

# FINAL ANNOUNCEMENT

Montecatini Terme - Italy • June 8-19/2014

# C I M 2014 T E C

13<sup>th</sup>  
International  
Ceramics  
Congress

June 8-13/2014

6<sup>th</sup>  
Forum  
on  
New Materials

June 15-19/2014

**CIMTEC** 2014

113<sup>th</sup> INTERNATIONAL CERAMICS CONGRESS

Flowsheet



#### **WELCOME RECEPTION**



GALA CONCERT



#### **CONFERENCE DINNER**

# SUMMARY

## Invitation to attend

The 13<sup>th</sup> senior edition of the International Conferences on Modern Materials and Technologies (CIMTEC 2014) to be held in Montecatini Terme, Tuscany, Italy will consist of the 13<sup>th</sup> International Ceramics Congress (June 8-13) and of the 6<sup>th</sup> Forum on New Materials (June 15-19). Continuing its long standing involvement as a major event for the international materials community, CIMTEC will again gather together a large and qualified attendance of materials scientists and of experts of a wide range of the most demanding uses of modern materials, from the molecular and nanoscales to large complex integrated systems. Most relevant areas whose progress and implementation is crucial for a vital and sustainable world economy will be covered by the about two thousand contributions presented by experts from over 60 Countries.

The Chair, Co-chairs and CIMTEC 2014 Committees invite you to foster progress in the field by participating in what promises to be a premier event for the world materials community, and to enjoy the unique artistic heritage and wonderful landscape of Tuscany.

Pietro Vincenzini  
General Chair CIMTEC Conferences  
Chairman World Academy of Ceramics (WAC)

Co-chairs CIMTEC 2014  
Gary Messing  
Immediate Past President International Ceramic Federation (ICF)

Robert P.H. Chang  
General Secretary International Union of Materials Research Societies (IUMRS)

Welcome to CIMTEC 2014!

13 <sup>th</sup> International Ceramics Congress - Flowsheet.....	2 <sup>nd</sup> Cover
6 <sup>th</sup> Forum on New Materials - Flowsheet .....	3 <sup>rd</sup> Cover
Summary.....	1
<b>SCIENTIFIC PROGRAMME</b>	
<b>13<sup>th</sup> INTERNATIONAL CERAMICS CONGRESS</b>	
Congress Committees .....	2
Outline Congress .....	5
Sessions Timetable .....	6
Code Number of Contributions by Presenting Author (in alphabetical order).....	9
<b>Symposium CA</b> Ceramic Powders: Advances in Synthesis, Processing and Manufacturing.....	15
<b>Symposium CB</b> Progress in Non Conventional and Novel Manufacturing Routes to Ceramics .....	18
<b>Special Session CB-9</b> SHS Ceramics .....	22
<b>Symposium CC</b> Materials Solutions for Highly Demanding Tribological Applications.....	23
<b>Symposium CD</b> Joining Inorganic Materials at Different Length Scales .....	24
<b>Symposium CE</b> Innovative Synthesis and Processing of Nanostructured, Nanocomposite and Hybrid Functional Materials for Energy and Sustainability.....	25
<b>Symposium CF</b> High and Ultra High Temperature Ceramics for Extreme Environments.....	28
<b>Symposium CG</b> Progress in Nano-laminated Ternary Carbides and Nitrides (MAX Phases) and Derivatives Thereof (MXenes) .....	30
<b>Symposium CH</b> Porous Ceramics for Environmental Protection, Energy-related Technologies and Advanced Industrial Cycles .....	31
<b>Symposium CI</b> Ceramic Thin Films and Coatings for Protective, Tribological and Multifunctional Applications .....	33
<b>Symposium CJ</b> Advances in Electroceramics .....	36
<b>Special Session CJ-6</b> State-of-the-art Development and Application of Thin Film Piezoelectric MEMS/NEMS .....	38
<b>Symposium CK</b> Functional Magnetic Oxides.....	39
<b>Symposium CL</b> Inorganic Materials Systems for Optical and Photonics Applications .....	41
<b>Symposium CM</b> Inorganic Polymers (Geopolymers) and Geocements: Environmentally Friendly Ceramic Materials for Low-Technology and High-Technology Applications .....	43
<b>Symposium CN</b> Science and Technology for Silicate Ceramics .....	45
<b>Symposium CO</b> Refractories: Developments in Raw Material, Production and Installation, Modelling, and Testing/Performance .....	46
<b>CP - 7<sup>th</sup> International Conference</b> Advanced Inorganic Fibre Composites for Structural and Thermal Management Applications.....	48
<b>6<sup>th</sup> FORUM ON NEW MATERIALS</b>	
Forum Committees .....	50
Outline Forum .....	53
Sessions Timetable .....	54
Code Number of Contributions by Presenting Author (in alphabetical order).....	58
<b>Symposium FA</b> Fuel Cells: Materials and Technology Challenges .....	64
<b>Symposium FB</b> Hydrogen Production and Storage .....	67
<b>Symposium FC</b> Electrochemical Energy Storage Systems: The Next Evolution.....	69
<b>Symposium FD</b> Advances in Materials and Technologies for Efficient Direct Thermal-to-electrical Energy Conversion.....	71
<b>Symposium FE</b> Advances in Photocatalytic Materials for Energy and Environmental Sustainability.....	73
<b>Symposium FF</b> Magnetic Materials for Energy .....	75
<b>Symposium FG</b> Photovoltaic Solar Energy Conversion: Silicon and Beyond.....	78
<b>Symposium FH</b> Recent Developments in the Research and Application of Transparent Conducting and Semiconducting Oxides .....	79
<b>Symposium FI</b> Materials and Technologies for Solid State Lighting.....	81
<b>Symposium FJ</b> Materials Challenges for Future Nuclear Fission and Fusion Technologies .....	83
<b>Special Session FJ-10</b> Materials Technology for Nuclear Waste Treatment and Disposal .....	85
<b>FK - 5<sup>th</sup> International Conference</b> Novel Functional Carbon Nanomaterials .....	86
<b>FL - 4<sup>th</sup> International Conference</b> Mass, Charge and Spin Transport in Inorganic Materials: Fundamentals to Devices .....	88
<b>FM - International Conference</b> Novel Non-volatile Inorganic Memory Devices: materials, concepts and applications .....	90
<b>FN - 7<sup>th</sup> International Conference</b> Science and Engineering of Novel Superconductors.....	92
<b>FO - 10<sup>th</sup> International Conference</b> Medical Applications of Novel Biomaterials and Nano-biotechnology .....	94
<b>Special Session FO-8</b> Smart Polymers for Biomedical Applications .....	97
<b>Special Session FO-9</b> Wearable and Implantable Sensors and Body Sensor Networks.....	99
Information to Authors & Participants .....	101
"HOT POSTER" Submission .....	103
Social Programme.....	105
Optional Tours .....	107
REGISTRATION FORM.....	111
HOTEL ACCOMMODATION FORM.....	113

# CONGRESS COMMITTEES

***Chair*****Pietro Vincenzini**

World Academy of Ceramics

***Co-Chair*****Gary Messing**

Immediate Past President International Ceramic Federation

***Advisory Boards*****SYMPOSIUM CA - Ceramic Powders: Advances in Synthesis, Processing and Manufacturing**

*Programme Chair:* Masahiro Yoshimura, Japan *Members:* Jean-François Baumard, France Stuart Blackburn, UK Rajendra K. Bordia, USA Paul Bowen, Switzerland K. Byrappa, India Thierry Chartier, France Mari-Ann Einarssrud, Norway Rainer Gadow, Germany Gregory K.L Goh, Singapore Olivia Graeve, USA Thomas Graule, Switzerland Jing-Kun Guo, China Krzysztof Haberko, Poland Ken Hirota, Japan Junichi Hojo, Japan Suk-Joong L. Kang, Korea Sridhar Komarneni, USA Edson Roberto Leite, Brazil Alexander Michaelis, Germany Makio Naito, Japan Victor M. Orera, Spain Roman Pampuch, Poland Giuseppe Pezzotti, Japan Andreas Roosen, Germany Fabrice Rossignol, France Pavol Šajgalík, Slovakia Yoshio Sakka, Japan Gian Domenico Sorarù, Italy Chris Sorrell, Australia Mikolaj Szafran, Poland Veena Tikare, USA Jyh-Ming Ting, Taiwan Dragan P. Uskokovic, Serbia

**SYMPOSIUM CB - Progress in Non Conventional and Novel Manufacturing Routes to Ceramics**

*Programme Chair:* Ralf Riedel, Germany *Members:* James Adair, USA Dinesh Agrawal, USA Florence Babonneau, France Byeong-Soo Bae, Korea Alessandra Bianco, Italy Joachim Bill, Germany Ricardo H.R. Castro, USA Nachum Frage, Israel Javier Garay, USA Peter Greil, Germany Young Hwan Han, Korea Dong Pyo Kim, Korea Hans-Joachim Kleebe, Germany Sanjay Kumar, India Jennifer Lewis, USA Yali Li, China Jacques Livage, France Sylvain Marinel, France Martha Mecartney, USA Philippe Miele, France Eugene A. Olevsky, USA Kurosch Rezwan, Germany Richard E. Riman, USA Clement Sanchez, France Kenneth Sandhage, USA Saburo Sano, Japan Tsugio Sato, Japan Julie M. Schoenung, USA Toshimori Sekine, Japan James Shen, Sweden Wolfgang Sigmund, USA Yoko Suyama, Japan Paula Maria Vilarinho, Portugal Di Zhang, China Igor Zhitomirsky, Canada

**Special Session CB-9 - SHS Ceramics**

*Chair:* Alexander S. Rogachev, Russia *Members:* Umberto Anselmi-Tamburini, Italy Inna P. Borovinskaya, Russia Giacomo Cao, Italy Shyan-Lung Chung, Taiwan Chang-Chun Ge, China Suren L. Kharatyan, Armenia Boris Khina, Belarus Evgeny Levashov, Russia Jerzy Lis, Poland Nikolay Z. Lyakhov, Russia Zulkhair Mansurov, Kazakhstan Alexander Mukasyan, USA Osamu Odawara, Japan Miguel A. Rodriguez, Spain Alexander E. Sytschey, Russia Giorgi Tavadze, Georgia Naresh Thadhani, USA Galina Xanthopoulou, Greece

**SYMPOSIUM CC - Materials Solutions for Highly Demanding Tribological Applications**

*Programme Chair:* Ali Erdemir, USA *Members:* Koshi Adachi, Japan Yasuhisa Ando, Japan José Daniel Biasoli De Mello, Brazil Robert W. Carpick, USA Jean-Pierre Celis, Belgium Maria I. De Barros, France Goffredo De Portu, Italy Christopher Dellacorte, USA Martin Dienwiebel, Germany Michael Dugger, USA Judith A. Harrison, USA Kenneth Holmberg, Finland Masami Ikeyama, Japan Staffan Jacobson, Sweden Dae-Eun Kim, Korea Jacqueline Krim, USA Laurence Marks, USA Denis Mazuyer, France Ernst Meyer, Switzerland Claudio Migliaresi, Italy Kouji Miura, Japan Kyoung Il Moon, Korea Michael Moseler, Germany Sandra E. Rodil, Mexico Naruo Sasaki, Japan W. Gregory Sawyer, USA Udo Schwarz, USA Sujeet K. Sinha, India Nicholas D. Spencer, Switzerland Margaret Stack, UK Tom Troczynski, Canada Mustafa Urgen, Turkey Lucia Vieira Santos, Brazil

**SYMPOSIUM CD - Joining Inorganic Materials at Different Length Scales**

*Programme Chair:* Jolanta Janczak, Switzerland *Members:* Viola L. Acoff, USA Florian Banhart, France Mathieu Brochu, Canada John A. Fernie, UK Natalya Froumin, Israel Masahiro Fukumoto, Japan Andreas Glaeser, USA Dmitry G. Gromov, Russia Michael C. Halbig, USA Akio Hirose, Japan Fiqiri Hodaj, France Yu-Dong Huang, China Wayne Kaplan, Israel Kevin M. Knowles, UK Katsuyoshi Kondoh, Japan Charles Lewinsohn, USA Leijun Li, USA Yongfeng Lu, USA Alberto Passerone, Italy Ivar E. Reimanis, USA Eduardo Saiz Gutierrez, UK Julius C. Schuster, Austria Natalia Sobczak, Poland Ravi Kant Soni, India Tadatomo Suga, Japan Shun-Ichi Tanaka, Japan Mauricio Terrones, USA Jun Wei, Singapore

**SYMPORIUM CE - Innovative Synthesis and Processing of Nanostructured, Nanocomposite and Hybrid Functional Materials for Energy and Sustainability**

*Programme Chair:* Sanjay Mathur, Germany *Members:* Davide Barreca, Italy Elisabetta Comini, Italy Zorica Crnjak, Slovenia Claus Feldmann, Germany M. Saif Islam, USA Menka Jain, USA Hidehiro Kamiya, Japan Aivaras Kareiva, Lithuania Amarjeet Kaur, India Masoud Latifi, Iran Yoshitake Masuda, Japan Bodh Raj Mehta, India Gary L. Messing, USA Juan-Ramon Morante, Spain Anja-Verena Mudring, Germany Daniel Niznansky, Czech Republic Volkvan Ozguz, Turkey Greta R. Patzke, Switzerland Kohei Soga, Japan Madhavi Srinivasan, Singapore Dunwei Wang, USA Zhong Lin Wang, USA

**SYMPORIUM CF - High and Ultra-high Temperature Ceramics for Extreme Environments**

*Programme Chair:* William G. Fahrenholtz, USA *Members:* Rotislav Andrievski, Russia Jon Binner, UK Bill Clegg, UK Erica L. Corral, USA Robert Danzer, Austria Arturo Dominguez Rodriguez, Spain Jan Dusza, Slovakia William A. Ellingson, USA Gilbert Fantozzi, France George V. Franks, Australia Stuart Hampshire, Ireland Jürgen G. Heinrich, Germany Michael J. Hoffmann, Germany Sylvia Johnson, USA Do Kyung Kim, Korea Hiroshi Kimura, Japan Peter Kroll, USA Edgar Lara-Curcio, USA William Lee, UK Giuseppe Magnani, Italy Hasan Mandal, Turkey Klaus G. Nickel, Germany Elisabeth Opila, USA Triplicane A. Parthasarathy, USA Daniel Riley, Australia Jitendra P. Singh, USA Gregory B. Thompson, USA Wei-Hsing Tuan, Taiwan Fumihiro Wakai, Japan Eric Wuchina, USA Yanchun Zhou, China

**SYMPORIUM CG - Progress in Nano-laminated Ternary Carbides and Nitrides (MAX Phases) and Derivatives Thereof (MXenes)**

*Programme Chair:* Michel W. Barsoum, USA *Members:* Rajeev Ahuja, Sweden Bikramjit Basu, India Matthieu Bugnet, Canada Thierry Cabioch, France Sylvain Dubois, France Xiaodong He, China Chunfeng Hu, China Lars Hultman, Sweden Milan Radovic, USA Johanna Rosen, Sweden Surendra Saxena, USA Peter Schaaf, Germany Jochen M. Schneider, Germany Zheng Ming Sun, Japan Jingyang Wang, China

**SYMPORIUM CH - Porous Ceramics for Environmental Protection, Energy-related Technologies and Advanced Industrial Cycles**

*Programme Chair:* Paolo Colombo, Italy *Members:* Joerg Adler, Germany Lennart Bergstrom, Sweden Henry J.M. Bowmeester, Netherlands Nitin Chopra, USA Sylvain Deville, France Katherine Faber, USA José Maria Ferreira, Portugal Georg Grathwohl, Germany Keith E. Gubbins, USA Ellen Ivers-Tiffée, Germany Yuji Iwamoto, Japan Philip R. Jackson, UK Katsumi Kaneko, Japan Young-Wook Kim, Korea Nitin Labhsetwar, India Scott Misture, USA Laura Montanaro, Italy Rodrigo Moreno, Spain Kazuki Nakanishi, Japan Alexander V. Neimark, USA Kazushige Ohno, Japan Alberto Ortona, Switzerland Alain Pierre, France Alexander J. Pyzik, USA Michael Scheffler, Germany David S. Smith, France Matthias Thommes, USA Tim Van Gestel, Germany Ulrich Vogt, Switzerland Yusuke Yamauchi, Japan Yongjie Yan, China Yu Zhou, China

**SYMPORIUM CI - Ceramic Thin Films and Coatings for Protective, Tribological and Multifunctional Applications**

*Programme Chair:* Christopher C. Berndt, Australia *Members:* Jun Akedo, Japan Samir M. Aouadi, USA Alain Denoirjean, France Diederik Depla, Belgium Per Eklund, Sweden Steven L. Girshick, USA Wayne L. Gladfelter, USA Philippe Goudeau, France Sang Sub Kim, Korea Seiji Kuroda, Japan Enrique J. Lavernia, USA Luca Lusvarghi, Italy Tapio Mantyla, Finland Christian Mitterer, Austria Ghislain Montavon, France Christian Moreau, Canada Javad Mostaghimi, Canada Nitin P. Padture, USA Sophoclis Patsias, UK Uwe Schulz, Germany Fuh-Sheng Shieh, Taiwan Dmitry V. Shtansky, Russia Yongho Sohn, USA Rodney Trice, USA Constantin Vahlas, France Robert Vassen, Germany José Filipe Vilela Vaz, Portugal Ping Xiao, UK Sam Zhang, Singapore Dongming Zhu, USA

**SYMPORIUM CJ - Advances in Electroceramics**

*Programme Chair:* José Arana Varela, Brazil *Members:* Sheikh Akbar, USA Neil Alford, UK Akira Ando, Japan David P. Cann, USA Xiang Ming Chen, China Mohammed Es-Souni, Germany Ludwig Gauckler, Switzerland Spartak S. Gevorgian, Sweden Adrian Goldstein, Israel Daniel Guyomar, France Hajime Haneda, Japan Jacob L. Jones, USA Sergei V. Kalinin, USA Stanislav Kamba, Czech Republic Andrei Khoklin, Portugal Eung Soo Kim, Korea Ling Bing Kong, Singapore Jong-Heun Lee, Korea Yongxiang Li, China Raffaella Lo Nigro, Italy Ichiro Matsubara, Japan Liliana Mitoseriu, Romania Reginaldo Muccillo, Brazil Truls Eivind Norby, Norway Toshio Ogawa, Japan Hitoshi Ohsato, Japan Lorena Pardo, Spain Ramamoorthy Ramesh, USA Guus Rijnders, Netherlands Edward M. Sabolsky, USA Mailadil T. Sebastian, India Nava Setter, Switzerland Derek C. Sinclair, UK Andris Sternberg, Latvia Danilo Suvorov, Slovenia Steven C. Tidrow, USA Isabel Van Driessche, Belgium Chan-Ho Yang, Korea Zuo-Guang Ye, Canada Ki Hyun Yoon, Korea Weiguang Zhu, Singapore

**Special Session CJ-6 - State-of-the-art Development and Application of Thin Film Piezoelectric MEMS/NEMS**

*Chair:* Massimo De Vittorio, *Italy* *Members:* Vladimir A. Aksyuk, *USA* Seung-Hyub Baek, *Korea* Nazanin Bassiri-Gharb, *USA* Nico De Rooij, *Switzerland* Chang-Beom Eom, *USA* Marc Faucher, *France* Vittorio Ferrari, *Italy* Hiroshi Funakubo, *Japan* Reza Ghodssi, *USA* Isaku Kanno, *Japan* Chih-Kung Lee, *Taiwan* Xinxin Li, *China* Ryutaro Maeda, *Japan* Gianluca Piazza, *USA* Ronald G. Polcawich, *USA* Denis Remiens, *France* Srinivas Tadigadapa, *USA* Ruud Vullers, *Netherlands*

**SYMPORIUM CK - Functional Magnetic Oxides**

*Programme Chairs:* Daniele Marré, *Italy* Silvia Picozzi, *Italy* *Members:* Agnès Barthelemy, *France* Riccardo Bertacco, *Italy* Silke Biermann, *France* Scott Chambers, *USA* Sang-Wook Cheong, *USA* Elbio Dagotto, *USA* Roberto De Renzi, *Italy* José Maria De Teresa, *Spain* Valentin Alek Dedić, *Italy* Thomas Dietl, *Poland* Craig Fennie, *USA* Alessio Filippetti, *Italy* Giacomo Ghiringhelli, *Italy* Edmondo Gilioli, *Italy* Harold Hwang, *USA* Masashi Kawasaki, *Japan* Tsuyoshi Kimura, *Japan* Hideomi Koinuma, *Japan* Darko Makovec, *Slovenia* Neil D. Mathur, *UK* Tanusri Saha-Dasgupta, *India* Jacobo Santamaria, *Spain* George Sawatzky, *Canada* Susanne Stemmer, *USA* Hitoshi Tabata, *Japan* Hidekazu Tanaka, *Japan* Jean-Marc Triscone, *Switzerland* Jeroen Van Den Brink, *Germany* Maria Varela, *USA* Antonio Vecchione, *Italy*

**SYMPORIUM CL - Inorganic Materials Systems for Optical and Photonic Applications**

*Programme Chair:* Maurizio Ferrari, *Italy* *Members:* Jean-Luc Adam, *France* Tomoko Akai, *Japan* John Ballato, *USA* Marco G. Bettinelli, *Italy* Dieter Bimberg, *Germany* Richard J. Blaikie, *New Zealand* Brigitte Boulard, *France* Louise Bradley, *Ireland* Connie J. Chang-Hasnain, *USA* Xiaolong Chen, *China* M. Lucia Curri, *Italy* Shanhui Fan, *USA* Alexander V. Gekht, *Ukraine* Min Gu, *Australia* Jong Heo, *Korea* Mikio Higuchi, *Japan* Kazuyuki Hirao, *Japan* Frank Hubenthal, *Germany* Mile Ivanda, *Croatia* Nigel P. Johnson, *Scotland* Safa Kasap, *Canada* Peter Kazansky, *UK* Marian Marciniak, *Poland* Joanna Mckittrick, *USA* Naoki Ohashi, *Japan* Gary R. Pickrell, *USA* Jianrong Qiu, *China* Roberta Ramponi, *Italy* Giancarlo Righini, *Italy* Federico Rosei, *Canada* Vladimir M. Shalaev, *USA* Setsuhisa Tanabe, *Japan* Katsuhisa Tanaka, *Japan* Franck Tessier, *France* Sergei A. Tretyakov, *Finland* Dae Ho Yoon, *Korea* Nikolay I. Zheludev, *UK*

**SYMPORIUM CM - Inorganic Polymers (Geopolymers) and Geocements: Environmentally Friendly Ceramic Materials for Low-Technology and High-Technology Applications**

*Programme Chair:* Kenneth J.D. Mackenzie, *New Zealand* *Members:* Erez Allouche, *USA* Christopher Cheeseman, *UK* Katja Dombrowski, *Germany* Tomas Hanzlíček, *Czech Republic* Waltraud M. Kriven, *USA* Cristina Leonelli, *Italy* Zongjin Li, *China* Henk Nugteren, *Netherlands* Kiyoshi Okada, *Japan* Hassane Oudadesse, *France* Angel Palomo Sanchez, *Spain* John L. Provis, *UK* Kwesi Sagoe-Crentsil, *Australia* Arie Van Riessen, *Australia* Marcel Weil, *Germany* Wanchai Yodsudjai, *Thailand*

**SYMPORIUM CN - Science and Technology for Silicate Ceramics**

*Programme Chair:* Michele Dondi, *Italy* *Members:* Philippe Blanchart, *France* Federica Bondioli, *Italy* Anselmo O. Boschi, *Brazil* Vilma Ducman, *Slovenia* Pierre Flament, *Belgium* Christopher Hall, *Scotland* Dachamir Hotza, *Brazil* Fakher Jamoussi, *Tunisie* Alpagut Kara, *Turkey* Alexander Karamanov, *Bulgaria* Bekir Karasu, *Turkey* Joao A. Labrincha, *Portugal* Araceli E. Lavat, *Argentina* Arnaldo Moreno Berto, *Spain* Guido Nassetti, *Italy* Manuel Ocana Jurado, *Spain* Mariarosa Raimondo, *Italy* Maximina Romero Perez, *Spain* Juan Jacobo Ruiz Valdes, *Mexico* Mariya Sedelnikova, *Russia* Toyohiko Sugiyama, *Japan* Paolo Zannini, *Italy*

**SYMPORIUM CO - Refractories: Developments in Raw Material, Production and Installation, Modelling, and Testing/Performance**

*Programme Chair:* James P. Bennett, *USA* *Members:* Esteban F. Aglietti, *Argentina* Christos G. Aneziris, *Germany* Carmen Baudin, *Spain* Goutam Bhattacharya, *India* Bart Blanpain, *Belgium* Richard C. Bradt, *USA* Elena Brandaleze, *Argentina* Thierry Cutard, *France* Swapan Kumar Das, *India* Harald Harmuth, *Austria* Marc Huger, *France* Yawei Li, *China* Manuel Miranda, *Spain* Kusuhiro Mukai, *Japan* George Oprea, *Canada* Toshitaka Ota, *Japan* Victor Carlos Pandolfelli, *Brazil* Christopher Parr, *France* M.D. Patil, *USA* Jacques Poirier, *France* Michael Rigaud, *Canada* Nigel Stone, *Australia* Kiyoshi Sugita, *Japan* Analía G. Tomba Martinez, *Argentina*

**CP - 7th International Conference "Advanced Inorganic Fibre Composites for Structural and Thermal Management Applications"**

*Co-Chairs:* Mrityunjay Singh, *USA* (*Programme Chair*) Shaoming Dong, *China* Walter Krenkel, *Germany* Tatsuki Ohji, *Japan* *Members:* Rajiv Asthana, *USA* Laifei Cheng, *China* Monica Ferraris, *Italy* Andrew L. Gyekenyesi, *USA* Kiyoshi Hirao, *Japan* Toshihiro Ishikawa, *Japan* Yutaka Kagawa, *Japan* Hai-Doo Kim, *Korea* Jacques Lamon, *France* David Marshall, *USA* Sergei T. Mileiko, *Russia* Gregory Morscher, *USA* Dileep Singh, *USA* Junichi Tatami, *Japan* Guo-Jun Zhang, *China*

# OUTLINE CONGRESS

**SYMPORIUM CA**

Ceramic Powders: Advances in Synthesis, Processing and Manufacturing

**SYMPORIUM CB**

Progress in Non Conventional and Novel Manufacturing Routes to Ceramics

*Special Session CJ-9  
SHS Ceramics*

**SYMPORIUM CC**

Materials Solutions for Highly Demanding Tribological Applications

**SYMPORIUM CD**

Joining Inorganic Materials at Different Length Scales

**SYMPORIUM CE**

Innovative Synthesis and Processing of Nanostructured, Nanocomposite and Hybrid Functional Materials for Energy and Sustainability

**SYMPORIUM CF**

High and Ultra High Temperature Ceramics for Extreme Environments

**SYMPORIUM CG**

Progress in Nano-laminated Ternary Carbides and Nitrides (MAX Phases) and Derivatives Thereof (MXenes)

**SYMPORIUM CH**

Porous Ceramics for Environmental Protection, Energy-related Technologies and Advanced Industrial Cycles

**SYMPORIUM CI**

Ceramic Thin Films and Coatings for Protective, Tribological and Multifunctional Applications

**SYMPORIUM CJ**

Advances in Electroceramics

*Special Session CJ-6  
State-of-the-art Development and Application of Thin Film Piezoelectric MEMS/NEMS*

**SYMPORIUM CK**

Functional Magnetic Oxides

**SYMPORIUM CL**

Inorganic Materials Systems for Optical and Photonics Applications

**SYMPORIUM CM**

Inorganic Polymers (Geopolymers) and Geocements: Environmentally Friendly Ceramic Materials for Low-Technology and High-Technology Applications

**SYMPORIUM CN**

Science and Technology for Silicate Ceramics

**SYMPORIUM CO**

Refractories: Developments in Raw Material, Production and Installation, Modelling, and Testing/Performance

**Serial Conference**
**CP**
**7<sup>th</sup> International Conference**

Advanced Inorganic Fibre Composites for Structural and Thermal Management Applications

# SESSIONS TIMETABLE

## 13th International Ceramics Congress - June 8-13, 2014

### Sunday June 8

11.00-13.00 15.00-19.00

#### REGISTRATION

Palazzo dei Congressi  
Via Amendola, 2  
Montecatini Terme, Pistoia, Italy

### Monday June 9

**Morning:** 9.30-13.00

#### Opening Session

Welcome Addresses

Plenary Lectures (C:PL1-PL3)

**Afternoon:** 15.00-19.30

Symposium CA (CA-1:IL01-L04)  
(CA-2:IL01-L05)

Symposium CB (CB-1:IL01-L04)  
(CB-2:IL01-L05)

Symposium CC (CC-1:IL01-L06)  
(CC-2:IL01:IL02)

Symposium CE (CE-1:IL01-L05)  
(CE-2:IL01-IL04)

Symposium CG (CG-1:IL01-IL04)  
(CG-1:IL05-L07)

Symposium CI (CI-1:IL01-L04)  
(CI-1:IL05-L07)

Symposium CJ (CJ-1:IL01-L04)  
(CJ-1:IL05-L10)

Symposium CN (CN-1:IL01-IL03)  
(CN-1:IL04-L06)

Symposium CO (CO-1:IL01-L05)  
(CO-2:IL01-L04)

Conference CP (CP-1:IL01-L04)  
(CP-1:IL05-L07)

8.30-13.00

15.00-19.00

POSTER MOUNTING

20.30-22.30

*Welcome Party*

**Tuesday June 10****Morning:** 8.30-13.00

Symposium CA	(CA-1:IL05-L11) (CA-1:IL12-L16)
Symposium CB	(CB-1:IL06-L08) (CB-2:IL06-L10)
Symposium CC	(CC-2:IL03-L07) (CC-3:IL01-L04)
Symposium CE	(CE-1:IL06-L10) (CE-1:IL11-L15)
Symposium CG	(CG-2:IL01-L04) (CG-3:IL01-L04)
Symposium CI	(CI-1:IL08-L12) (CI-2:IL01-L04)
Symposium CJ	(CJ-1:IL11-L15) (CJ-2:IL01-L05)
Symposium CN	(CN-2:IL01-L05) (CN-2:IL06-L09)
Symposium CO	(CO-2:IL05-L10) (CO-3:IL01-L04)
Conference CP	(CP-2:IL01-L03) (CP-3:IL01-L05)

**Afternoon:** 15.00-19.30

Symposium CA	(CA-3:IL01-L04) (CA-3:IL05-L08)
Symposium CB	(CB-1:IL09-L13) (CB-4:IL01-L04)
Symposium CC	(CC-4:IL01-L03) (CC-5:IL01-L04)
Symposium CE	(CE-2:IL05-L08) (CE-2:IL09-L12)
Symposium CG	(CG-3:IL05-L08) (CG-4:IL01-L04)
Symposium CH	(CH-1:IL01-L05) (CH-1:IL06-L09)
Symposium CJ	(CJ-2:IL06-L09) (CJ-2:IL10-L14)
Symposium CL	(CL-1:IL01-L05) (CL-1:IL06-L10)
Symposium CN	(CN-2:IL10-L12) (CN-3:IL01-L04)
Symposium CO	(CO-3:IL05-L08) (CO-4:IL01-L03)
Conference CP	(CP-4:IL01-L03) (CP-5:IL01-L04)

**Wednesday June 11****Morning:** 8.30-13.00

Symposium CB	(CB-4:IL05-L09) (CB-4:IL10-L15)
Symposium CC	(CC-6:IL01-L06)
Symposium CD	(CD-1:IL01-L03)
Symposium CE	(CE-3:IL01-L05) (CE-3:IL06-L09)
Symposium CF	(CF-1:IL01-L04) (CF-1:IL05-L09)
Symposium CG	(CG-4:IL05-L09) (CG-4:IL10-L12)
Symposium CI	(CI-3:IL01-L04) (CI-3:IL05-L07)
Symposium CJ	(CJ-3:IL01-L04) (CJ-4:IL01-L04)
Symposium CK	(CK-1:IL01-L04) (CK-1:IL05-IL08)
Symposium CN	(CN-3:IL05-L08) (CN-4:IL01-L03)
Symposium CO	(CO-4:IL04-IL06) (CO-4:IL07-IL09)
Conference CP	(CP-4:IL04-IL05) (CP-6:IL01-L04)

**Afternoon:** 15.00-19.30

Symposium CA	(CA-4:IL01-L04) (CA-4:L14-L17)
Symposium CB	(CB-3:IL01-L04) (CB-3:IL05-L08)
Symposium CC	(CC-7:IL01-L05)
Symposium CD	(CD-1:IL04-IL05)
Symposium CE	(CE-3:IL10-L13)
Symposium CF	(CF-1:IL10-L12)
Symposium CG	(CG-5:IL01-L06)
Symposium CH	(CH-1:IL10-L14) (CH-2:IL01-L03)
Symposium CJ	(CJ-6.1:IL01-L03) (CJ-6.1:IL04-L06)
Symposium CK	(CK-1:IL09-L13) (CK-3:IL01-L03)
Symposium CL	(CL-1:IL11-L15) (CL-1:IL24-IL25)
Symposium CN	(CN-4:IL04-L07)
Conference CP	(CP-5:IL05-IL06) (CP-6:IL05-IL08)

21.30-23.00

*Gala Concert*

**Thursday June 12****Morning:** 8.30-13.00

- Symposium CA (CA-4:IL05-IL08)  
(CA-4:IL09-L13)
- Symposium CB (CB-5:IL01-L04)  
(CB-5:IL05-L07)  
(CB-9.1:IL01-L03)  
(CB-9.1:IL04-L06)
- Symposium CD (CD-1:IL06-L10)  
(CD-2:IL01-L04)
- Symposium CF (CF-2:IL01-L05)  
(CF-3:IL01-L05)
- Symposium CH (CH-2:IL04-L07)  
(CH-3:IL01-L05)
- Symposium CI (CI-2:IL05-L07)  
(CI-4:IL01-L06)
- Symposium CJ (CJ-6.3:IL01-L03)  
(CJ-6.3:IL04-L06)
- Symposium CK (CK-2:IL01-L05)  
(CK-3:IL04-L07)
- Symposium CL (CL-1:IL16-L19)  
(CL-1:IL20-L23)
- Symposium CM (CM-1:IL01-L05)  
(CM-1:IL06-L09)

**Afternoon:** 15.00-19.30

- Symposium CB (CB-6:IL01-L05)  
(CB-9.2:IL01-L07)  
(CB-9.3:IL01-L03)
- Symposium CD (CD-3:IL01-IL04)
- Symposium CF (CF-2:IL06-L09)  
(CF-3:IL06-L10)
- Symposium CH (CH-4:IL01-IL03)  
(CH-4:IL04-IL06)
- Symposium CI (CI-5:IL01-L04)  
(CI-5:IL05-L07)
- Symposium CJ (CJ-3:IL05-L07)  
(CJ-4:IL05-L08)  
(CJ-6.2:IL01-IL03)  
(CJ-6.2:IL04-L07)
- Symposium CK (CK-4:IL01-L05)  
(CK-4:IL06-L09)
- Symposium CL (CL-2:IL01-L03)  
(CL-2:IL04-L06)
- Symposium CM (CM-1:IL10-L14)  
(CM-2:IL01-L04)

17.30-19.00

**POSTER DISCUSSION**

Symposia CC - CE - CG - CN - CO - CP

**Friday June 13****Morning:** 8.30-13.00

- Symposium CA (CA-1:L17-L21)  
(CA-5:IL01-IL03)
- Symposium CB (CB-7:IL01-L04)  
(CB-7:IL05-L08)  
(CB-9.4:IL01-L05)  
(CB-9.5:IL01-L03)
- Symposium CD (CD-3:IL05-L07)  
(CD-4:IL01-L05)
- Symposium CF (CF-1:IL13-L16)  
(CF-3:L11-L13)  
(CF-4:IL01-IL02)
- Symposium CH (CH-5:IL01-L05)  
(CH-5:IL06-L10)
- Symposium CI (CI-6:IL01-L05)  
(CI-6:IL06-IL07)
- Symposium CJ (CJ-6.3:IL07-IL09)  
(CJ-5:IL01-L05)
- Symposium CK (CK-5:IL01-IL03)  
(CK-5:IL04-IL06)
- Symposium CL (CL-3:IL01-L05)  
(CL-3:IL06-IL09)
- Symposium CM (CM-1:IL15-L19)  
(CM-1:IL20-L25)

**Afternoon:** 14.45-18.30

- Symposium CA (CA-5:IL04-L06)
- Symposium CB (CB-7:IL09-L12)  
(CB-9.5:IL04-L07)
- Symposium CD (CD-4:IL06-L09)
- Symposium CF (CF-4:IL03-L07)
- Symposium CH (CH-5:IL11-L16)
- Symposium CJ (CJ-5:IL06-L10)
- Symposium CK (CK-6:IL01-IL03)
- Symposium CL (CL-4:IL01-IL05)
- Symposium CM (CM-2:IL05-L10)

17.00-18.30

**POSTER DISCUSSION**

Symposia CA - CB - CD - CF - CH - CI - CJ - CK - CL - CM

20.00-23.30

*Conference Dinner*

## Code Number of contributions by Presenting Author (in alphabetical order)

The Code Number XY-W:Z00 includes: XY Symposium; W Session; Z Type of presentation (PL, IL, L, P)\*; 00 Paper number

\* PL Plenary IL Invited Lecture L Contributed Lecture P Poster presentation

*NOTE: Due to the restructuring of some symposia, the session number included in the Code may differ from the one selected by the Presenting Author in the Abstract Submission Form.*

Abali Serkan	CF:P06	Batista Leonardo	CJ-2:L08	Carja Gabriela	CE-3:L04
Abdulkarimova Roza	CB-9:P02	Battiatto Sergio	CJ:P14	Carraro Giorgio	CE-3:L03
Abrantes Joao	CJ-5:L03	Bei Guo-Ping	CG-3:L04	Casalegno Valentina	CD:P03
Abrikosov Igor	CI-6:IL07	Benavente Rut	CB:P07	Caspi Elad	CG-2:IL01
Acchar Wilson	CI:P07	Benavidez Edgardo	CO:P02	Cassidy Mark	CA-3:L06
Adak Sukumar	CO-3:IL07	Bendaoudi Seif-Eddine	CC:P03	Castro Ricardo	CF-1:L09
Adler Joerg	CH-5:IL12	Benhaliliba Mostefa	CE:P09	Catalan Gustau	CJ-2:IL01
Adschiri Tadafumi	CA-1:IL12	Bennett James	CO-3:IL05	Catalano Maria Rita	CK:P04
Aghayan Marina	CC-2:L07	Berek Harry	CH-3:IL04	Cavalli Lorenzo	CF-1:L14
Agrafiotis Christos	CH-5:L05	Berger Lutz-Michael	CI-4:IL01	Caviglia Andrea	CK-1:IL06
Aharonian Charles	CA-4:L15	Berger Shlomo	CJ-2:IL02	Cernuschi Federico	CI-3:IL05
Ahmad Rizwan	CH-1:L05	Bergstrom Lennart	CA-2:IL01	Cerro-Prada Elena	CI-2:L04
Aimable Anne	CA-1:IL02	Bernard Frederic	CB-4:IL01	Cesarano Joe	CH-1:L04
Aizenberg Joanna	C:PL2	Bernard Samuel	CB-2:IL02	Chambers Scott	CK-1:IL07
Aizenberg Michael	CE-3:L07	Bernardo Enrico	CN-2:IL06	Chang Jeong Ho	CH:P08
Aizenshtain Michael	CD-1:IL09	Bertacco Riccardo	CK-4:L04	Chapelle Lucie	CP:P03
Aleksandrova Elena	CB-4:L08	Bettinelli Marco	CL:P01	Chatain Dominique	CD-1:IL06
Algieri Catia	CH-1:L03	Bezzi Federica	CI:P06	Chen Chin-Yi	CE-1:L05
Ali Majed	CD-1:IL03	Bhattacharya Anand	CK-1:IL05	Chen Xiang Ming	CJ-1:IL11
Alias Rosidah	CJ-1:L04	Bianco Alessandra	CB-1:L07	Chen Ying	CA:P13
Aloy Albert	CH:P09	Biasoli de Mello Jose D.	CC-7:IL04	Chen Zhou	CP-1:L07
Alzeer Mohammad	CM-1:IL16	Bignozzi Maria Chiara	CM-1:L13	Cheng Laifei	CP-5:IL01
Amoros Albaro	CN-3:IL01	Bill Joachim	CB-5:IL01	Cheng Wen-Tung	CO-4:L03
Andreev Dmitrii	CB-9.2:IL05	Binner Jon	CF-1:IL05	Chiappini Andrea	CL-1:L14
Andreola Fernanda	CN-2:IL10	Blond Eric	CO-4:IL01	Chinelatto Adilson Luiz	CJ:P17
Andrew Jennifer	CB-7:IL02	Blum Yigal D.	CB-2:L09	Chinelatto Adriana	CA:P34
Andrievskaya Elena	CF:P02	Bobnar Vid	CJ-2:L12	Ching Wai-Yim	CG-1:IL02
Andrievski Rostislav	CF-3:IL01	Bogachev Igor	CB:P14	Chislov Mikhail	CE:P10
Aneziris Christos G.	CO-3:IL02	Bogdanov Bogdan	CM-1:P03	Chislova Irina	CE:P17
Anil Umit Engin	CH-1:L14	Bondioli Federica	CN-1:IL02	Chlubny Leszek	CB-9.1:L06
Araujo Huyra Estevao	CJ:P19	Boniecki Marek	CF:P05	Chmielewski Marcin	CC:P01
Artini Cristina	CD-4:IL01	Bonk Alexander	CH-5:L03	Chollon Georges	CI-1:L11
Aseev Vladimir	CL-3:L04	Bootchanont Atipong	CJ:P09	Chowdhury Anirban	CA-1:L09
Asthana Rajiv	CP-2:IL02	Borcanescu Silvana	CA:P15	Chun Myoung Pyo	CJ:P01
Aydin Tuna	CN:P11	Bordia Rajendra	CA-4:IL03	Chung Shyan-Lung	CB-9.2:L02
Aydinaryn Sofiya	CB-9.5:L06	Borrell Amparo	CA:P38	Ciulli Enrico	CC-4:IL02
Ayres Rocha Renata	CA:P29	Bowen Paul	CA-4:IL06	Clauss Bernd	CP-1:IL02
Babuta Roxana	CA:P14	Bowman Richard	CN-4:IL01	Clemens Frank	CA-3:IL02
Baek Seung-Hyub	CJ-6.1:IL01	Brandaleze Elena	CO-2:L03	Colombo Paolo	CH-1:L12
Bagnato Osmar R.	CD:P04	Brandes Christoph	CH-1:L13	Coperet Christophe	CE-3:IL10
Bah Micka	CJ-2:L05	Brochu Mathieu	CD-3:IL05	Cornu Lucile	CL-3:L03
Baideldinova Anna	CB-9.2:L06	Bruno Giovanni	CH-3:L05	Corral Erica L.	CF-1:IL01
Baik Kyeong-Ho	CI-2:IL01	Bu Junfu	CA-1:L10	Coulon Antoine	CB-4:L11
Bakhsh Nabi	CF:P03	Bucharsky Ethel	CA:P05	Coury Marc	CK-2:L04
Balachandran U. (Balu)	CE-2:IL10	Bucko Miroslaw M.	CA-3:IL05	Crean Abina	CH-5:IL02
Balat-Pichelin Marianne	CF-2:IL07	Buechner Bernd	CK-5:IL03	Crnjak Orel Zorica	CE-2:IL04
Ballato John	CL-1:L03	Bugnet Matthieu	CG-5:IL04	Cuoco Mario	CK-1:IL09
Banerjee Sarbjit	CA-1:IL01	Cabioch Thierry	CG-4:IL03	Cutard Thierry	CO-2:L04
Baras Florence	CB-9.1:IL04	Cabrelon Marcelo Dezena	CN:P03	Da Luz Ana Paula	CO-2:L08
Barbato Maurizio	CH-4:IL02	Caglar Batuhan	CM-2:L10	Dabirian Ali	CE-3:IL11
Barsoum Michel	C:PL1	Camargo Nelson H.A.	CA:P09	Daghofer Maria	CK-2:IL01
Barsoum Michel	CG-3:IL01	Cao Giacomo	CB-9.4:IL02	Dang Quoc-Khanh	CB-4:L15
Basyuk Tetyana	CG-4:L07	Caramiello Ciro	CA-3:L08	Das Suman	CB-7:L12

Das Swapna Kumar	CO-1:IL02	Fiocco Laura	CB-2:L05	Gupta Surojit	CG-3:IL05
Dazai Takuro	CL:P12	Fomenko Sergey	CB-9:P03	Gupta Surojit	CM-1:L18
De Barros Bouchet Maria I.	CC-1:IL03	Fonseca de Lima Juliana	CA:P07	Hahn Yoon-Bong	CE-2:IL07
De Bilbao Emmanuel	CO-4:IL07	Fontcuberta Josep	CK-1:IL01	Hakeem Abbas Saeed	CF-1:L15
De Florio D.Z.	CJ:P18	Francisco-Escudero Juan	CB:P18	Halasova Martina	CP-5:L02
De La Fuente German	CN-4:L06	Franz Robert	CI-2:IL02	Halperin Victor	CB:P02
De Moura Ana Paula	CA:P04	Fritzsche Wolfgang	CL-4:IL02	Hama Hisaya	CB:P01
de Oliveira Magnago R.	CA:P39	Fu Zhengyi	CB-9.3:L03	Hamzioui Louanes	CA:P19
Dedova Elena	CF:P10	Fujita Hiroyuki	CC-6:IL04	Han Lili	CL:P07
Defay Emmanuel	CJ-6.3:IL02	Fukumura Tomoteru	CK-5:IL06	Harvey Gerry	CJ-6.2:IL01
Del Roveri Carolina	CN:P12	Fukushima Manabu	CH-1:IL11	Hashimoto Shinobu	CM-1:IL06
Dellacorte Christopher	CC-7:IL03	Funakubo Hiroshi	CJ-6.1:L03	Hauert Roland	CC-4:IL01
Deptula Andrzej	CB-1:IL06	Furushima Ryoichi	CB-4:IL02	Heo Jong	CL-1:L13
Dienwiebel Martin	CC-6:IL01	Gadow Rainer	CB-2:IL01	Herrera Mayra	CN-2:L05
Ding Zhu	CM-1:IL20	Gaertner Frank	CG-4:IL05	Heuguet Romain	CB-3:L06
Diwald Oliver	CE-2:L12	Galemeck Fernando	CC-1:IL04	Hilmas Greg	CF-3:IL06
Dombrowski-Daube Katja	CM-1:IL07	Gallego Silvia	CK-2:L05	Hinoki Tatsuya	CP-5:IL06
Dominguez-Rodriguez A.	CF-3:L03	Galliano Pablo	CO-4:IL05	Hirose Akio	CD-3:IL03
Dondi Michele	CN-4:L03	Gao Jinghan	CJ-2:L09	Hoetzer Johannes	CH-4:L04
Dong Qiang	CB-1:L12	Gao Le	CF-2:L09	Hojo Junichi	CA-4:IL02
Dong Shaoming	CP-4:IL01	Gao Yanfeng	CB-1:IL01	Holanda José	CN:P05
Duan Xiaoming	CF-3:L05	Garay Javier	CB-4:IL03	Hong Soon Hyung	CP-3:IL02
Dubois Sylvain	CG-1:IL01	Garcia-Diaz Brenda	CG-5:IL02	Hozumi Atsushi	CI-5:L06
Ducman Vilma	CO-3:L08	Gardini Davide	CN-3:IL05	Hu Chunfeng	CG-2:IL03
Duff Andrew	CF-1:IL03	Garrett Jethro	CB-4:L07	Hu Michael	CB-1:L10
Dugger Michael	CC-3:IL02	Garzhouni Ameni	CM-1:L05	Huang Cheng-Liang	CJ:P04
Dul Krzysztof	CA-4:L13	Gasek Katarzyna	CN:P01	Huang Chi-Yuen	CJ:P02
Duran Alicia	CL-1:IL11	Gasparotto Alberto	CE:P01	Hug Gilles	CG-1:IL03
Durif Caroline	CH:P04	Gasser Alain	CO-4:IL02	Huger Marc	CO-2:IL02
Dusza Jan	CF-4:L06	Gaudon Manuel	CL:P14	Hussainova Irina	CB:P12
Eisele Holger	CL-2:IL04	Gaur N.K.	CJ-5:L10	Igityan Arsen	CJ:P03
Eklund Per	CI-5:IL05	Gazeau Camille	CJ-5:L04	Ikuhara Yuichi	CA-4:IL08
El Hafid Kenza	CM-1:L09	Gelfuso Maria Virginia	CJ:P05	Ikuhara Yumi H.	CE-1:L03
Elsayed Hamada	CB-6:L05	Gerhardt Rosario	CI-1:L06	Ilin Evgeniy	CL:P15
Enachescu Marius	CE-1:L10	Ghiringhelli Giacomo	CK-1:IL02	Imakawa Kimie	CB:P05
Endo Akira	CH-3:IL03	Gleizes Alain N.	CI-6:IL01	Ingason Arni Sigurdur	CG-1:IL04
Enke Dirk	CH-2:IL01	Godin Nathalie	CP-5:L03	Iniguez Jorge	CK-4:IL01
Eom Chang-Beom	CJ-6.1:IL04	Golestan Fard Farhad	CM-2:L04	Inoue Mitsuteru	CL-1:IL07
Eom Jung-Hye	CH-5:L14	Gomez Cuaspud Jairo A.	CA-1:L20	Ionescu Emanuel	CB-2:IL06
Epifani Mauro	CE-2:IL09	Gomez-Garcia Diego	CF-3:IL02	Iqbal Asif	CJ-1:L09
Erdemir Ali	CC-2:L06	Gomez-Zamorano Lauren	CM-1:L25	Isaenko Lyudmila	CL-1:IL24
Ergin Hasan	CN-2:L03	Gopalan Venkatraman	CJ-3:IL02	Ishikawa Toshihiro	CP-1:IL01
Eschrig Matthias	CK-5:IL01	Gorodyleva Natalia	CA-1:L11	Istomin Pavel	CG-4:L09
Essiptchouk Alexei	CI:P11	Gorshkov Vadim	CE:P18	Istomina Elena	CG-4:L12
Estournes Claude	CB-4:IL05	Goto Masahiro	CC-6:L05	Ito Setsuro	CB-7:L03
Etchepare Pierre-Luc	CI-1:L07	Goto Takashi	CI-2:IL06	Ivanda Mile	CL-2:IL05
Eustathopoulos Nicolas	CD-1:IL01	Goudeau Philippe	CI-1:IL01	Iwamoto Yuji	CH-2:IL02
Evans Joe T.	CJ-6.2:IL03	Gouraud Fanny	CO-2:L09	Iwasaki Kentaro	CH-5:L16
Falah Poorsichani Mahroo	CM-2:IL01	Gouvea Douglas	CA-1:L19	Izu Noriya	CJ-4:IL06
Faldini Sonia	CI:P09	Grabis Janis	CA:P03	Jach Katarzyna	CI:P01
Falkowski Pawel	CA-3:L07	Graeve Olivia	CA-4:IL01	Jamieson Evan	CM-1:IL11
Fedorov Pavel	CL-1:L08	Grass Vladislav	CG:P01	Jamoussi Fakher	CN-2:L04
Feldmann Claus	CE-2:L03	Graule Thomas	CE-2:IL11	Janczak-Rusch Jolanta	CD-3:IL01
Fernie John	CD-1:IL07	Grohsmeier Ryan	CF-1:L08	Jang Boyun	CE-1:L04
Ferraço Fabio	CN:P09	Grossenbacher Jonas	CB-2:L10	Janssen Rolf	CP-3:L05
Ferrari Chiara	CN-3:L07	Gruber Dietmar	CO-2:IL05	Jantunen Heli	CJ-1:IL12
Ferrari Vittorio	CJ-6.3:IL04	Gualtieri Alessandro	CN-4:IL04	Jayaram Vikram	CD-4:IL03
Ferraris Monica	CP-6:IL06	Guan Tianru	CF:P12	Jayaseelan Doni D.	CF-4:IL01
Ferreira José M.F.	CA-3:IL01	Gubernat Agnieszka	CN:P10	Jin Shengli	CO-2:IL01
Fetisov Yuri	CJ-3:IL04	Guido Francesco	CJ-6.1:L06	Jo Moon-Ho	CJ-4:IL03
Fey Tobias	CH-4:IL01	Guillon Olivier	CA-4:IL09	Jogiaas Taivo	CB-7:L04

Jothi Sudagar	CF-2:L05	Kovaleva Marina	CI:P02	Maglione Mario	CJ-2:IL06
Joulain Anne	CG-2:IL02	Kowbel Witold	CP-6:L02	Magnani Giuseppe	CF:P01
Jubera Veronique	CL-3:L05	Krekhova Elena	CF:P11	Mahesh K.V.	CG-5:L06
Julian-Lopez Beatriz	CE-2:IL05	Krenkel Walter	CP-3:IL01	Maksymovych Petro	CJ-4:IL02
Jung In-Ho	CO-4:IL04	Kriskova Lubica	CM-1:L14	Malandrino Graziella	CJ-3:IL06
Kadhim Mohammed Jasim	CA:P35	Kriven Waltraud M.	CM-1:IL15	Malek Marcin	CA:P40
Kahoul Fares	CA:P18	Krohns Stephan	CK-4:L03	Malzbender Juergen	CO-2:L06
Kakali Glikeria	CM-1:L19	Kroll Peter	CF-3:L11	Mandal Sanjay Kumar	CK-4:L09
Kanamura Kiyoshi	CJ-5:IL01	Kroll Stephen	CH-5:L08	Mandic Vilko	CA-4:L12
Kaneko J.H.	CL-4:IL03	Kubo Momoji	CC-5:IL03	Mansurov Zulkhair	CB-9.2:IL01
Kaneta Motohiro	CC-1:IL05	Kumruoglu Levent Cenk	CM-2:L09	Manulyk Alexander	CG-3:L08
Kang Chong-Yun	CJ-1:L13	Kupp Elizabeth	CH-1:L08	Marangoni Mauro	CN-2:L12
Kang Suk-Joong L.	CA-4:IL05	Kurama Semra	CN-4:IL05	Marks Laurence	CC-6:IL03
Kaplan Wayne	CD-1:IL02	Kuraoka Koji	CE:P05	Marti Xavier	CK-6:IL03
Kaptay George	CD-3:IL02	Kuroki Yuichiro	CL-1:L23	Martinez Benjamin	CK-1:L13
Karacaoglu Erkul	CL:P03	Kvashnin Dmitry	CE-3:L09	Mashimo Tsutomu	CB-7:IL01
Karamanov Alexander	CN-3:IL06	Kwatera Andrzej	CI:P04	Masi Giulia	CM-1:L23
Kasap Safa	CL-2:IL01	Labrincha Joao	CN-1:IL05	Massi Marcos	CL:P16
Katayama-Yoshida Hiroshi	CK-5:IL05	Laganapan Aleena	CA-2:L04	Masuda Yoshitake	CE-2:IL02
Katsui Hirokazu	CF-2:L04	Lahiri Basudev	CL-3:IL09	Mathur Sanjay	CE-1:IL06
Kawamoto Takahiro	CK-4:L07	Lambertin David	CM-2:L08	Matsuda Akifumi	CE-3:L05
Kawashima Kenta	CE-1:L09	Lamon Jacques	CP-2:IL01	Mauchamp Vincent	CG-1:IL05
Kayaci Kagan	CN-2:L08	Laszkiewicz-Lukasik Jolanta	CB:P15	Mayrhofer Paul H.	CC-2:IL03
Kenmoe Stephane	CA-1:L05	Lau Chi Man	CJ:P08	Mazzanti Francesca	CA:P21
Kennedy Jennifer	CB-3:L07	Lavrencic Stangar Urska	CE-3:IL02	Mazzoli Claudio	CK-4:IL02
Kern Frank	CA-4:IL04	Lazarevic Zorica	CK:P03	McKittrick Joanna	CL-3:IL08
Khajornboon Jiraprabha	CN:P06	Le Bras Solene	CH-5:L15	Meda Lamartine	CE:P14
Khan Hidayat	CJ-1:L10	Le Tacon Mathieu	CK-3:IL06	Medesi Anna Julia	CJ-1:L06
Khina Boris	CB-9.5:L05	Lebedev Egor	CD:P01	Meier Dennis	CK-4:IL06
Khomskii Daniel	CK-3:IL04	Lebedeva Lyubov	CB:P10	Mello-Castanho Sonia	CA:P26
Kim Bongsoo	CE:P13	Lee Dong Bok	CG-3:IL02	Meyer Ernst	CC-1:IL01
Kim Byung-Nam	CB-4:L09	Lee Haeshin	CB-5:L04	Michalik D.	CL:P04
Kim Dae-Eun	CC-3:IL03	Lee Hyesun	CH:P07	Mikhailov Mikhail	CA:P02
Kim Do Kyung	CF-2:IL06	Lee Jong-Heun	CJ-4:IL05	Mileiko Sergei	CP-3:IL04
Kim Dong-Pyo	CB-2:L03	Lee Kee Sung	CI:P05	Mingazzini Claudio	CP-1:L04
Kim Hai-Doo	CP-1:IL03	Lee Pooi See	CE-1:IL11	Miranda Felipe	CE:P20
Kim J.-S.	CJ:P16	Lemke Fabian	CA:P31	Miriyev Aslan	CD-2:L04
Kim Jinwoong	CJ-1:L07	Lesne Edouard	CK-3:IL02	Mitic Vojislav	CJ-1:L14
Kim Joosun	CJ:P15	Levashov Evgeny	CB-9.1:IL02	Miyahara Minoru	CE-1:IL12
Kim Sang-Gook	CJ-6.3:IL05	Levi Carlos G.	CI-3:IL01	Miyazaki Hiroyuki	CP:P04
Kim Seongwon	CI-3:LO7	Lewinsohn Charles	CD-4:IL02	Mofa Nina	CB-9:P04
Kim Woong	CJ-1:IL05	Leyens Christoph	CI-2:IL03	Mohd Shapee Sabrina	CJ-1:L08
Kim Yeong-Cheol	CJ-5:IL08	Li Ji-Guang	CL-1:L21	Molina-Jotel Laura	CH-5:L09
Kim Youngseok	CA:P27	Li Sean	CJ-4:IL04	Monceau Daniel	CI-1:IL08
Kimura Hiroshi	CF-1:IL02	Li Shibo	CG-3:IL06	Monégier du Sorbier Q.	CB-1:L08
Kirakosyan Khachatur	CB-9.5:L03	Li Yawei	CO-3:IL06	Moon Jooho	CA-5:IL03
Klausmann Amon	CI-2:L07	Liang Shu-Ting	CN-3:L03	Moon Kyoung Il	CC-7:IL01
Klemm Hagen	CF-2:L08	Lim Dae-Soon	CC-2:IL02	Morales-Rivera A.M.	CJ-2:L14
Knies Franziska	CI-5:L04	Lim Kwang-Young	CF:P13	Morisada Yoshiaki	CD-2:IL03
Kobayashi Takeshi	CJ-6.3:IL07	Lind Hans	CI-6:L04	Morita Koji	CB-4:L13
Koch Dietmar	CP-1:IL05	Liu Wenjing	CL-1:L22	Morito Haruhiko	CA:P11
Kodera Yasuhiro	CA-4:IL10	Llusar Mario	CN-3:IL02	Moseler Michael	CC-5:IL02
Kok Swee Leong	CJ-6.2:IL02	Lo Nigro Raffaella	CJ-1:L03	Moshtaghioun Bibi Malmal	CF-3:L09
Kolobkova Elena	CL:P09	Locs Janis	CJ-4:IL01	Moskovskikh D.O.	CB-9.2:L07
Kong L.B.	CJ-1:L15	Low Jim	CG-3:IL03	Muccillo Eliana	CJ-5:IL06
Konstantinova Tetyana	CC-1:L06	Lucas Fernanda	CC:P02	Muccillo Reginaldo	CB-4:L10
Korc Gunes	CN-3:L04	Lukiyanchuk Irina	CI-5:L07	Mukasyan Alexander	CB-9.5:IL01
Koshizaki Naoto	CA-5:IL01	MacKenzie Kenneth	CM-1:IL10	Mukuda Hidekazu	CK-5:IL04
Kosyanov Denis	CL:P10	Madej Dominika	CO-3:L03	Munhoz Jr. Antonio H.	CA:P08
Kotsareva Klara	CA-1:L16	Maedler Lutz	CB-7:IL09	Munoz M. Carmen	CK-1:L11
Kovalev Dmitry	CE:P02	Magen Cesar	CK-1:IL08	Muralt Paul	CJ-6.3:IL09

Music Denis	CI-6:IL06	Pedzich Zbigniew	CC-6:L06	Riley Daniel	CG-5:IL03
Myloslavskyy Oleksandr	CH:P03	Pelli Stefano	CL-4:IL04	Ringgaard Erling	CJ-6.3:IL01
Myz Artem	CA-1:L17	Perazolli Leinig	CA-1:L08	Risbud Subhash	CP-6:IL03
Naguib Michael	CG-5:IL01	Perez Natalia Marin	CN:P08	Riu Dohhyung	CP-1:IL06
Naimark Oleg	CF-3:L13	Pernechele Chiara	CK-4:L08	Rivadulla Francisco	CK-6:IL02
Nakamura Masao	CK-1:IL03	Pertsev Nikolay	CJ-3:IL01	Rizzo Antonella	CG-4:L11
Nakayama Masanobu	CJ-5:IL07	Petraconi Gilberto	CI:P10	Rocha Rosa Maria	CF:P04
Naleway Steven	CA-5:L06	Pettinà Michele	CF-3:L08	Rodil Sandra Elisabeth	CC-4:IL03
Nassif Nadine	CB-5:IL03	Peyratout Claire	CH-1:IL06	Rogachev Alexander	CB-9.1:IL05
Nastro Alfonso	CA:P01	Phule Ajit	CA:P16	Rokebrand Patrick	CB-4:L12
Natali Maria Elia	CM-1:L21	Pietrzak Katarzyna	CD-2:IL02	Romero Maximina	CN-4:IL02
Nazabal Virginie	CL-1:IL06	Pimentel Patricia	CA:P17	Rondinelli James	CK-1:L12
Neimark Alexander	CH-4:IL03	Pirzada Tahria	CE-1:L15	Rosei Federico	CL-1:IL01
Nematollahi Behzad	CM-1:L24	Plewa Julian	CL:P11	Rossi Antonella	CC-6:IL02
Nemec Petr	CL-2:L03	Plokhikh Aleksander	CK-4:L05	Rossignol Fabrice	CE-3:IL06
Nersisyan Hayk	CB-9.3:L02	Poerio Teresa	CA-1:L03	Rousseau Benoit	CH-2:IL04
Newns Dennis	CJ-6.2:IL06	Poirier Jacques	CO-4:IL08	Rüdinger Arne	CP-5:L04
Nguyen Tran Nhu Hong	CI-1:L10	Polini Riccardo	CI-4:IL04	Rudnev Vladimir	CI-5:L03
Nikbin Kamran	CF-4:L04	Pomar Alberto	CK-3:L07	Rundans Maris	CF:P07
Nikonorov Nikolay	CL-1:L15	Ponsot Ines	CN-2:L07	Rutkowski Paweł	CA:P33
Nöth Andreas	CP-2:L03	Pouhet Raphaelle	CM-1:L17	Rybin Dmitrii	CC:P04
Nourbakhsh Amirabbas	CM-1:P05	Pradella José	CE:P19	Sabolsky Edward	CJ-4:IL07
Novais Rui	CH-5:L04	Prakash Braham	CC-7:IL05	Sabolsky Katarzyna	CB:P08
Novak Sasa	CP-6:IL07	Prichodko Aleksandra	CE:P04	Sadik Chaouki	CN:P15
Novikov Mykola	CB:P20	Prikhna Tatiana	CG-2:L04	Saeed Muhammad Umar	CP:P05
Nugteren Henk	CM-1:L12	Prokofyev Vadim	CB-9.1:IL03	Saglam Onur Emre	CN-2:L09
Nylen Per	CI-3:IL02	Psyllaki Pandora	CI:P12	Saha-Dasgupta Tanusri	CK-2:IL02
Odawara Osamu	CB-9.4:IL03	Puszynski Jan	CE-2:L08	Saito Noritaka	CD-4:IL04
Ogata Yudai	CB-7:L10	Pyzik Alek	CH-1:IL01	Saitoh Eiji	CK-3:IL01
Ogawa Toshio	CJ-2:IL10	Qin Jieling	CE-3:L08	Sakka Yoshio	CA-5:IL04
Oh Yoonsuk	CI-3:L04	Radovic Miladin	CG-4:IL06	Salman Saad	CB:P21
Ohji Tatsuki	CP-6:IL01	Raethel Jan	CB-4:L04	Salvador Maria Dolores	CB:P13
Ohno Kazushige	CH-5:IL13	Ragulya Andrey	CB-4:L14	Salvini Vania	CH-2:L07
Ohyama Sho-ichi	CN:P07	Rahier Hubert	CM-1:L08	Salvo Milena	CD:P02
Okada Kiyoshi	CM-2:IL06	Raimondo Mariarosa	CN-1:IL04	Sandhage Kenneth	CB-5:L07
Okamoto Tomoichiro	CJ-4:L08	Rajesh K.B.	CL-2:L06	Sanna Samuele	CK-5:IL02
Olevano Daniela	CO-3:L04	Ramanathan Shriram	CK-2:IL03	Sano Saburo	CB-3:L04
Olevsky Eugene	CB-4:L06	Ramponi Roberta	CL-4:IL01	Sano Tomokazu	CB-7:IL05
Opila Elizabeth	CF-2:IL01	Ranogajec Jonjaua	CN-1:IL03	Santamaria Jacobo	CK-1:IL04
Ordanian Sukias	CF-1:IL04	Rapaud Olivier	CF-4:L07	Santos Claudinei	CA:P41
Orlovskaya Nina	CJ-5:L05	Ravash Hamed	CA-4:L14	Santos Lucia	CC-2:IL01
Orrù Roberto	CB-9.5:IL04	Rebillat Francis	CF-2:IL02	Sarraf-Mamoory Rasoul	CE:P08
Ortona Alberto	CH-4:IL05	Reboud Vincent	CL-4:IL05	Sasaki Naruo	CC-5:IL01
Osada Minoru	CI-1:IL09	Reece Michael	CF-1:IL10	Sato Tsugio	CB-1:L11
Oudadesse Hassane	CM-2:L03	Reichenauer Gudrun	CH-3:IL02	Savary Etienne	CB-3:L08
Ouhsaine Lahoucine	CN:P14	Reichmann Angelika	CJ:P07	Sawka Agata	CI:P03
Ouisse Thierry	CG-4:IL02	Reichmann Klaus	CJ-2:L13	Scheffler Michael	CH-1:IL07
Palmero Paola	CA-4:IL07	Reichmann Mickael	CJ-5:L09	Schmidt Jens	CD-4:L09
Pan Chien-Nan	CO-2:L10	Reinosa Julian J.	CN-1:IL01	Schmitt Nicolas	CO-2:L07
Pandolfelli Victor Carlos	CO-3:IL01	Reiterer Markus	CD-4:IL06	Schneider Jochen	CG-4:IL04
Pardo Lorena	CJ-2:L03	Rejasse Florian	CF-4:L05	Schneider Joerg	CB-3:IL05
Park Hyun-Kuk	CB:P16	Remiens Denis	CJ-6.1:IL01	Schneller Theodor	CE-1:IL01
Park Sang Whan	CH:P01	Reszka Kazimierz	CI:P13	Schwentenwein Martin	CB-6:L01
Parr Chris	CO-1:IL01	Reynaud Pascal	CF-3:IL07	Sciti Diletta	CF-1:IL06
Partyka Janusz	CN:P04	Rezwan Kurosch	CB-1:IL02	Scola Joseph	CK:P01
Paruch Patrycja	CE-3:IL01	Ribot Francois	CB-1:IL09	Sedmale Gaida	CM-1:P01
Pashev Plamen	CE:P06	Rickard William	CM-2:IL02	Semchenko Galina	CE:P07
Passerone Alberto	CD-1:IL08	Riedel Ralf	CB-2:IL07	Senthilnathan Jaganathan	CE-1:L08
Pastewka Lars	CC-5:IL04	Riedo Elisa	CC-1:IL02	Serizawa Hisashi	CD-2:IL01
Pawlak Tomasz	CL:P06	Rigacci Arnaud	CH-5:IL07	Sesso Mitchell	CI-3:L06
Pedersen Henrik	CI-1:IL05	Righini Giancarlo	CL:P13	Sever Skapin Andrijana	CI-4:L05

Seyhan Nurcan	CN-2:L11	Tanaka Shun-Ichiro	CD-1:IL05	Vidal Laeticia	CM-1:L03
Shao Tianmin	CC-2:IL05	Tapaszto Orsolya	CA:P32	Videcoq Arnaud	CA-2:IL02
Sherchenkov Alexey	CI-1:L12	Tarasov Boris	CA-4:L17	Vignoles Gerard	CP-5:IL05
Shilova Olga	CB-7:IL06	Tasci Eda	CN:P13	Villanueva-Ibáñez Maricela	CB:P04
Shimamura Kiyoshi	CL-1:IL25	Tasci Selim	CI-4:L06	Violin Kalan	CA:P28
Shkodich Natalia	CB-9.5:IL07	Tchamba Arlin Bruno	CO-1:L05	Vitale Bryan	CL-1:L04
Shornikov Dmitry	CE:P11	Teshima Katsuya	CE-1:IL02	Vivier Florence	CB:P06
Shtansky Dmitry	CI-5:IL01	Thadhani Naresh	CB-9.1:IL01	Vlasova Marina	CB:P19
Sidane Djahida	CA-1:L21	Thakur Rasna	CK:P02	Vlcek Jaroslav	CI-5:IL02
Sidorowicz Agata	CL:P02	Thomazini Daniel	CJ:P06	Vogelgesang Ralf	CL-1:IL12
Silvestroni Laura	CF-4:IL02	Thommes Matthias	CH-3:IL01	Vogt Ulrich	CH-5:IL06
Singh Dileep	CP-6:IL08	Thore Andreas	CG-1:L07	Voss Tobias	CL-1:IL17
Singh Raj	CE-1:L13	Thornton Jeoff	CE-2:IL01	Wada Satoshi	CJ-1:IL02
Singlard Marc	CB-6:L04	Thuault Anthony	CB-3:L02	Wada Satoshi	CL-3:IL06
Sinnema Sido	CO-4:IL06	Timellini Giorgio	CN-2:IL01	Wagata Hajime	CE-1:L14
Sioulas Dimitris	CA:P06	Toda Kenji	CL-1:IL20	Wajler Anna	CA:P25
Sivakov Vladimir	CE-1:IL07	Tofteberg Hannah	CJ-6.3:IL03	Wamser Thomas	CP-3:IL03
Skinner Stephen	CJ-5:IL02	Tokuda Makoto	CB-7:L07	Wang Chang-An	CH-1:IL02
Skorodumova Olga	CA:P10	Tolochko Boris	CB-9.5:IL02	Wang Genshui	CJ-6.1:IL05
Smeacetto Federico	CD-4:IL07	Tomar Maharaj	CJ-3:L07	Wang Hao	CL-1:L05
Smilauer Vit	CM-1:L04	Tomar Vikas	CF-4:IL03	Wang Jingyang	CG-1:IL06
Smith David S.	CH-2:IL05	Tomasi Roberto	CA:P23	Wang Junling	CJ-3:IL03
So Byoungjin	CL-1:L10	Tomaszewski Henryk	CA-1:L15	Wang Moo-Chin	CA-1:L14
Song Jaesung	CJ:P10	Tonnesen Thorsten	CO-4:IL09	Wang Xiaohui	CG-4:IL10
Sopicka-Lizer Małgorzata	CC-3:L04	Torrecillas Ramon	CF-1:L11	Wang Yang	CF-3:L10
Soraru Gian Domenico	CB-2:IL08	Tosa Masahiro	CI-4:IL03	Wang Yuhua	CL-1:L19
Souza Tiago	CO-1:L04	Treccani Laura	CB-5:IL05	Wang Zhen	CP:P01
Sperberga Ingunda	CM-1:P02	Tremel Wolfgang	CE-2:IL06	Wang Zhihong	CJ-6.2:IL07
Speyer Robert	CF-2:L03	Troadec Claire	CJ-6.3:IL06	Wang Zhoucheng	CI:P08
Stack Margaret	CC-3:IL01	Troczyński Tom	CB-1:L03	Weclas Miroslaw	CH-5:IL01
Staff Martyn	CD-1:L10	Trolier-McKinstry Susan	CJ-6.3:IL08	Weglarcz Helena	CL:P05
Starostina Alexandra	CG-3:L07	Tromas Christophe	CI-4:IL02	Wei Ronghua	CI-2:IL05
Stefanovsky Sergey S.	CB-9.4:IL05	Trombini Vania	CB:P17	Wei Yaowu	CO-1:L03
Stefenelli Mario	CI-1:L04	Trunec Martin	CA-3:L03	Weiss Roland	CP-6:IL05
Steinerova Michaela	CM-1:L22	Trusova Elena	CA-1:L07	Werner Julia	CH-2:L06
Stemmer Susanne	CK-1:IL10	Tsivilis Sotirios	CM-1:PO4	Westraadt Johan	CB-7:L08
Strek Wieslaw	CL-1:IL16	Tsuchiya Tetsuo	CI-1:IL02	Wicks George G.	CH-5:IL11
Strojny-Nedza Agata	CH:P06	Tsuda Hiroshi	CD-3:IL06	Wiecinska Paulina	CA-2:L05
Stryszewska Teresa	CN-4:L07	Tsukamoto Masahiro	CD-4:IL08	Wiemes Leandro	CN:P02
Stuecker John	CB-6:L02	Tsukamoto Masaya	CP:P02	Wierzbicki Lukasz	CA:P24
Suchkov Aleksei	CD-4:L05	Tsuruoka Fujio	CJ:P13	Wilmanski Alan	CB-9.2:IL03
Sugimura Joichi	CC-7:IL02	Tulliani Jean-Marc	CH-2:L03	Wojtowicz Bartosz	CA-1:L04
Sugiyama Toyohiko	CN-1:L06	Tunali Ayse	CE:P03	Won Chang Whan	CB-9.4:IL01
Suleimanov Nail	CE-3:L13	Tushtev Kamen	CP-4:IL05	Won Hyung-il	CA-1:L18
Sun JuHyun	CE-3:L12	Tyholdt Frode	CJ-6.2:IL05	Wu Haibo	CH-1:L09
Sun Xin	CF-3:L12	Urbanovich Vladimir	CF-1:IL13	Wu Jia-Min	CB-1:L13
Sun ZhengMing	CG-4:IL01	Urgen Mustafa	CC-2:IL04	Wu Xiao	CJ-2:L04
Suvorov Danilo	CJ-1:IL01	Ustimpchik Vasily	CL-1:L09	Wu Xiaoyong	CB-1:L04
Suzuki Yohei	CB:P09	Vaidhyanathan Bala	CF-1:L12	Wu Z.J.	CH:P05
Svinka Ruta	CH-5:L10	Valcke Siska	CM-1:IL02	Xanthopoulou Galina	CB-9.4:IL04
Szafran Mikolaj	CA-2:L03	Valentin Jan	CE:P12	Xavier Camila	CA:P12
Szczerba Jacek	CO:P01	Van Benthem Klaus	CD-3:IL04	Xiao Hai	CL-3:IL07
Szoplik Tomasz	CL-2:IL02	Van Gestel Tim	CH-1:IL10	Xin Shuangyu	CL:P08
Takahashi Masahide	CL-1:IL02	Van Riessen Arie	CM-1:IL01	Xu Yibin	CI-6:IL02
Takeo Takashi	CJ:P11	Van Roode Mark	CI-6:L03	Xue Dongfeng	CA-1:IL13
Tallarek Ulrich	CH-4:IL06	Van Wezel Jasper	CK-3:IL05	Yamada Ikuya	CK-6:IL01
Tallman Darin	CG-5:L05	Vassen Robert	CI-3:IL03	Yan Yongjie	CH:P02
Tamayo Aitana	CB-2:L04	Vecchione Antonio	CK-3:L03	Yang Chan-Ho	CJ-3:IL05
Tamsu Sellı Neslihan	CN-3:L08	Velez David	CI-1:L03	Yang Zhihua	CF:P09
Tamura Kenji	CN-2:IL02	Verbraeken Maarten	CA-3:L04	Yao Kui	CJ-2:IL07
Tamura Yoshihiro	CF-3:L04	Viana Bruno	CL-3:IL01	Yasui Shintaro	CE:P16

Yates Paul	CD-3:L07	Zacharova Ksenia	CB:P03	Zhang Xiangyu	CP-4:L03
Yen Fu-Su	CE:P15	Zake-Tiluga Ieva	CF:P08	Zhao Huoping	CB-6:L03
Yildirim Yildiz	CM-2:L07	Zapata-Solvas Eugenio	CF-1:L07	Zheludev Nikolay I.	C:PL3
Yin Xiaowei	CP-4:IL02	Zereffa Enyew	CA:P30	Zhou Haijun	CP-6:L04
Yodsudjai Wanchai	CM-2:IL05	Zhang Baile	CL-3:IL02	Zhou Yuichi	CA-4:L11
Yoshikawa Noboru	CB-3:IL01	Zhang Di	CB-5:IL06	Zhu Qi	CL-1:L18
Yoshimura Humberto	CB-7:L11	Zhang Dongjiao	CA:P36	Ziani Salima	CA:P37
Yoshimura Masahiro	CA-5:IL02	Zhang Fei	CA-4:L16	Zientara Dariusz	CB-9:P01
Youm Mi-Rae	CA:P20	Zhang Guo-Jun	CP-4:IL04	Zou Ji	CF-1:L16
Yu Pei-Ching	CA:P22	Zhang Haijun	CB-3:L03	Zubko Pavlo	CJ-6.2:IL04
Yukhvid Vladimir	CB-9.3:IL01	Zhang Hongling	CJ:P12	Zucker Rachel	CD-1:IL04
Yun Sung-il	CA-1:L06	Zhang Jie	CG-4:L08	Zurnachyan Alina	CB-9.2:L04
Yurlova Maria	CB:P11	Zhang Wang	CB-5:IL02	Zuruzi Abu Samah	CA-5:IL05

# SCIENTIFIC PROGRAMME

## 13<sup>th</sup> INTERNATIONAL CERAMICS CONGRESS

### OPENING SESSION

#### WELCOME ADDRESSES

#### *Plenary Lectures*

##### C:PL1 From MAX to MXene - From 3D to 2D

**M.W. BARSOUM**, Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA

##### C:PL2 Multifunctionality of Liquid-filled Porous Ceramic Coatings: From Encryption to Anti-fouling

**J. AIZENBERG**, Harvard University, Cambridge, MA, USA

##### C:PL3 From Metamaterials to Metadevices

**N.I. ZHELUDOV**, Optoelectronics Research centre, University of Southampton, Southampton, UK; Centre for Disruptive Photonic Technologies, Nanyang Technological University, Singapore

### SYMPOSIUM CA CERAMIC POWDERS: ADVANCES IN SYNTHESIS, PROCESSING AND MANUFACTURING

#### *Oral Presentations*

##### Session CA-1

###### Advances in Powder Synthesis and Characterisation

###### CA-1:L01 Adventures in Metal Oxide Nanomaterials

**S. BANERJEE**, University at Buffalo, The State University of New York & New York State Center of Excellence in Materials Informatics, Buffalo, NY, USA

###### CA-1:L02 Synthesis of Nanopowders by Aqueous Precipitation with Continuous Reactors

**A. AIMABLE<sup>1</sup>**, C. PAGNOUX<sup>1</sup>, F. ROSSIGNOL<sup>1</sup>, T. CHARTIER<sup>1</sup>, N. JONGEN<sup>2</sup>, A. TESTINO<sup>3</sup>, P. BOWEN<sup>2</sup>, <sup>1</sup>SPCTS, CNRS, ENSCI, Université de Limoges, France; <sup>2</sup>EPFL, Switzerland; <sup>3</sup>Paul Scherrer Institute, Switzerland

###### CA-1:L03 FAU Membrane for Organic-Template-Free Synthesis of Nanosized Zeolite Crystals

**T. F. MASTROPIETRO<sup>2</sup>**, E. DRIOLI<sup>1,2</sup>, **T. POERIO<sup>1</sup>**, <sup>1</sup>National Research Council, Institute for Membrane Technology (ITM-CNR) c/o University of Calabria, Rende, Italy; <sup>2</sup>Department of Environment and Territory and Chemical Engineering, University of Calabria Rende, Italy

###### CA-1:L04 Nonclassical Crystallization of Zirconium Oxide and its Derivatives

**B. WÓJTOWICZ**, W. PYDA, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Ceramics and Refractories, Kraków, Poland

###### CA-1:L05 ZnO Nanoparticles Shape and Absolute Surface Energies-a DFT Study of the Water Coverage Dependence for the Non-polar Surfaces

**S. KENMOE**, M. TODOROVA, P.U. BIEDERMANN, Max-Planck-Institut fuer Eisenforschung GmbH, Duesseldorf, Germany

###### CA-1:L06 Synthesis of Nano Size $\beta$ -SiC by a Carbothermal Process from a SiO<sub>2</sub>-C Precursor Obtained by a Two-Step Sol-Gel Process with Base Catalyst

**SUNG-IL YUN**, DAE-SOON LIM, Korea University, Seoul, Korea; YUNG-CHUL JO, GYOUNG-SUN CHO, MI-RAE YOUM, SANG WHAN PARK, Interfacial Control Research Center, Korea Institute of Science and Technology, Seoul, Korea

###### CA-1:L07 Ultradispersed Powder Raw Materials with High Chemical Homogeneity for Fine Grained Ceramics

**E.A. TRUSOVA**, K.V. VOKHMINTCEV, A.A. Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia

###### CA-1:L08 Sputtering Surface Modification on TiO<sub>2</sub> with Nb to Photo Activity Performance

**M.V. NÓGUEIRA**, G.F. PEGLER, M.A.Z. BERTOCHI, J.A. VARELA, **L. PERAZOLLI**, UNESP - Instituto de Química, Araraquara, SP, Brazil; R. GIMENEZ, M.R.A. DA SILVA, Universidade Federal de Itajubá, IFQ, Itajubá, MG, Brazil

###### CA-1:L09 Studies on the Compositional Anomalies in Lanthanum Zirconate System Prepared by Co-Precipitation

**A. CHOWDHURY<sup>1,\*</sup>**, D. PRUSTY<sup>1</sup>, A. PATHAK<sup>1</sup>, A. CHINTHA<sup>1</sup>, B. MUKHERJEE<sup>2</sup>, <sup>1</sup>R&D, Tata Steel Limited, Jamshedpur, India; <sup>2</sup>Materials Research Centre, Indian Institute of Science, Bangalore, India. \*Present address: Materials Science and Engineering, Indian Institute of Technology, Patna

###### CA-1:L10 BaZr0.5Ce0.3Ln0.2O3- $\delta$ (Ln=Y, Sm, Gd, Dy) Based Electrolyte for Intermediate Temperature Solid Oxide Fuel Cell

**JUNFU BU**, ZHE ZHAO, Department of Materials Science and Engineering, KTH Royal Institute of Technology, Stockholm, Sweden

###### CA-1:L11 High Energy Milling of ZrO<sub>2</sub> - Reactivity Improvement and Application for the Synthesis of Ceramic Phosphate Pigments

**N.O. GORODYLOVA**, Z. DOHNALOVÁ, P. SULCOVÁ, University of Pardubice, Pardubice, Czech Republic

###### CA-1:L12 Continuous Production of Ceramic Nano Crystals using Supercritical Aqueous Solution

**T. ADSCHIRI**, WPI-AIMR, Tohoku University, Sendai, Japan

###### CA-1:L13 Regular-Shape Power Formation Mechanism: A Chemical Bonding Theory of Single Crystal Growth

**DONGFENG XUE**, State Key Laboratory of Rare Earth Resource Utilization, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun, China

###### CA-1:L14 Controlled Synthesis and Biocompatibility of Hydroxyapatite Nanopowders by a Hydrolysis Process

H.T. CHEN, **M.C. WANG**, Kaohsiung Medical University, Kaohsiung, Taiwan; W.J. SHIH, Metal Industries Research and Development Center, Kaohsiung, Taiwan

###### CA-1:L15 Effect of Ammonium Sulfate on Morphology of Y2O<sub>3</sub> Nanopowders Obtained by Precipitation and its Impact on the Transparency of YAG Ceramics

**H. TOMASZEWSKI**, A. WAJLER, H. WEGLARZ, A. SIDOROWICZ, U. BRYKALA, K. JACH, Institute of Electronic Materials Technology, Department of Ceramics, Warsaw, Poland

###### CA-1:L16 Preparation of Ultradispersed Powders of Cobalt, Nickel, Molybdenum and Tungsten Oxides by Modified Sol-gel Technique

**K.V. KOTSAREVA**, E.A. TRUSOVA, A.A. Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia

###### CA-1:L17 Possible Mechanism of Induced Low-temperature Nano-alpha-alumina Formation

G.R. KARAGEDOV, **A.L. MYZ**, N.Z. LYAKHOV, ISSC SB RAS, Novosibirsk, Russia

###### CA-1:L18 Combustion Synthesis of Silicon Based Oxy-nitride Phosphor for LED Application

**HYUNG-IL WON**, H. NERSISYAN, CHANG WHAN WON, Rapidly Solidified Materials Research Center (RASOM), Chungnam National University, Daejon, Korea

###### CA-1:L19 Segregation and Color Change on (Cr,Ca) Codoped Nanocrystalline Tin Dioxide

**D. GOUVEA**, D.U. ROCHA, L.B. CALIMAN, Polytechnic School of the University of Sao Paulo, Sao Paulo, Brazil

###### CA-1:L20 Gadolinia Doped Ceria Synthesis by Means a Soft Chemical Route

**J.A. GOMEZ-CUASPU**, O.C. VERGARA-ESTUPIÑAN, A.F. CRUZ-PACHECO, Departamento de Química, Universidad Pedagógica y Tecnológica de Colombia, Tunja-Boyacá, Colombia

**CA-1:L21 Preparation and Characterisation of Synthetic Bioceramic Hydroxyapatite for Bone Substitute**  
**D. SIDANE**, H. KHIREDDINE, S. YALA, F. BIR, Laboratoire de Génie de l'Environnement, Université de Béjaia, Algérie

## Session CA-2

### Colloidal Processing

**CA-2:IL01 Assembly of Nanoparticles and Inorganic-nanocellulose Hybrids into Functional Materials**

**L. BERGSTRÖM**, Department of Materials and Environmental Chemistry, Stockholm University, Stockholm, Sweden

**CA-2:IL02 Structuration of Ceramic Suspensions via Colloidal Processing: Simulations and Experiments**

**A. VIDEKOQ**, F. ROSSIGNOL, C. PAGNOUX, SPCTS, UMR 7315, ENSCI, CNRS, Limoges, France; D. BOCHICCHIO, R. FERRANDO, Dipartimento di Fisica, Genova, Italy

**CA-2:L03 Colloidal Systems in the Fabrication of Advanced Ceramics and Composites**

**M. SZAFRAN**, A. IDZKOWSKA, E. PAWLICKOWSKA, Warsaw University of Technology, Faculty of Chemistry, Inorganic Technology and Ceramics Department, Warsaw, Poland

**CA-2:L04 Simulation of Colloidal Suspensions under Shear Flow**

**A. LAGANAPAN**, A. VIDEKOQ, M. BIENA, SPCTS, UMR 7315, ENSCI, CNRS, Limoges, France; D. BOCHICCHIO, R. FERRANDO, Dipartimento di Fisica, Genova, Italy; T. ALA-NISSLILA, Department of Applied Physics, Aalto University School of Science, Aalto, Espoo, Finland

**CA-2:L05 Challenges and Achievements in Fabrication of Ceramics by Techniques using in Situ Polymerization**

**P. WIECINSKA**, M. BACHONKO, Warsaw University of Technology, Faculty of Chemistry, Warsaw, Poland

## Session CA-3

### Shape Forming and Consolidation Mechanisms

**CA-3:IL01 Direct Consolidation Techniques for Ceramics**

**J.M.F. FERREIRA**, A. KAUSHAL, S.M. OLHERO, Department of Materials and Ceramics Engineering (DEMaC), CICECO, University of Aveiro, Aveiro, Portugal

**CA-3:IL02 Manufacture and Benefit of Ceramic Composite Membranes by Plastic Processes**

**F. CLEMENS<sup>1</sup>**, M. SALEHI<sup>1,2</sup>, B. GROBETY<sup>2</sup>, J. KARBAUM<sup>3</sup>, M. ZWICK<sup>3</sup>, <sup>1</sup>Lab. for High Performance Ceramics, Empa, Swiss Federal Laboratories for Materials Science and Technology, Duebendorf, Switzerland; <sup>2</sup>The Fribourg Center for Nanomaterials (FriMat) and Dept. of Geosciences, University of Fribourg, Fribourg, Switzerland; <sup>3</sup>FGK, Forschungsinstitut für Anorganische Werkstoffe - Glas / Keramik - GmbH, Hoehr-GrenzhausenHoehr-Grenzhausen, Germany

**CA-3:L03 Transparent Tetragonal Zirconia Ceramics by Colloidal Processing of Nanoparticle Suspension**

**M. TRUNEC**, CEITEC BUT, Brno University of Technology, Brno, Czech Republic; O. BERA, Faculty of Technology, University of Novi Sad, Novi Sad, Serbia

**CA-3:L04 Development of Aqueous Processing Routes for Alternative SOFC Materials in an Anode Supported Cell Design**

**M.C. VERBRAEKEN**, M. CASSIDY, J.T.S. IRVINE, University of St Andrews, School of Chemistry, North Haugh, St Andrews, UK

**CA-3:L05 Consolidation of Alumina and Aluminium Oxynitride Powders using Hydrolysis of Aluminium Nitride**

**M.M. BUCKO**, R. LACH, J. DOMAGALA, K. WOJCIECHOWSKI, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland

**CA-3:L06 Thick Film Processing Challenges in the Realisation of a Co-Fired Solid Oxide Fuel Cell Roll**

**M. CASSIDY**, M. MACHADO, Y. KALECHEFF, M. ETCHEES, J.T.S. IRVINE, University of St Andrews, School of Chemistry, St Andrews, UK

**CA-3:L07 Photopolymerization of Thin Ceramic Layers**

**P. FALKOWSKI**, M. SZAFRAN, Faculty of Chemistry, Warsaw University of Technology, Warsaw, Poland

**CA-3:L08 A Mixed SVD-neural Network Approach to Optimal Control of Ceramic Mould Manufacturing in Lost Wax Cast Processes**

**C. CARAMIELLO**, S. IANNUZZI, Europea Microfusioni Aerospaziali, Morra de Sanctis (AV), Italy; D. D'ADDONA, University of Naples Federico II, Naples, Italy

## Session CA-4

### Sintering, Grain Growth and Property/Microstructure Evolution and Characterization

**CA-4:IL01 Recent Advances in Nano-scale Metallic and Ceramic Powder Sintering and Microstructure Evolution**

**O.A. GRAEVE**, University of California, San Diego, La Jolla, CA, USA

**CA-4:IL02 Fabrication of Translucent Silicon Nitride Ceramics by SPS**

**J. HOJO**, W. YANG, M. INADA, N. ENOMOTO, Department of Applied Chemistry, Faculty of Engineering, Kyushu University, Fukuoka, Japan

**CA-4:IL03 Densification and Microstructural Development in Anisotropic and Hierarchical Porous Ceramics**

**A. LICHTNER**, H. SHANG, University of Washington; D. ROUSSEL, D. JAUFFRES, C. MARTIN, Université de Grenoble; **R.K. BORDIA**, Clemson University, Clemson, SC, USA

**CA-4:IL04 In Situ Platelet Reinforcement of Alumina and Zirconia Matrix Nanocomposites - One Concept Different Reinforcement Mechanisms**

**F. KERN**, R. GADOW, University of Stuttgart - IFKB, Stuttgart, Germany

**CA-4:IL05 Evolution of Microstructure during Sintering of Ceramics**

**SUK-JOONG L. KANG**, Materials Interface Laboratory, Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea

**CA-4:IL06 Atomistic Simulations from Dopant Segregation to Grain Boundary Complexions and Transparent Ceramics via a Microstructural Model**

**P. BOWEN<sup>1</sup>**, U. ASCHAUER<sup>3</sup>, S. GALMARINI<sup>1</sup>, A. TEWARI<sup>1</sup>, S.C. PARKER<sup>2</sup>, F. NABIEL<sup>4</sup>, M. CANTONI<sup>4</sup>, C. HEBERT<sup>4</sup>, <sup>1</sup>Laboratoire de Technologie des Poudres, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland; <sup>2</sup>Department of Chemistry, University of Bath, Bath, UK; <sup>3</sup>Materials Theory, ETH Zürich, Zurich, Switzerland; <sup>4</sup>CIME, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

**CA-4:IL07 Ceramic Composites for Biomedical Applications: New Strategies for Tailoring Composition, Microstructure and Properties**

**P. PALMERO**, L. MONTANARO, Dept. of Applied Science and Technology, Politecnico of Torino, Torino, Italy; J. CHEVALIER, V. GARNIER, Université de Lyon, INSA de Lyon, MATEIS UMR CNRS 5510, Villeurbanne, France

**CA-4:IL08 Grain Boundary Atomic Structures and Mechanical Properties in Oxide Ceramics**

**Y. IKUHARA**, Institute of Engineering Innovation, The University of Tokyo, Tokyo, Japan; Nanostructures Res. Lab., Japan Fine Ceramics Center, Nagoya, Japan; WPI-AIMR Research Center, Tohoku University, Sendai, Japan

**CA-4:IL09 Effect of Electrical Field and Atmosphere on the Processing of Nanocrystalline Zinc Oxide**

**B. DARGATZ**, J. GONZALEZ, **O. GUILLON**, Otto Schott Institute of Materials Research, Friedrich Schiller University of Jena, Germany

**CA-4:IL10 Current Activated Pressure Assisted Densification of Rare Earth Doped Polycrystalline Oxide Ceramics for Solid State Lighting and Lasing Applications**

**Y. KODERA**, E.H. PENILLA, C. HARDIN, J.E. GARAY, University of California, Riverside, CA, USA

**CA-4:L11 Crystallization and Microstructural Evolution Process from Mechanically Alloyed Amorphous SiBCN Powder to Nano SiC/BN(C) Ceramic Sintered at Ultra-high Pressure and High Temperature**

**YU ZHOU**, BIN LIANG, DECHANG JIA, ZHIHUA YANG, Harbin Institute of Technology, Harbin, P. R. China

**CA-4:L12 Sol-gel Derived Mullite-gahnite Composite**

**S. KURAJICA**, E. TKALEEC, **V. MANDIC**, I. LOZIC, University of Zagreb, Faculty of Chemical Engineering and Technology, Zagreb, Croatia; J. SCHMAUCH, University of Saarland, Saarbrücken, Germany

**CA-4:L13 Reaction Sintered Al2O3-SIALON in Air Atmosphere Furnace**

**K. DUL**, J. SZCZERBA, D. MADEJ, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Ceramics and Refractories, Krakow, Poland

**CA-4:L14 3D Phase-field Simulation and Characterization of Microstructure Evolution During Liquid Phase Sintering**

**H. RAVASH**, J. VLEUGELS, N. MOELANS, Department of Metallurgy and Materials Engineering, KU Leuven, Heverlee (Leuven), Belgium

**CA-4:L15 Development of High Properties Multilayered Ceramics**

**C. AHARONIAN**, C. PAGNOUX, P.-M. GEFFROY, SPCTS, Limoges, France; N. TESSIER-DOYEN, GEMH, Limoges, France

**CA-4:L16 Influence of Alumina Addition on Low Temperature Degradation of Y2O3-Coated Powder Based Y-TZP ceramics**

**FEI ZHANG**, K. VANMEENSEL, J. VLEUGELS, Department of Metallurgy and Materials Engineering (MTM), KU Leuven, Leuven, Belgium; M. INOKOSHI, B. VAN MEERBEEK, I. NAERT, BIOMAT, KU Leuven, Leuven, Belgium

**CA-4:L17 Influence of the Ceramic Powders Crystallite Substructure on the Sintering Kinetics**

**B.A. TARASOV**, M.S. YURLOVA, V.G. BARANOV, NRNU MEPhI, Russia; E.A. OLEVSKY, SDSU, CA, USA

## Session CA-5 Innovation in Fabrication and Technology

**CA-5:IL01 Space-selective Pulsed Heating for Fabrication of Submicrometer Ceramic Spherical Particles**

**N. KOSHIZAKI**, Hokkaido University, Sapporo, Hokkaido, Japan; Y. ISHIKAWA, National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan

**CA-5:IL02 Hydrothermal Reactions for Synthesis/Preparation of Nano-Materials with Desired Shapes, Sizes and Structures for Oxides and Carbons**

**M. YOSHIMURA**, Promotion Center for Global Materials Research, Dept. Mater.Sci. & Eng., National Cheng Kung University, Tainan, Taiwan, Professor Emeritus of Tokyo Institute of Technology, Japan

**CA-5:IL03 Electronic/Ionic Conducting Oxide Particles Added Si Nanocomposite Fibers for High Performance Anodes for Li-Ion Battery**

DONGHA KIM<sup>1</sup>, DAEHEE LEE<sup>1</sup>, JOOSUN KIM<sup>2</sup>, JOOHO MOON<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering, Yonsei University, Seoul, Republic of Korea; <sup>2</sup>High-Temperature Energy Materials Research Center Korea Institute of Science and Technology, Seoul, Republic of Korea

**CA-5:IL04 Texture Developing and Some Properties of Ceramics by Colloidal Processing in a Strong Magnetic Field and Sintering**

**Y. SAKKA**, CHUNFENG HU, K. TATO, T.S. SUZUKI, T. UCHIKOSHI, National Institute for Materials Science (NIMS), Tsukuba, Japan

**CA-5:IL05 Formation of Nanostructured Titania on High Aspect Ratio Microstructures: A Novel Wicking Material for Thermal Management**

**A.S. ZURUZI**, Engineering Product Development Pillar, Singapore University of Technology and Design, Singapore

**CA-5:IL06 Clathrate Hydrate Structures in Biomimetic Ceramic Freeze Casting**

**S.E. NALEWAY**<sup>1</sup>, M.M. PORTER<sup>1</sup>, M.A. MEYERS<sup>1,2</sup>, J. McKITTRICK<sup>1,2</sup>, <sup>1</sup>Materials Science and Engineering Program, University of California, San Diego, La Jolla, CA, USA; <sup>2</sup>Department of Mechanical and Aerospace Engineering, University of California, San Diego, La Jolla, CA, USA

**Poster Presentations****CA:P01 Characterization of Calcium Phosphate Biomaterials**

F. LAMONACA<sup>1</sup>, M. VASILE<sup>2</sup>, GRIMALDI<sup>1</sup>, **A. NASTRO**<sup>3</sup>, <sup>1</sup>Department of Computer Science, Modeling, Electronic and System (DIMES), University of Calabria, Rende (CS), Italy; <sup>2</sup>Medical School, Ovidius University of Constanta, Romania; <sup>3</sup>Chemical Department, University of Calabria, Rende (CS), Italy

**CA:P02 Synthesis of Precursors for Laser Ceramics YAG:Nd**

**M.D. MIKHAILOV**<sup>1</sup>, I.E. KOLESNIKOV<sup>2</sup>, D.V. TOLSTIKOVA<sup>1,2</sup>, A.A. DUNAEV<sup>1</sup>, E.V. GOLYEV<sup>1,3</sup>, <sup>1</sup>Scientific and Technological Institute of Optical Material Science, VNTs S.I. Vavilov State Optical Institute, St. Petersburg, Russia; <sup>2</sup>Saint Petersburg State University, Saint Petersburg, Russia; <sup>3</sup>Saint Petersburg State Polytechnical University, Saint Petersburg, Russia

**CA:P03 Characteristic and Sinterability of Alumina-Zirconia-Yttria Nanoparticles Prepared by Different Chemical Methods**

**J. GRABIS**, D. JANKOVICA, I. STEINS, I. SIPOLA, RTU Institute of Inorganic Chemistry, Salaspils, Latvia

**CA:P04 Study of the Annealing Temperature Effect on the Structural, Luminescent and Electric Properties of Pb<sub>0.5</sub>Sr<sub>0.5</sub>TiO<sub>3</sub> Produced by Chemical Method**

**A.P. DE MOURA**<sup>1</sup>, S.A. ELIZÍARIO<sup>2</sup>, L.H. DE OLIVEIRA<sup>1</sup>, G. FERREIRA<sup>1</sup>, M.S. LI<sup>3</sup>, I.L.V. ROSA<sup>2</sup>, E. LONGO<sup>1</sup>, J.A. VARELA<sup>1</sup>, <sup>1</sup>Universidade Estadual Paulista, Araraquara, Brazil; <sup>2</sup>Universidade Federal de São Carlos, Brazil; <sup>3</sup>Universidade de São Paulo, São Carlos, Brazil

**CA:P05 Characterization and Preparation of High Lithium Ion Conductive NASICON-type Ceramics by Phosphate Assisted Sol-gel Method**

**E.C. BUCHARSKY**, K.G. SCHELL, M.J. HOFFMANN, Karlsruhe Institute of Technology, Institute for Applied Materials, Ceramics in Mechanical Engineering, Karlsruhe, Germany

**CA:P06 Development of Highly Dispersed Hybrid Nanoalumina with the Sol-Gel Method**

F. PETRAKLIB<sup>1</sup>, **D. SIOULAS**<sup>2</sup>, A. TSETSEKOU<sup>1</sup>, <sup>1</sup>School of Mining and Metallurgical Engineering N.T.U.A, Athens, Greece; <sup>2</sup>Department of Materials Science and Engineering, University of Ioannina, Ioannina, Greece

**CA:P07 Ceria-based Mixed Oxides UV Filters Obtained by an Innovated Sol-Gel Route for Photoprotection Application**

**J. FONSECA DE LIMA**, J.L. CUNHA, O.A. SERRA, Department of Chemistry/FFCLRP, University of São Paulo, Ribeirão Preto, São Paulo, Brazil

**CA:P08 Study of Gamma Alumina Synthesis**

H. DE PAIVA, M.V. SURMANI MARTINS, L. FIGUEIREDO DE MIRANDA, E.C. DE OLIVEIRA; R. CONS ANDRADES, **A.H. MUNHOZ Jr.**, U.P. Mackenzie, Santo André, São Paulo, Brazil

**CA:P09 Synthesis and Characterization of Nanocomposite HA/ $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Sol-Gel Powders for Biomedical Applications**

**N.H.A. CAMARGO**, P. CORRÊA, P.F. FRANCZAK, E. GEMELLI, Santa Catarina State University - UDESC, Program in Materials Science and Engineering, Mechanical Engineering Department, Joinville - SC, Brazil

**CA:P10 Silica Fillers of Dental Composites Based on Hybrid Gels of TEOS**

**O. SKORODUMOVA**, Y. GONCHARENKO, A. LOZOVSOKOY, D. OLIYNIK, Ukrainian Engineering-Pedagogical Academy, Kharkiv, Ukraine

**CA:P11 Synthesis of Silicon Carbide from Graphite and Silicon Using Sodium**

**H. MORITO**, H. YAMANE, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

**CA:P12 Synthesis, Growth Process and Photoluminescence of CaZn<sub>2</sub>(OH)<sub>6</sub>.2H<sub>2</sub>O Crystals**

**C.S. XAVIER**<sup>1</sup>, M.S. LI<sup>2</sup>, E. LONGO<sup>1</sup>, J.A. VARELA<sup>1</sup>, M.A. ZAGHETE<sup>1</sup>, <sup>1</sup>UNESP-IQ, Araraquara-SP, Brazil; <sup>2</sup>USP, São Carlos-SP, Brazil

**CA:P13 Synthesis of Nanocomposite La<sub>1.67</sub>Sr<sub>0.33</sub>NiO<sub>4</sub>-YSZ Powders by Microwave Assisted Complex-gel Auto-combustion**

**YING CHEN**, JIANZHONG XIAO, School of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan, Hubei, China

**CA:P14 A Thermodynamic Approach of the Alumina Powder Properties Prepared by Combustion Synthesis**

R. IANOS, **R. BABUTA**, R. LAZAU, "Politehnica" University of Timisoara, Faculty of Industrial Chemistry and Environmental Engineering, Timisoara, Romania

**CA:P15 Synthesis and Characterization of Nanocrystalline YAlO<sub>3</sub> and Cr<sub>3+</sub>-doped YAlO<sub>3</sub> Powders**

R. IANOS, R.I. LAZAU, **S. BORCANESCU**, "Politehnica" University of Timisoara, Faculty of Industrial Chemistry and Environmental Engineering, Timisoara, Romania

**CA:P16 Hybrid Nanocermets of Ag-Al<sub>2</sub>O<sub>3</sub> with Polymer by Self Combustion Method**

**A.D. PHULE**<sup>1</sup>, S. RAM<sup>1</sup>, A.K. TYAGI<sup>2</sup>, <sup>1</sup>Materials Science Centre, Indian Institute of Technology, Kharagpur, India; <sup>2</sup>Solid State Chemistry Section, Applied Chemistry Division, BARC, Mumbai, India

**CA:P17 Magnetic and Structural Properties of Cobalt and Nickel Ferrites Obtained by Combustion Method**

D.K.S. GOMES<sup>1</sup>, **P.M. PIMENTEL**<sup>2</sup>, D.M.A. MELO<sup>1</sup>, J.H. ARAÚJO<sup>1</sup>, T. ANDRADE JR.<sup>2</sup>, <sup>1</sup>Universidade Federal do Rio Grande do Norte, RN, Brasil; <sup>2</sup>Universidade Federal Rural do Semi-Árido, Campus Angicos, RN, Brasil

**CA:P18 Structural and Electrical Properties of (1-x)Pb(Zry Ti<sub>1-y</sub>)O<sub>3</sub>-xSm(Fe<sub>3+0.5</sub>,Nb<sub>5+0.5</sub>)O<sub>3</sub> Ceramics Prepared by Conventional Solid State Synthesis and Sintered at Low Temperature**

**F. KAHOUL**, L. HAMZIOUI, A. BOUTARFAIA, Université Kasdi Merbah, Département de Génie des Procédés, Faculté des Sciences Appliquée, Ouargla, Algérie; and Département de Chimie, Laboratoire de Chimie Appliquée, Université de Biskra, RP-Biskra, Algérie

**CA:P19 Structural and Electrical Properties of Ca<sup>2+</sup> Substituted Pb[(Zr<sub>0.52</sub>Ti<sub>0.48</sub>)<sub>0.98</sub>(Cr<sub>3+0.5</sub>,Ta<sub>5+0.5</sub>)<sub>0.02</sub>]<sub>0.96</sub>Pb<sub>0.04</sub>O<sub>3</sub> Ceramics**

**L. HAMZIOUI**, F. KAHOUL, A. BOUTARFAIA, Université Kasdi Merbah Ouargla, Département de Génie des Procédés, Faculté des Sciences appliquée, Ouargla, Algérie; and Université Mohamed Khider Biskra, Laboratoire de Chimie Appliquée, Université de Biskra, RP-Biskra, Algérie

**CA:P20 Synthesis of SiC Powders with High Purity by a Carbothermal Reduction Using SiO<sub>2</sub>-C Hybrid Precursors Containing Various C/Si Mole Ratios**

**MI-RAE YOUN**, SUNG-IL YUN, YUNG-CHUL JO, GYOUNG-SUN CHO, SANG WHAN PARK, Interfacial Control Research Center, Korea Institute of Science and Technology, Seoul, Korea

**CA:P21 Microstructural Characterization of Activated Carbon Obtained from Waste Tyres**

**F. MAZZANTI**, G. MAGNANI, S. GRILLI, ENEA-UTTMATF, Faenza, Italy; A. BRILLANTE, T. SALZILLO, University of Bologna, Italy; A. BRENTARI, E. BURRESI, Certimac s.c.a.r.l., Faenza, Italy

**CA:P22 Reaction Mechanism of Mullite Formation in Alpha-Al<sub>2</sub>O<sub>3</sub>/Cristobalite Powder Systems**

**PEI-CHING YU**, YUNG-WEI TSAI, FU-SU YEB, Department of Resources Engineering, National Cheng Kung University, Tainan, Taiwan

**CA:P23 Synthesis and Sintering of Alumina-borides Powders Obtained by High-energy Ball Milling**

V.R. CERQUEIRA<sup>1</sup>, J.J. PIERRI<sup>2</sup>, **R. TOMASI**<sup>2</sup>, E.M.J.A. PALLONE<sup>3</sup>, <sup>1</sup>Departamento de Construção Civil (UNED-Imperatriz-MA); <sup>2</sup>Universidade Federal de São Carlos - DEMa; <sup>3</sup>Universidade de São Paulo - FZEA, Brazil

**CA:P24 Composition - Property Relations in Shear Thickening Fluids**

**L. WIERZBICK**, M. LEONOWICZ, Faculty of Materials Science and Engineering, Warsaw University of Technology, Warsaw, Poland

**CA:P25 Freeze-granulation of Nanometric and Submicronic Barium Titanate Powders**

**A. WAJLER**, A. SIDOROWICZ, H. WĘGLARZ, U. BRYKALA, K. JACH, Institute of Electronic Materials Technology, Warsaw, Poland

**CA:P26 Yttrium Disilicate Stability in Aqueous Medium**

S.C. SANTOS, C. YAMAGATA, **S. MELLO-CASTANHO**, Nuclear and Energy Research Institute, IPEN-CCTM, São Paulo, SP, Brazil; W. ACCHAR, Federal University of Rio Grande do Norte, UFRN, Natal, RN, Brazil

**CA:P27 Study on Processing Conditions of Making RBSC Radiant Tube Using Centrifugal Casting**

**YOUNGSEOK KIM**, DONG-IL CHUN, Incera Inc., Yongin, South Korea

**CA:P28 Manufacturing of Porous Ceramic Spheres using Biphasic Ceramic Phosphates, Hydroxyapatite and Beta Tricalcium Phosphate by a Mechanical Method without Additives or Binder**

**K.B. VIOLIN**, T.S. GOIA, J.C. BRESSIANI, A.H.A. BRESSIANI, Materials Science and Technology Center - CCTM, Energy and Nuclear Research Institute - IPEN, São Paulo/SP, Brazil; K. ISHIKAWA, Department of Biomaterials, Faculty of Dental Science, Kyushu University, Fukuoka, Japan

**CA:P29 Processing Study of Nanostructured Alumina**

V. TROMBINI; **R. AYRES ROCHA**, Universidade Federal do ABC, Santo André, SP, Brazil; K.P.S. TONELLO, A.H.A. BRESSIANI, Instituto de Pesquisas Energéticas e Nucleares, São Paulo, SP, Brazil

**CA:P30 Microstructure, Phase Transition Temperature and Dielectric Studies of Pure and B-Site Modified (Bi<sub>0.5</sub> Na<sub>0.5</sub>)<sub>0.94</sub>Ba<sub>0.06</sub>TiO<sub>3</sub> Ferroelectric Ceramics**

**E. ZEREFFA**, PhD Student in the Department of Inorganic & Analytical Chemistry, College of Science & Technology, Andhra University, India  
Research Supervisor: Professor A.V. PRASADARAO

**CA:P31 Space Charge Contributions During the Intermediate Stage of Sintering**

**F. LEMKE**, J. HÖTZER, M.J. HOFFMANN, B. NESTLER, IAM-KM, KIT, Karlsruhe, Germany

**CA:P32 Effect of Sintering on the Dispersion of Carbon Nanostructures in Ceramic Matrix Nanocomposites**

**O. TAPASZTO**, M. MARKO, C. BALAZSI, L. TAPASZTO, Research Centre for Natural Sciences, Institute of Technical Physics and Materials Science, Budapest, Hungary

**CA:P33 The Investigation on Anisotropy of Hot-pressed Al<sub>2</sub>O<sub>3</sub>-Graphene Composites**

**P. RUTKOWSKI**, L. STOBERSKI, G. GÓRNY, D. ZIENTARA, W. PIEKARCZYK, AGH University of Science and Technology, Faculty of Material Science and Ceramics, Krakow, Poland

**CA:P34 Effect of Different Sintering Processes on Microstructure of Alumina Ceramics**

**A.S.A. CHINELATTO**<sup>1</sup>, A.L. CHINELATTO<sup>1</sup>, C. LAGO<sup>1</sup>, A. PEREIRA PINTO<sup>1</sup>, M.V. GELFUSO<sup>2</sup>, D. THOMAZINI<sup>2</sup>, <sup>1</sup>Materials Engineering Department, State University of Ponta Grossa, UEPG, Brazil; <sup>2</sup>Mechanical Engineering Institute, Federal University of Itajubá, UNIFEI, Brazil

**CA:P35 Numerical Simulation of Solid State Sintering of Alumina**

**M.J. KADHIM**<sup>1</sup>, A.A. ALWAN<sup>2</sup>, E.A.M. IBRAHEEM<sup>2</sup>, <sup>1</sup>University of Technology, Department of Production Engineering and Metallurgy, Baghdad, Iraq; <sup>2</sup>University of Babylon, Babylon, Iraq

**CA:P36 Effect of Alumina Addition on Mechanical Behavior and Fracture Properties of All-ceramics Zirconia Dental Materials**

**DONGJAO ZHANG**<sup>1</sup>, DAEWI SONG<sup>1</sup>, YUNMAO LIAO<sup>2</sup>, XINMIN CHEN<sup>1,2</sup>, MIN WANG<sup>1,2</sup>, <sup>1</sup>Prosthodontics West China College of Stomatology Sichuan University, Chengdu, P.R. China; <sup>2</sup>State Key Laboratory of Oral Diseases West China College of Stomatology Sichuan University, Chengdu, P.R. China

**CA:P37 Characterization of Magnesium-doped Hydroxyapatite Prepared by Sol-gel Process**

**S. ZIANI**, S. MESKI, H. KHIREDDINE, Université De Skikda, Université De Bejaia, Algérie

**CA:P38 Mechanical Characterization of Conventional and Non-conventional Sintering of Commercial and Lab-synthesized Y-TZP Zirconia for Dental Applications**

A. PRESENDA, **A. BORRELL**, M.D. SALVADOR, Instituto de Tecnología de Materiales, Universidad Politécnica de Valencia, Camino de Vera, Valencia, Spain; F.L. PENARANDA-FOIX, J.M. CATALA, Instituto de Aplicaciones de las Tecnologías de la Información y las Comunicaciones Avanzadas (ITACA), Universidad Politécnica de Valencia, Valencia, Spain

**CA:P39 Sintering of Al<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub> Mixtures Obtained by High-energy Ball Milling**

A. SARAIWA RAMOS<sup>1</sup>, M. APARECIDA DE SOUZA<sup>1</sup>, **R. DE OLIVEIRA MAGNAGO**<sup>3,4</sup>, C. DOS SANTOS<sup>3,4</sup>, C.A. ARAUJO DA SILVA<sup>3</sup>, B. DE ALMEIDA FORTES<sup>3</sup>, <sup>1</sup>Universidade Federal de Alfenas, Instituto de Ciéncia e Tecnologia; <sup>2</sup>Universidade Estadual Paulista, Departamento de Materiais e Tecnologia; <sup>3</sup>Universidade Estadual do Rio de Janeiro, Faculdade de Tecnologia; <sup>4</sup>Centro Universitário de Volta Redonda, Brazil

**CA:P40 Comparison of Technological Properties of Ceramic Shell Moulds Based on Ethyl Silicate and Colloidal Silica Binders**

**M. MALEK**<sup>1</sup>, H. MATYSIAK<sup>2</sup>, P. WISNIEWSKI<sup>2</sup>, K.J. KURZYDŁOWSKI<sup>1</sup>, <sup>1</sup>Faculty of Materials Science and Engineering, Warsaw University of Technology, Warsaw, Poland; <sup>2</sup>Functional Materials Research Centre, Warsaw University of Technology, Warsaw, Poland

**CA:P41 Effect of Particle Size of ZrO<sub>2</sub>(Y<sub>2</sub>O<sub>3</sub>) Powders on the Shrinkage of the Sintered Substrate with Coloring Gradient**

**C. DOS SANTOS**<sup>1</sup>, P. CIPRIANO DA SILVA<sup>2</sup>, C.A. ARAÚJO DA SILVA<sup>1</sup>, B. DE ALMEIDA FORTES<sup>1</sup>, ROBERTO DE OLIVEIRA MAGNAGO<sup>1,2</sup>, <sup>1</sup>UERJ-FAT - Universidade do Estado do Rio de Janeiro, Brazil; <sup>2</sup>UNIFOA, Brazil

**SYMPOSIUM CB****PROGRESS IN NON CONVENTIONAL AND NOVEL MANUFACTURING ROUTES TO CERAMICS****Oral Presentations****Session CB-1****Solution-based Processing****CB-1:IL01 Aqueous Solution Processing of Thermochromic VO<sub>2</sub>: from Synthesis, Properties to Applications**

**YANFENG GAO**, School of Materials Science and Engineering, Shanghai University, Shanghai, China; Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

**CB-1:IL02 Multi-porous Advanced Ceramics for Biomedical, Biotechnological and Environmental Applications**

**K. REZWAN**, Advanced Ceramics, University of Bremen, Bremen, Germany

**CB-1:IL03 Phospho-Silicate Hydraulic Cements: Studies of Hydration, Toughening and Self-Healing Behaviour**

**T. TROCZYNSKI**, S. ZHOU, A. GOUDARZI, Materials Engineering, University of British Columbia, Vancouver B.C., Canada

**CB-1:IL04 Preparation and Visible Light Induced NO<sub>x</sub> Destruction Activity of C-NaTaO<sub>3</sub> and C-NaTaO<sub>3</sub>/Cl-TiO<sub>2</sub>**

**XIAOYONG WU**, QIANG DONG, SHU YIN, T. SATO, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

**CB-1:IL06 Fabrication of Advanced Ceramic Materials by the Complex Sol-Gel Process**

**A. DEPTULA**<sup>1</sup>, M. BRYKALA<sup>1</sup>, W. LADA<sup>1</sup>, T. OLCZAK<sup>1</sup>, A.G. CHMIELEWSKI<sup>1</sup>, K.C. GORETTA<sup>2</sup>, <sup>1</sup>Institute of Nuclear Chemistry and Technology, Warsaw, Poland; <sup>2</sup>Argonne National Laboratory, Argonne, IL, USA

**CB-1:IL07 Innovative Ceramic Nanostructures by Means of Electro-spinnig Technique**

**A. BIANCO**, S. DETTI, I. CACCIOTTI, Dipartimento di Ingegneria dell'Impresa, UdR INSTM Roma "Tor Vergata", Università degli Studi di Roma "Tor Vergata", Rome, Italy

**CB-1:IL08 Decorated Latex Particles with Inorganic Colloids: Synthesis and Processing**

**Q. MONEGIER DU SORBIER**, A. AIMABLE, C. PAGNOUX, SPCTS, CNRS, ENSCI, Université de Limoges, CEC, Limoges, France

**CB-1:L09 Probing the Functionalization of Nano-objects Used for Solution Processing with DOSY NMR**

**F. RIBOT**, UPMC - CNRS - College de France, CMCP-UMR 7574, Paris, France

**CB-1:L10 Liquid-Phase Synthesis and Engineered Processing of Ceramic and Semiconductor Nanomaterials for Energy and Security Applications**

**M.Z. HU**, Energy and Transportation Science Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA

**CB-1:L11 Solvothermal Morphology Control of Zinc Oxide for Cosmetic Application**

**T. SATO**, S. YIN, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan; T. GOTO, T. TANAKA, Daito Kase Kogyo Co., Ltd, Osaka, Japan

**CB-1:L12 Automobile Three-way Catalytic Application of Novel Oxygen Storage Materials: Calcium-Doped Ceria-Zirconia Solid Solutions**

**QIANG DONG**, S. YIN, T. SATO, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

**CB-1:L13 Effect of Calcining Temperature of Si<sub>3</sub>N<sub>4</sub> Poly-hollow Microspheres on the Properties of the Porous Si<sub>3</sub>N<sub>4</sub> Ceramics Prepared by Aqueous Gelcasting**

**JIA-MIN WU**, XIAO-YAN ZHANG, JIA-LU LI, JIN-LONG YANG, State Key Lab of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, Beijing, China

## Session CB-2 Polymer Derived Ceramics

**CB-2:L01 SiOC Composite Structures for Intermediate Service Temperatures with Increased Friction Properties**

**R. GADOW**, P. WEICHAND, University of Stuttgart - IFKB, Stuttgart, Germany

**CB-2:L02 Polymer-derived Ceramic Nanocomposites**

**V. PROUST**<sup>1</sup>, A. BALLESTERO<sup>1</sup>, J. ALAUZUN<sup>2</sup>, **S. BERNARD**<sup>1</sup>, P. MIELE<sup>1</sup>, <sup>1</sup>Institut Européen des Membranes (IEM-UMR 5635) ENSCM/UM2/CNRS - CC047, Montpellier Cedex, France; <sup>2</sup>Institut C. Gerhardt, CMOS, Université Montpellier 2 - CC1701, Montpellier Cedex, France

**CB-2:L03 Utilization of Silicon Based Material for Microfluidic Applications**

K.C. BASAVARAJU, **DONG-PYO KIM**, National Center of Applied Microfluidic Chemistry, Department of Chemical Engineering, POSTECH, Pohang, Korea

**CB-2:L04 Heat Exchange Filters of Silicon Oxycarbonitride Glasses**

**A. TAMAYO**, M.A. MAZO, L. VIVANCO, J. RUBIO, F. RUBIO, Ceramics and Glass Institute, CSIC, Madrid, Spain

**CB-2:L05 Highly Porous Wollastonite-diopside and Wollastonite-apatite Ceramic Foams from Low Temperature Foaming and Reactive Ceramization of Silicone-based Mixtures**

**L. FIOCCO**, E. BERNARDO, P. COLOMBO, Dipartimento di Ingegneria Industriale, University of Padova, Italy

**CB-2:L06 Polymer-Derived Ceramic Nanocomposites: Preparative Concepts towards Tailor-Made Phase Compositions and Properties**

**E. IONESCU**, Technische Universität Darmstadt, Darmstadt, Germany

**CB-2:L07 High-Temperature-Stable Ceramic Nanocomposites**

**R. RIEDEL**, E. IONESCU, Technische Universität Darmstadt, Institute for Materials Science, Darmstadt, Germany

**CB-2:L08 Micro-Meso-Porous Si-based Polymer-derived Ceramics (PDC) for Functional Applications**

**G.D. SORARU**, Department of Industrial Engineering, University of Trento, Trento, Italy

**CB-2:L09 Solution Chemistry/ Processing for Achieving Unique Nanomaterials and Milder Condition Processing**

**Y.D. BLUM**, SRI International, Menlo Park, CA, USA

**CB-2:L10 Micromolding of Polymer Derived Ceramics for MEMS Applications**

**J. GROSSENBACHER**<sup>1</sup>, M.R. GULLO<sup>1</sup>, V. BAKUMOV<sup>2</sup>, G. BLUGAN<sup>2</sup>, K. JAKOB<sup>2</sup>, J. BRUGGER<sup>1</sup>, <sup>1</sup>Microsystems Laboratory (LMIS1), EPFL, Lausanne, Switzerland; <sup>2</sup>EMPA, Swiss Federal Labs for Materials Science and Technology, Lab. for High Performance Ceramics, Dübendorf, Switzerland

**Session CB-3****Microwave Processing****CB-3:L01 Microwave Energy Application for Materials' Processing and Environmental Technology**

**N. YOSHIKAWA**, Graduate School of Environmental Studies, Tohoku University, Sendai, Japan

**CB-3:L02 Hot Pressing Microwave Sintering of Oxides Ceramics**

**A. THUAULT**<sup>1</sup>, R. HEUGUET<sup>1</sup>, F.-X. LEFEVRE<sup>1</sup>, E. SAVARY<sup>1,2</sup>, S. MARINEL<sup>1</sup>, <sup>1</sup>Laboratoire de Cristallographie et Sciences des Matériaux, Caen Cedex, France; <sup>2</sup>Laboratoire des Matériaux Céramiques et Procédés Associés - Université de Valenciennes et du Hainaut-Cambrésis, Maubeuge, France

**CB-3:L03 Sol-Gel and Microwave Assisted Synthesis of Ultrafine Powders of High-Temperature Nitrides, Carbides and Borides**

**HAIJUN ZHANG**, YINGNAN CAO, FALIANG LI, SHAOWEI ZHANG, State Key Laboratory Breeding Base of Refractories and Ceramics, Wuhan University of Science and Technology, Wuhan, China

**CB-3:L04 Microwave Absorbency Change of Nitride Powders under Vacuum Heating**

**S. SANO**<sup>1</sup>, S. TAKAYAMA<sup>2</sup>, A. KISHIMOTO<sup>3</sup>, <sup>1</sup>National Institute of Advanced Industrial Science and Technology, Nagoya-city, Aichi, Japan; <sup>2</sup>National Institute for Fusion Science, Toki-city, Gifu, Japan; <sup>3</sup>Okayama University, Okayama-city, Okayama, Japan

**CB-3:L05 Metal Chalcogenide Nanoparticles derived from Molecular Precursors: Microwave Synthesis, Characterization and Electronic Performance**

**J.J. SCHNEIDER**, S. SANCTIS, F. ROTH, M. NOWOTTY, R.W. HOFFMANN, Technische Universität Darmstadt, Fachbereich Chemie, Eduard-Zintl-Institut für Anorganische und Physikalische Chemie, Darmstadt, Germany

**CB-3:L06 Single Mode Microwave Sintering of Alumina at 2450 and 915 MHz with a View of Scaling up Size Samples**

**R. HEUGUET**<sup>1</sup>, A. THUAULT<sup>1</sup>, E. SAVARY<sup>2</sup>, F.-X. LEFEVRE<sup>1</sup>, S. MARINEL<sup>1</sup>, <sup>1</sup>Laboratoire de Cristallographie et Sciences des Matériaux, Caen Cedex, France; <sup>2</sup>Laboratoire des Matériaux Céramiques et Procédés Associés - Université de Valenciennes et du Hainaut-Cambrésis, Maubeuge, France

**CB-3:L07 Rapid Microwave (MW) Synthesis of Group 13 Carbides**

**J.L. KENNEDY**<sup>1,2</sup>, T.D. DRYSDALE<sup>1</sup>, D.H. GREGORY<sup>2</sup>, <sup>1</sup>Dept of Electrical Engineering, University of Glasgow, Glasgow, UK; <sup>2</sup>Dept. of Chemistry, University of Glasgow, Glasgow, UK

**CB-3:L08 Influence of the Frequency and Applicator Type on Hydroxyapatite Microwave Sintering**

**E. SAVARY**<sup>1,2</sup>, A. THUAULT<sup>2</sup>, J.-C. HORNEZ<sup>1</sup>, M. DESCAMPS<sup>1</sup>, S. MARINEL<sup>2</sup>, A. LERICHE<sup>1</sup>, <sup>1</sup>Laboratoire des Matériaux Céramiques et Procédés Associés - Université de Valenciennes et du Hainaut-Cambrésis, Maubeuge, France; <sup>2</sup>Laboratoire de Cristallographie et Sciences des Matériaux, Caen Cedex, France

**Session CB-4****Spark Plasma and Flash Sintering****CB-4:L01 Preparation of Ceramics by SPS Reactive Sintering: Success and Difficulties**

**F. BERNARD**, S. LE GALLET, Laboratoire Interdisciplinaire Carnot de Bourgogne (UMR 6303 CNRS), Dijon, France

**CB-4:L02 Microstructure and Mechanical Properties of WC-FeAl Composites Fabricated by Pulse Current Sintering**

**R. FURUSHIMA**, A. MATSUMOTO, K. KATOU, K. SHIMOJIMA, H. HOSOKAWA, National Institute of Advanced Industrial Science and Technology, Nagoya, Japan

**CB-4:L03 Processing of Rare Earth Doped Nitride Ceramics for Laser Applications using Current Activated Pressure Assisted Densification**

A.T. WIEG<sup>1</sup>, Y. KODERA<sup>1</sup>, Z. WANG<sup>1</sup>, C. DAMES<sup>2</sup>, **J.E. GARAY**<sup>1</sup>, <sup>1</sup>University of California, Riverside, CA, USA; <sup>2</sup>University of California, Berkeley, CA, USA

**CB-4:L04 New Developments for Suitable FAST/SPS Tool Materials**

**J. RAETHEL**, M. HERRMANN Fraunhofer IKTS, Dresden, Germany; J. HENNICKE, FCT Systeme GmbH, Rauenstein, Frankenblick, Germany

**CB-4:L05 Spark Plasma Sintering of Multilayer Ceramics**

**C. ESTOURNES**<sup>1</sup>, M. BOIDOT<sup>1</sup>, S. SELEZNEFF<sup>1</sup>, P. AUDIGÉ<sup>1</sup>, D. OQUAB<sup>1</sup>, D. MONCEAU<sup>1</sup>, M. MAGLIONE<sup>2</sup>, C. ELISSALDE<sup>2</sup>, <sup>1</sup>Institut Carnot CIRIMAT Toulouse Cedex, France; <sup>2</sup>CNRS, Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France

**CB-4:L06 Ultra-Rapid Spark-Plasma Sintering of SiC powder**

**E. OLEVKY**, S. ROLFING, A. ILYINA, San Diego State University, CA, USA; Moscow Engineering Physics University, Russia

**CB-4:L07 Detailed Investigation of the Interfacial Regions between SiAlON/cBN, the Formation and its Tribological Implications**

**J. GARRETT**, I. SIGALAS, School of Chemical and Metallurgical Eng., DST/NRF Centre of Excellence in Strong Materials, University of the Witwatersrand, JHB, South Africa; M. HERRMANN, Fraunhofer-Institute of Ceramic Technologies and Systems (IKTS), Dresden, Germany; A. ZIEGLER, Microscopy and Microanalysis Unit, DST/NRF Centre of Excellence in Strong Materials, University of the Witwatersrand, JHB, South Africa

**CB-4:L08 Porosity Evolution under Spark Plasma Sinter-Forging**

**E.V. ALEKSANDROVA<sup>1</sup>**, E.A. OLEVSKY<sup>2,1</sup>, A.M. ILYINA<sup>1</sup>, E.G. GRIGORYEV<sup>1</sup>, <sup>1</sup>Engineering Physics University, Moscow, Russia; <sup>2</sup>San Diego State University, San Diego, CA, USA

**CB-4:L09 Dynamic Grain Growth during Spark Plasma Sintering of Transparent Alumina**

**BYUNG-NAM KIM**, K. MORITA, H. YOSHIDA, Y. SAKKA, K. HIRAGA, National Institute for Materials Science, Tsukuba, Japan

**CB-4:L10 Low Temperature Densification of Tin Dioxide by Flash Sintering**

**R. MUCCILLO**, E.N.S. MUCCILLO, Center of Science and Technology of Materials Energy and Nuclear Research Institute S. Paulo, SP, Brazil

**CB-4:L11 Iodate-substituted Hydroxyapatite Sintering at Low Temperature by SPS**

**A. COULON**, L. CAMPAYO, A. GRANDJEAN, Commissariat à l'énergie atomique et aux énergies alternatives-Centre de Marcoule, Bagnols-sur-Cèze, France; D. LAURENCIN, Institut Charles Gerhardt de Montpellier, Montpellier, France; S. LE GALLET, Laboratoire Interdisciplinaire Carnot de Bourgogne, Dijon, France; S. ROSSIGNOL, Groupe d'Etude des Matériaux Hétérogènes, Limoges, France

**CB-4:L12 Fe-B-C Composites Produced using Spark Plasma Sintering**

**P.P. ROKEBRAND**, I. SIGALAS, School of Chemical and Metallurgical Engineering, DST/NRF Centre of Excellence in Strong Materials, University of the Witwatersrand, Braamfontein, South Africa

**CB-4:L13 Effect of Carbon Contamination on Transparent MgAl<sub>2</sub>O<sub>4</sub> Spinel during SPS Processing**

**K. MORITA<sup>1</sup>**, B.-N. KIM<sup>1</sup>, H. YOSHIDA<sup>1</sup>, K. HIRAGA<sup>2</sup>, Y. SAKKA<sup>1</sup>, <sup>1</sup>Advanced Ceramics Group, National Institute for Materials Science (NIMS), Tsukuba, Ibaraki, Japan; <sup>2</sup>Materials Science and Engineering, Kitami Institute of Technology, Kitami, Hokkaido, Japan

**CB-4:L14 Fundamentals of Reaction Field Assisted Sintering for Ultra-High Temperature Ceramic Matrix Composites**

**A. RAGULYA**, Frantsevich Institute for Problems in Materials Science, NAS of Ukraine, Kiev, Ukraine

**CB-4:L15 Consolidation of ZrO<sub>2</sub>(1.5Y<sub>2</sub>O<sub>3</sub>)-25Al<sub>2</sub>O<sub>3</sub> Ceramics by Two-step Heating in Pulsed Electric Current Sintering Process**

**K.Q. DANG**, V.H. NGUYEN, School of Materials Science and Engineering, Hanoi University of Science and Technology, Hanoi, Vietnam; K. SASAI, M. KATO, K. HIROTA, Faculty of Science and Engineering, Doshisha University, Kyoto, Japan

**Session CB-5****Bio-inspired Processing****CB-5:IL01 Generation of Inorganic Functional Materials by Molecular Bionics**

**J. BILL**, Institute for Materials Science, University of Stuttgart, Stuttgart, Germany

**CB-5:IL02 Characterization and Simulation of Bioinspired Optical Ceramics Templatized from Lepidopteran Wings**

**WANG ZHANG**, WANLING WANG, JIAJUN GU, QINGLEI LIU, DI ZHANG, State Key Lab of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai, China

**CB-5:IL03 Biomimetic Approach to Design Collagen/Apatite Composites for Tissue Engineering and Biomimeralization Studies**

**YAN WANG**, S. VON EUW, M. ROBIN, F. BABONNEAU, M.-M. GIRAUD-GUILLE, T. AZAIS, **N. NASSIF**, LCMCP-UMR7574-CNRS-UPMC, Paris, France

**CB-5:IL04 Hydroxyapatite Interfacial Growth Inspired by Marine Mussel Adhesion**

**HAESHIN LEE**, Department of Chemistry Director, Center for Nature-inspired Technology Korea, Advanced Institute of Science and Technology (KAIST) Daejeon, South Korea

**CB-5:IL05 Sustainable Biotemplated Porous Ceramics for Biomedical and Environmental Remediation**

**L. TRECCANI**, Advanced Ceramics, University of Bremen, Bremen, Germany

**CB-5:IL06 Novel Functional Hierarchical Materials Bioinspired from Nature Microstructures**

**DI ZHANG**, WANG ZHANG, JIAJUN GU, SHENMING ZHU, HUILAN SU, QINGLEI LIU, State Key Lab of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai, China

**CB-5:IL07 (Bio)Materials Alchemy: Chemical Transformation of Bio-organic and Bio-inorganic 3-D Hierarchical Structures into 3-D Replicas of New (Non-Biogenic) Functional Inorganic Materials**

**K.H. SANDHAGE**, S.C. DAVIS, W.B. GOODWIN, C.G. CAMERON, Y. FANG, Y. CAI, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA; J.P. VERNON, J.D. BERRIGAN, Air Force Research Laboratory, Wright-Patterson Air Force Base, OH, USA; I.J. GOMEZ, J.C. MEREDITH, School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA, USA; J. AIZENBERG, M. KOLLE, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA; A. LETHBRIDGE, P. VUKUSIC, School of Physics, University of Exeter, Exeter, UK

**Session CB-6****Solid Freeform Fabrication****CB-6:L01 Lithography-based Ceramic Manufacturing: A Novel Technique for Additive Manufacturing of High-Performance Ceramics**

**M. SCHWENTENWEIN**, J. HOMA, Lithoz GmbH, Vienna, Austria

**CB-6:L02 Layered Manufacturing Via Robocasting**

**J. STUECKER**, J. CESARANO, M. NIEHAUS, Robocasting Enterprises LLC, Albuquerque, NM, USA

**CB-6:L03 Three Dimensional Printing of Calcia-based Ceramic Core Composites**

**HUOPING ZHAO**, C.S. YE, Z.T. FAN, State Key Laboratory of Material Processing and Die & Mould Technology, Huazhong University of Science and Technology, Wuhan, P.R. China

**CB-6:L04 Deposition and Drying of Inkjet Printed Dielectric Layers: Understanding and Optimization**

**M. SINGLARD**, M. LEJEUNE, A. AIMABLE, A. VIDEKOQ, SPCTS laboratory, Limoges, France; C. DOSSOU-YOVO, E. BEAUDROUET, CERADROP, Limoges, France

**CB-6:L05 3D-Printing of Bioactive Glass-Ceramic Scaffolds from Preceramic Polymers and Fillers**

**H. ELSAYED<sup>1</sup>**, A. ZOCCA<sup>1</sup>, E. BERNARDO<sup>1</sup>, C.M. GOMES<sup>2</sup>, J. GÜNSTER<sup>2</sup>, P. COLOMBO<sup>1,3</sup>, <sup>1</sup>Dipartimento di Ingegneria Industriale, University of Padova, Padova, Italy; <sup>2</sup>Division of Ceramic Processing and Biomaterials, BAM Federal Institute for Materials Research and Testing, Berlin, Germany; <sup>3</sup>Department of Materials Science and Engineering, The Pennsylvania State University, University Park, PA, USA

**Session CB-7****Other Non Traditional or Novel Routes****CB-7:IL01 New Materials Processing under Strong Gravitational Field**

**T. MASHIMO**, Institute of Pulsed Power Science, Kumamoto University, Kumamoto, Japan

**CB-7:IL02 Multifunctional Nanofibers: New Methods for Synthesizing Composites on a Fiber**

**J.D. STARR**, M.A.K. BUDI, **J.S. ANDREW**, University of Florida, Gainesville, FL, USA

**CB-7:IL03 Anisotropic Property and Nanostructure of Phosphate Glass**

**S. ITO**, S. INABA, H. HOSONO, J. ENDO, Tokyo Institute of Technology, Yokohama, Japan

**CB-7:IL04 Atomic Layer Deposition of Metal Oxide on Silicon Carbide Nanopowder**

**T. JOGIAAS<sup>1</sup>**, L. KOLLO<sup>2</sup>, J. KOZLOVA<sup>1</sup>, A. TAMM<sup>1</sup>, I. HUSSAINOVA<sup>2</sup>, K. KUKLI<sup>1,3</sup>, <sup>1</sup>University of Tartu, Institute of Physics, Department of Materials Science, Tartu, Estonia; <sup>2</sup>Tallinn University of Technology, Department of Materials Engineering, Tallinn, Estonia; <sup>3</sup>University of Helsinki, Department of Chemistry, Univ. Helsinki, Finland

**CB-7:IL05 Femtosecond Laser Shock Processing of Solids and its Dynamics**

**T. SANO**, A. HIROSE, Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Osaka, Japan

**CB-7:IL06 Electrophoretic Deposition of Ceramic Thin-film Coatings**

**O.A. SHILOVA**, T.V. KHAMOVA, S.V. HASHKOVSKY, Institute of Silicate Chemistry of Russian Academy of Sciences, St. Petersburg, Russia

**CB:7:L07 Strong-gravity Experiments on Perovskite-type Oxides**

**M. TOKUDA<sup>1</sup>, Y. OGATA<sup>1</sup>, K.J. ISRAM<sup>1</sup>, A. YOSHIASA<sup>2</sup>, T. NISHIYAMA<sup>2</sup>, T. MASHIMO<sup>1</sup>**, <sup>1</sup>Institute of Pulsed Power Science, Kumamoto University, Kumamoto, Japan; <sup>2</sup>Faculty of Science, Kumamoto University, Kumamoto, Japan

**CB:7:L08 Effect of Grain Size Distribution and Pressure on the Microstructure of Polycrystalline Diamond**

**J. WESTRAADT<sup>1</sup>**, Centre for HRTEM, NMMU, Port Elizabeth, South Africa; W. MATIZAMHUKA, Diamond Research Laboratories, Element Six, Springs, South Africa; C. MASILELA, I.SIGALAS, CoE Strong Materials, WITS, Johannesburg, South Africa

**CB:7:L09 Material and Structure Design Across Length Scale using Aerosols Methods**

**L. MAEDLER**, Foundation Institute of Materials Science (IWT), Department of Production Engineering, University of Bremen, Germany

**CB:7:L10 Strong-gravity Experiments on Fullerene with Yttrium**

**Y. OGATA, M. TOKUDA, A. YOSHIASA, S. HAYAM, M. NAKAYA, T. MASHIMO, Kumamoto University, Kumamoto, Japan**

**CB:7:L11 Development of Nanostructured Inorganic Binder for Eco-friendly Ceramic Processing**

**H.N. YOSHIMURA**, M.B. Lima, Universidade Federal do ABC, Santo André, SP, Brazil

**CB:7:L12 Additive Manufacturing of Ceramic Articles Through Large Area Maskless Photopolymerization (LAMP) – A Disruptive Manufacturing Technology**

**SUMAN DAS**, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

**Poster Presentations****CB:P01 Synthesis and Characterization of VO<sub>2</sub> Particles by Solvo-thermal Approach**

**H. HAMA**, Q. DONG, S. YIN, T. SATO, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

**CB:P02 Ceramic and Composite Fe<sub>2</sub>O<sub>3</sub> Based Nanofiber Mats by Electrospinning**

**V. HALPERIN**, G.E. SHTER, G.S.GRADER, Technion - Israel Institute of Technology, Haifa, Israel

**CB:P03 A Study of the Boron Carbide Synthesis from Carbon-containing Components and Boric Acid**

**K. ZACHAROVA**, A. MEDNIKOVA, V. RUMYANTSEV, VIRIAL Ltd., Saint-Petersburg, Russia

**CB:P04 Synthesis and Characterisation of HfO<sub>2</sub> Sol-gel Material with Embedded Y<sub>2</sub>O<sub>3</sub>:Eu<sup>3+</sup> Polyol Nanoparticles**

**M. VILLANUEVA-IBÁÑEZ**, M.-A. FLORES-GONZÁLEZ, P. RIVERA-ARZOLA, J. FRANCISCO-ESCUDERO, Nanotecnología y Sistemas Inteligentes, Universidad Politécnica de Pachuca, Zempoala, Hidalgo, Mexico; M.-A. HERNÁNDEZ-PÉREZ, H. DORANTES-ROSALES, Escuela Superior de Ingeniería Química e Industrias Extractivas, Instituto Politécnico Nacional, D.F., Mexico

**CB:P05 Solution Synthesis and Photocatalytic Property of Fibrous titania**

**K. IMAKAWA**, Q. DONG, S. YIN, T. SATO, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Miyagi, Japan

**CB:P06 Solid State Catalyst: Utility in Silicon Resin Synthesis as PDC**

**F. VIVIER**, Politecnico di Torino, Torino, Italy

**CB:P07 Microwave Technique: An Innovated Method for Sintering Beta-eucryptite Ceramic Materials**

**R. BENAVENTE**, A. BORRELL, M.D. SALVADOR, Instituto de Tecnología de Materiales (ITM), Universitat Politècnica de Valencia, Valencia, Spain; F.L. PENARANDA-FOIX, Instituto de Aplicaciones de las Tecnologías de la Información y de las Comunicaciones Avanzadas (ITACA), Universitat Politècnica de Valencia, Valencia, Spain; O. GARCÍA-MORENO, R. TORRECILLAS, Centro de Investigación en Nanomateriales y Nanotecnología (CINN) (CSIC-UO-PA), Llanera, Spain

**CB:P08 Microwave Sintering of Ceramic Electrolyte Nanomaterials**

**K. SABOLSKY**, A. BULBULE, S. CRONIN, K.A. SIERROS, E.M. SABOLSKY, Department of Mechanical and Aerospace Engineering, West Virginia University, Morgantown, WV, USA; Stan Morrow, Hadron Technologies, Arvada, CO, USA

**CB:P09 Morphological Control and Characterization of NaYF<sub>4</sub> Up-conversion Particles by Microwave-assisted Solvothermal Methods**

**Y. SUZUKI**, Q. DONG, S. YIN, T. SATO, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Miyagi, Japan

**CB:P10 Structure of Zirconium Alloy Consolidated by Electric Pulse Consolidation**

**E.G. GRIGORYEV, L.Y. LEBEDEVA**, NRNU "MEPhI", Moscow, Russia; E.A. OLEVSKY, San Diego State University, San Diego, CA, USA

**CB:P11 Spark Plasma Sintering of Titanium Nitride Fine Powders**

**M.S. YURLOVA**, B.A. TARASOV, A.N. NOVOSELOV, E.G. GRIGORYEV, NRNU MEPhI, Moscow, Russia; E.A. OLEVSKY, San Diego State University, San Diego, CA, USA

**CB:P12 Graphene as Toughening Agent in Alumina Ceramics**

**I. HUSSAINOVA**, M. DROZDOVA, M. AGHANJAN, R. IVANOV, Department of Materials Engineering, Tallinn University of Technology, Tallinn, Estonia

**CB:P13 Al<sub>2</sub>O<sub>3</sub> // 3Y-TZP // Graphene Multilayers Produced by Tape Casting and Spark Plasma Sintering. A Rheological, Sintering and Characterization Study**

**A. BORRELL, M.D. SALVADOR, E. RAYON**, Instituto de Tecnología de Materiales, Universitat Politècnica de Valencia, Valencia, Spain; C.F. GUTIERREZ-GONZALEZ, Centro de Investigación en Nanomateriales y Nanotecnología (CINN) (CSIC-UO-PA), Llanera (Asturias), Spain; A. RINCON, R. MORENO, Instituto de Cerámica y Vidrio, CSIC, Madrid, Spain; A.S.A. CHINELATTO, Universidade Estadual de Ponta Grossa, Uvaranas, Ponta Grossa - PR, Brasil

**CB:P14 Dispersion Strengthening Effect on the Spark Plasma Sintering of Ferritic/Martensitic Steels**

**I.A. BOGACHEV**, I.I. CHERNOV, M.S. STALTSOV, NRNU MEPhI, Russia; E.A. OLEVSKY, San-Diego State University, USA

**CB:P15 Reactive Sintering of TaB<sub>2</sub> by Spark Plasma Sintering**

**J. LASZKIEWICZ-LUKASIK**, L. JAWORSKA, P. PUTYRA, B. SMUK, The Institute of Advanced Manufacturing Technology, Cracow, Poland

**CB:P16 Fabrication and Mechanical Property of HAp Sputtering Target by SPS**

**JUN-HO JANG<sup>1,2</sup>, HYUN-KUK PARK<sup>1</sup>, IK-HYUN OH<sup>1</sup>, KEE-DO WOO<sup>2</sup>**, <sup>1</sup>Korea Institute of Industrial Technology, Automotive Components Group, Gwangju, Korea; <sup>2</sup>Division of Advanced Materials Engineering, Chonbuk National University, Korea

**CB:P17 Sintering of Alumina/NbC Nanocomposites by Different Methods - Pressureless Sintering, Hot Pressing and SPS**

**V. TROMBINI**, Universidade Federal do ABC Santo Andre, SP, Brasil; U. ANSELMI-TAMBURINI, Z.A. MUNIR, Dept. of Chemical Engineering and Materials Science, University of California, Davis, CA, USA; C.A. CAIRO, Divisão de Materiais do Instituto de Aeronáutica e Espaço, AMR-IAE, São José dos Campos, SP, Brazil; A.H.A. BRESSIONI, Instituto de Pesquisas Energéticas e Nucleares, São Paulo, SP, Brazil; E.M.J.A. PALLONE, Universidade de São Paulo, Pirassununga, SP, Brazil; R. TOMASI, Departamento de Engenharia de Materiais, Universidade Federal de São Carlos, São Carlos, SP, Brazil

**CB:P18 Phytosynthesis of Nanocrystalline Zinc Oxide by Opuntia Amychlaea Aqueous Extract**

**J. FRANCISCO-ESCUDERO**, M. VILLANUEVA-IBÁÑEZ, M.-A. FLORES-GONZÁLEZ, Nanotecnología y Sistemas Inteligentes, Universidad Politécnica de Pachuca, Zempoala, Hidalgo, Mexico; C.-A. LUCHO-CONSTANTINO, Posgrado en Biotecnología, Universidad Politécnica de Pachuca, Zempoala, Hidalgo, Mexico

**CB:P19 Directed Laser Synthesis of Composite Ceramics Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>-Y<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>-Al<sub>2</sub>O<sub>3</sub>-Al<sub>2</sub>Ti<sub>5</sub>O<sub>15</sub>**

**P. A. MÁRQUEZ AGUILAR<sup>1</sup>, M. VLASOVA<sup>1</sup>, M. KAKAZEYI<sup>1</sup>, A. BYKOV<sup>2</sup>, S. LAKIZA<sup>2</sup>, V. STETSENKO<sup>2</sup>**, <sup>1</sup>Center of Investigation in Eng. and Applied Sciences of the Autonomous University of the State of Morelos (CIICap-UAEMor), Cuernavaca, Mexico; <sup>2</sup>Institute for Problems of Materials Science, National Academy of Sciences of Ukraine, Kiev, Ukraine

**CB:P20 Phase Transitions in BN and AlN Loaded in Diamond Anvils at Room Temperature**

**M.V. NOVIKOV**, L.K. SHVEDOV, I.A. PETRUSHYA, I.P. FESENKO, B.Y. LUSHPENKO, O.M. KAIDASH, V.Z. TURKEVICH, Bakul Institute for Superhard Materials, NAS Ukraine, Kyiv, Ukraine; V.I. CHASNYK, R&D Institute ORION, Kyiv, Ukraine

**CB:P21 Solid Solution Phases from Thermally Crystallized Sodium Phlogopite Glasses and their Chemical Properties**

**S.M. SALMAN**, S.N. SALAMA, H.A. ABO-MOSALLAM, Glass Research Department, National Research Centre, Dokki, Cairo, Egypt

## Special Session CB-9

### SHS CERAMICS

#### Oral Presentations

#### Session CB-9.1

##### Analysis and Modeling of SHS Processes and Structure Formation

###### **CB-9.1:IL01 Mesoscale Modelling and Experimental Studies of Impact-initiated Reactions**

**N. THADHANI**, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

###### **CB-9.1:IL02 Peculiarities of Combustion and Structure Formation Routes in Multicomponent SHS-Systems with Participation of Gas Transport Reactions**

**E. LEVASHOV**, E.I. PATSERIA, A.YU. POTANIN, YU.S. POGOZHEV, V.V. KURBATKINA, N.A. KOCHETOV, National University of Science and Technology "MISIS", Moscow, Russia

###### **CB-9.1:IL03 Modeling of Changes in the Macroscopic Structure of a Substance during Combustion of Gasless Systems under External Loading**

**V. PROKOFYEV**, V. SMOLYAKOV, Tomsk State University, Department for Structural Macrokinetics, Tomsk Scientific Center, Tomsk, Russia

###### **CB-9.1:IL04 SHS in Nanofoils: A Molecular Dynamics Approach**

**F. BARAS**, O. POLITANO, Laboratoire ICB, UMR 6303 CNRS-Université de Bourgogne, Dijon Cedex, France

###### **CB-9.1:IL05 New Results on Structural Macrokinetics Obtained on Multilayer Nanofoils**

**A.S. ROGACHEV**, Institute of Structural Macrokinetics and Materials Science (ISMAN), Chernogolovka, Moscow region, Russia

###### **CB-9.1:IL06 Influence of Precursors Stoichiometry on SHS of Ternary Carbides and Nitrides in the Ti-Al-C-N System**

**L. CHLUBNY**, J. LIS, AGH-University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Ceramics and Refractories Krakow, Poland

#### Session CB-9.2

##### SHS Materials and Compounds

###### **CB-9.2:IL01 Carbonaceous Refractory Materials on SHS-technology**

**Z. MANSUROV**, Institute of Combustion Problems, Almaty, Kazakhstan

###### **CB-9.2:IL02 Synthesis and Luminescence Properties of a Red Nitride Phosphor (CaAlSiN<sub>3</sub>:Eu<sup>2+</sup>) for White Light LED Applications**

**SHYAN-LUNG CHUNG**<sup>1,2</sup>, S.C. HUANG<sup>1</sup>, <sup>1</sup>Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan, ROC; <sup>2</sup>Advanced Optoelectronic Technology Center, National Cheng Kung University, Tainan, Taiwan, ROC

###### **CB-9.2:IL03 Salt-assisted Combustion Synthesis of Aluminium Nitride and Aluminium Oxynitride Powders**

**A. WILMANSKI**, J. DOMAGALA, M.M. BUCKO, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland

###### **CB-9.2:IL04 Combustion and Microwave Methods for the Synthesis of Carbide Catalysts**

**A.R. ZURNACHYAN**, R.A. MNATSAKANYAN, A.B. Nalbandyan Institute of Chemical Physics NAS RA, Yerevan, Armenia

###### **CB-9.2:IL05 Surfacing of Protective Coatings on Titanium, Steel Substrates by SHS Metallurgy**

**D.E. ANDREEV**, V.I. YUKHVID, V.N. SANIN, Institute of Structural Microkinetics and Materials Science, RAS, Chernogolovka, Moscow region, Russia

###### **CB-9.2:IL06 Peculiarity of the Formation of Oxide Ceramics under the Action of Centrifugal Acceleration**

**G. KSANDOPULO**, A. BAIDELDINOVA, K. OMAROVA, Institute of Combustion Problems, Almaty, Kazakhstan

###### **CB-9.2:IL07 In Situ Consolidation Via Spark Plasma Sintering and Self-Propagating High Temperature Synthesis of SiC**

**D.O. MOSKOVSKIKH**<sup>1</sup>, A.S. ROGACHEV<sup>1,3</sup>, A.S. MUKASYAN<sup>1,2</sup>, <sup>1</sup>National University of Science and Technology «MISIS», Moscow, Russia; <sup>2</sup>Department of Chemical & Biomolecular Eng., University of Notre Dame, Notre Dame, IN, USA; <sup>3</sup>Institute of Structural Macrokinetics and Materials Science, RAS, Chernogolovka, Moscow Region, Russia

#### Session CB-9.3

##### SHS as Alternative Technology

###### **CB-9.3:IL01 SHS and Casting**

**V.I. YUKHVID**, Institute of Structural Macrokinetics and Materials Science, RAS, Chernogolovka, Moscow Region, Russia

###### **CB-9.3:IL02 High Purity Titanium Powder via Combustion Method**

**H. NERSISYAN**, CHANG WHAN WON, HYUNG IL WON, RASOM, Chungnam National University, Daejeon, Korea

###### **CB-9.3:IL03 Ultra-fast Densification of Nano- and Submicro-grain Ceramics Based on SHS Reaction**

**ZHENGYI FU**, WEIMING WANG, HAO WANG, JINYONG ZHANG, YUCHENG WANG, Wuhan University of Technology, Wuhan, China

#### Session CB-9.4

##### SHS Products Characterization, Application, Industrialization, Commercialization

###### **CB-9.4:IL01 Oxynitride and Nitride Luminescent Materials for Solid-state Lighting**

**CHANG WHAN WON**, Chungnam National University, Daejeon, Korea

###### **CB-9.4:IL02 Space Applications of SHS**

**R. LICHERI**<sup>1</sup>, G. CORRIAS<sup>1</sup>, R. ORRU<sup>1</sup>, A. CONCAS<sup>2</sup>, M. PISU<sup>2</sup>, **G. CAO**<sup>1,2</sup>, <sup>1</sup>DIMCM, UniCA, Italy; <sup>2</sup>CRS4, Italy

###### **CB-9.4:IL03 SHS Technology Applied to Renewable Energy Efficient for Exergy Loss Minimization**

**O. ODAWARA**, Tokyo Institute of Technology, Nagatsuta, Yokohama, Japan

###### **CB-9.4:IL04 Combustion Synthesis: Industrialization and Commercialization Success globally**

**G. XANTHOPOULOU**, Institute of Advanced Materials, Physicochemical Processes, Nanotechnology and Microsystems, NCSR "Demokritos", Athens, Greece

###### **CB-9.4:IL05 Characterization of Ceramic Nuclear Waste Forms Produced by SHS**

**S.S. STEFANOVSKY**, FSUE RADON, Moscow, Russia, S.V. YUDINTSEV, Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry RAS, Moscow, Russia, B.F. MYASOEDOV, Institute of Physical Chemistry and Electrochemistry RAS, Moscow, Russia

#### Session CB-9.5

##### SHS-coupled Processes

###### **CB-9.5:IL01 Kinetics of Rapid High-temperature Reactions**

**A.S. MUKASYAN**, A.S. SHTEINBERG, S.L. KHARATYAN, University of Notre Dame, Notre Dame, IN, USA; ALOFT Corporation, Berkeley, CA, USA; Institute of Chemical Physics, National Academy of Sciences of Armenia, Yerevan, Armenia

###### **CB-9.5:IL02 Single Mechanochemistry Impact Investigation by Synchrotron Radiation Methods with Nanosecond Time Resolution for Optimization of SHS Precursors Preparation**

**B.P. TOLOCHKO**, M.R. SHARAFUTDINOV, N.Z. LYAKHOV, Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia; K.A. TEN, E.R. PRUUEL Institute of Hydrodynamics SB RAS, Novosibirsk, Russia

###### **CB-9.5:IL03 Some Specific Features at Rapid Heating of Mechanically Activated Ni-Al System**

**Kh.G. KIRAKOSYAN**, S.L. KHARATYAN, Institute of Chemical Physics NAS RA, Yerevan, Armenia; A.A. NEPAPUSHEV, D.O. MOSKOVSKIKH, A.S. ROGACHEV, National University of Science and Technology, Moscow, Russia; A.S. MUKASYAN, Depart. Chem. & Biomolec. Eng., University of Notre Dame, Notre Dame, IN, USA

###### **CB-9.5:IL04 Coupling SHS and SPS Processes**

**R. ORRU**<sup>1</sup>, R. LICHERI, C.MUSA, G. CAO, Dipartimento di Ingegneria Mecanica, Chimica e dei Materiali, Università degli Studi di Cagliari, Cagliari, Italy

###### **CB-9.5:IL05 A Theory of Mechanically Activated SHS**

**B.B. KHINA**, Physico-Technical Institute, NASB, Minsk, Belarus

###### **CB-9.5:IL06 Combustion Synthesis of Copper - Refractory Metal Composites by Co-reduction Approach**

**S.V. AYDINYAN**, S.L. KHARATYAN, A.B. NALBANDYAN, Institute of Chemical Physics NAS RA, Yerevan, Armenia

**CB-9.5:L07 New Methods for Consolidation of Highly Dense Cu-Cr Nanocomposites: MA and SPS**

**N.F. SHKODICH**, A.S. ROGACHEV, S.G. VADCHENKO, A.S. MUKASYAN, D.O. MOSKOVSKIKH, S. ROUVIMOV, <sup>1</sup>Institute of Structural Macrokinetics and Materials Science, RAS, Chernogolovka, Russia; <sup>2</sup>Department of Chemical and Biomolecular Engineering, University of Notre Dame, Notre Dame, IN, USA; <sup>3</sup>National University of Science and Technology MISIS, Moscow, Russia

**Poster Presentations**

**CB-9:P01 Al - B - O - N Composites Prepared using SHS Technique**

**D. ZIENTARA**, M.M. BUCKO, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Cracow, Poland

**CB-9:P02 Self-propagating High Temperature Synthesis of Composition Materials using Boron Containing Ore**

**R. ABDULKARIMOVA**, K. KAMUNUR, M.K. SKAKOV, Z.A. MANSUROV, Institute of Combustion Problems, Almaty, Kazakhstan

**CB-9:P03 Features of Oxide Systems Aluminothermic Combustion in the Conditions of High Nitrogen Pressure**

**S. FOMENKO**, Z. MANSUROV, Combustion Problems Institute, Almaty, Kazakhstan

**CB-9:P04 SHS-Ceramics on the Basis of Mechanoactivated Mixtures**

**N. MOFA**, Z. MANSUROV, B. SADYKOV, Combustion Problems Institute, Almaty, Kazakhstan

**SYMPORIUM CC**  
**MATERIALS SOLUTIONS FOR**  
**HIGHLY DEMANDING TRIBOLOGICAL**  
**APPLICATIONS**

**Oral Presentations**

**Session CC-1**

**Fundamentals of Friction, Wear, Adhesion and Lubrication**

**CC-1:L01 Friction on Thin Films of Layered Materials**

**E. MEYER**, B. EREN, T. GLATZEL, A. BUBENDORF, M. KISIEL, G. FESSLER, Department of Physics, University of Basel, Switzerland

**CC-1:L02 Dissipation in Nanoscale Systems: from Nanotubes to Water**

**E. RIEDO**, School of Physics, Georgia Institute of Technology, Atlanta, GA, USA

**CC-1:L03 Structural and Mechanical Modifications of Hard Carbon Coatings Lubricated with Glycerol Studied by FIB-EFTEM**

**M.I. De BARROS BOUCHET**, Ecole Centrale de Lyon, Laboratory of Tribology and System Dynamics (LTDS), Ecully, France

**CC-1:L04 Friction Coefficient Dependence on Electrostatic Tribo-charging**

T.A.L. BURGO<sup>1</sup>, C.A. SILVA<sup>2</sup>, L.B.S. BALESTRIN<sup>1</sup>, **F. GALEMBECK**<sup>1, 2</sup>, <sup>1</sup>Institute of Chemistry, University of Campinas, Campinas SP, Brazil; <sup>2</sup>National Nanotechnology Laboratory and National Center for Energy and Materials Research, Campinas SP, Brazil

**CC-1:L05 Fundamentals of Elastohydrodynamic Lubrication**

**M. KANETA**<sup>1</sup>, P. YANG<sup>2</sup>, I. KRUPKA<sup>1</sup>, M. HARTL<sup>1</sup>, <sup>1</sup>Brno University of Technology, Brno, Czech Republic; <sup>2</sup>Qingdao Technological University, Qingdao, PR.China

**CC-1:L06 Nanopowder Technology for Highly Demanding Tribological Application of Zirconia Ceramic Composites**

**T.E. KONSTANTINOVA**, I.A. DANILENKO, I.O. YASHCHISHYN, V.O. GLAZUNOVA, G.K. VOLKOVA, Donetsk Institute for Physics and Engineering named after O.O. Galkin of NASU, Donetsk, Ukraine

**Session CC-2**

**Coatings, Surface Engineering and Nanostructuring**

**CC-2:L01 Silicon Diamond-like Coatings**

**L.V. SANTOS**<sup>1,2</sup>, F.L.C. LUCAS<sup>1</sup>, R.S. PESSOA<sup>1,2</sup>, H.S. MACIEL<sup>1,2</sup>, M. MASSI<sup>2</sup>, <sup>3</sup>, F. GALEMBECK<sup>4,5</sup>, <sup>1</sup>University of Paraiba Valley IP&D/UNIVAP, São José dos Campos - SP, Brazil; <sup>2</sup>Technologic Institute of Aeronautics, ITA/CTA, São José dos Campos - SP, Brazil; <sup>3</sup>Institute of Science and Technology, ICT/UNIFESP, São José dos Campos - SP, Brazil; <sup>4</sup>Institute of Chemistry, University of Campinas - UNICAMP, Campinas SP, Brazil; <sup>5</sup>National Nanotechnology Laboratory at the National Center for Energy and Materials Research, Campinas SP, Brazil

**CC-2:L02 Tribological Properties of Carbon Layers Derived from Different Polytypes of Silicon Carbide**

**DAE-SOON LIM**, MIN-GUN JEONG, EUNGSLUK LEE, Department of Materials Science and Engineering, Korea University, Seoul, Korea

**CC-2:L03 Advances in Ti-Al-N and other Nanocomposite Coatings for Severe Applications**

**P.H. MAYRHOFER**, Institute of Materials Science and Technology, Vienna University of Technology, Vienna, Austria

**CC-2:L04 Cathodic Arc Plasmas in Surface Engineering**

**M. URGEN**, S. ÖNCEL, T. TURUTOGLU, K. KAZMANLI, Istanbul Technical University, Department of Metallurgical and Materials Engineering, Maslak-Istanbul, Turkey

**CC-2:L05 Tribological Performance of Textured Coatings**

**TIANMIN SHAO**, XIMEI WANG, XIAO HUANG, HONGFEI SHANG, SHIYU HU, State Key Laboratory of Tribology, Tsinghua University, Beijing, China

**CC-2:L06 Design of Catalytically Active Nanocomposite Ceramic Coatings for DLC Boundary Film Formation on Lubricated Sliding Surfaces**

**A. ERDEMIR**, O. ERYILMAZ, Argonne National Laboratory, Energy Systems Division, Argonne, IL, USA

**CC-2:L07 The Influence of Alumina and Zirconia Coats on the Tribological Properties of Alumina NanoFibers**

**M. AGHAYAN**<sup>1</sup>, M. GASIK<sup>2</sup>, L. KOLLO<sup>1</sup>, I. HUSSAINOVA<sup>1</sup>, M. RODRÍGUEZ<sup>3</sup>, <sup>1</sup>Tallinn University of Technology, Department of Materials Engineering, Tallinn, Estonia; <sup>2</sup>Aalto University Foundation, School of Chemistry, Material Science and Engineering, Aalto, Finland; <sup>3</sup>Instituto de Cerámica y Vidrio (CSIC), Campus Cantoblanco, Madrid, Spain

**Session CC-3**

**Friction and Wear at Micro/Nanoscale**

**CC-3:L01 Mapping Tribological Mechanisms in Corrosive Environments: Application to Energy Conversion Processes**

**M.M. STACK**, Department of Mechanical and Aerospace Engineering, University of Strathclyde, Glasgow, UK

**CC-3:L02 Nano/Micro-Tribology of MEMS**

**M.T. DUGGER**, Sandia National Laboratories, Albuquerque, NM, USA

**CC-3:L03 Micro-wear Characteristics of Thin Coatings for Tribological Applications**

**DAE-EUN KIM**, School of Mechanical Engineering, Yonsei University, Seoul, Korea

**CC-3:L04 The Effect of Submicron Si3N4 Particles on Wear Resistance of Al-based Alloys**

**M. SOPICKA-LIZER**<sup>1</sup>, J. MYALSKI<sup>1</sup>, D. MICHALIK<sup>1</sup>, N. VALLE<sup>2</sup>, G. LIPP-MANN<sup>2</sup>, A. BOTOR-PROBIERZ<sup>2</sup>, T. PAWLIK<sup>1</sup>, <sup>1</sup>Silesian University of Technology, Gliwice, Poland; <sup>2</sup>Centre de Recherche Public (CRP-GL), Luxembourg

**Session CC-4**

**Biotribology**

**CC-4:L01 An Overview of Coatings for Articulating Medical Implants**

**R. HAUERT**, K. THORWARTH, Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; G. THORWARTH, Synthes GmbH, Dübendorf, Switzerland

**CC-4:L02 Tribological Behavior of Hip Replacements**

**E. CIULLI**, F. DI PUCCIO, L. MATTEI, Department of Civil and Industrial Engineering, University of Pisa, Pisa, IT; S. AFFATATO, S. BATTAGLIA, Istituto Ortopedici Rizzoli, Bologna, Italy

**CC-4:L03 Electrochemical Evaluation of Ceramic Coatings on Biological Relevant Media**

**R. GALICIA**, P. SILVA-BERMUDEZ, **S.E. RODIL**, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, México; A. ALMAGUER, Facultad de Odontología, Universidad Nacional Autónoma de México, México

## Session CC-5

### New Theory and Computer Simulations

#### **CC-5:IL01 Atomic-scale Friction, Peeling and Shear in Carbon and Silicon Nanostructures**

**N. SASAKI**, K. MIURA, H. FUJITA, Seikei University, Musashino, Tokyo, Japan; Aichi Univ. Educ., Kariya, Aichi, Japan; IIS, Univ. Tokyo, Meguro, Tokyo, Japan

#### **CC-5:IL02 Insights into Friction of Carbon Based Ceramic Tribomaterials by MD Simulations**

**M. MOSELER**, Fraunhofer Institute for Mechanics of Materials IWM, Freiburg, Germany

#### **CC-5:IL03 Tribocochemical Reaction Dynamics by First-Principles and Tight-Binding Quantum Chemical Molecular Dynamics Methods**

**M. KUBO**, Fracture and Reliability Research Institute, Graduate School of Engineering, Tohoku University, Sendai, Japan

#### **CC-5:IL04 Atomistic Understanding of Wear in Diamond and other Carbon Materials**

**L. PASTEWKA**, Fraunhofer Institute for Mechanics of Materials, Freiburg, Baden-Württemberg, Germany

## Session CC-6

### Testing and Characterization

#### **CC-6:IL01 In-Situ Observation of Topography Evolution Wear Debris Generation of Metal Surfaces**

**M. DIENWIEBEL**, P. STOYANOV, T. FESER, MicroTribology Centre μTC, Karlsruhe Institute of Technology and Fraunhofer IWM, Plintzal, Germany

#### **CC-6:IL02 Surface Chemical Characterization of Tribological Films Formed under Boundary Lubrication Conditions**

**A. ROSSI**, Dipartimento di Scienze Chimiche e Geologiche, Università degli Studi di Cagliari, Monserrato (Cagliari), Italy

#### **CC-6:IL03 Tribology in Full View, from Atomic Wear to Hip Replacements**

**L.D. MARKS**, Department of Materials Science and Engineering, Northwestern University, Evanston, IL, USA

#### **CC-6:IL04 In-Situ TEM Observation of Nanofriction at a Single Asperity**

**H. FUJITA**, Institute of Industrial Science, The University of Tokyo, Tokyo, Japan

#### **CC-6:IL05 Frictional Property and Crystal Structure of ZnO Coatings Analyzed by a Combinatorial Technique**

**M. GOTO<sup>1</sup>**, M. SASAKI<sup>2</sup>, A. KASAHARA<sup>2</sup>, M. TOSA<sup>2</sup>, <sup>1</sup>International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Ibaraki, Japan, <sup>2</sup>High Temperature Materials Unit, National Institute for Materials Science, Tsukuba, Ibaraki, Japan

#### **CC-6:IL06 Cavitation Wear of Dense Ceramic Sinters**

**Z. PEDZICH**, R. LACH, M. ZIABKA, P. RUTKOWSKI, AGH - University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Ceramics and Refractory Materials, Krakow, Poland; R. JASIONOWSKI, Maritime University, Institute of Basic Technical Sciences, Szczecin, Poland

## Session CC-7

### Tribology Applications

#### **CC-7:IL01 Development of Multi-component Single Alloying Targets for the Easy Preparation of the Low Friction Nanocomposite Coating Applicable to Automobile Engine Parts**

**KYOUNG IL MOON<sup>1</sup>**, J.H. SUN<sup>2</sup>, C.H. LEE<sup>2</sup>, S.Y. SHIN<sup>2</sup>, <sup>1</sup>Plasma Enhanced Technology Development Team, Korea Institute of Industrial Technology, Incheon, Republic of Korea; <sup>2</sup>Advanced Fusion Process R&D Group, Korea Institute of Industrial Technology, Incheon, Republic of Korea

#### **CC-7:IL02 Tribology of Machine Elements in Hydrogen Energy Systems**

**J. SUGIMURA**, Kyushu University, Fukuoka, Japan

#### **CC-7:IL03 Novel Super-elastic Materials for Advanced Bearing Applications**

**C. DELLACORTE**, NASA, Glenn Research Center, Cleveland, OH, USA

#### **CC-7:IL04 Carbon Based Coatings for Hermetic Compressor Applications**

**J.D. BIASOLI DE MELLO**, Universidade Federal de Uberlândia, Universidade Federal de Santa Catarina, Florianópolis, Santa Catarina, Brazil

#### **CC-7:IL05 Tribology of Functional Coatings for High Temperature Applications**

**B. PRAKASH**, C. COURBON, J. HARDELL, Luleå University of Technology, Luleå, Sweden

## *Poster Presentations*

#### **CC:P01 Effect of Different Form of Carbon Addition on the Wear Behaviour of Copper Based Composites**

**C. CHMIELEWSKI**, A. PIATKOWSKA, K. PIETRZAK, A. STROJNY-NEDZA, Institute of Electronic Materials Technology, Warsaw, Poland

#### **CC:P02 Deposition Parameters Control Aiming Repeatability and Traceability of DLC in Tribological Results**

**F.L.C. LUCAS<sup>1</sup>**, F.M. SOUZA<sup>1</sup>, E.D. SANTOS<sup>1</sup>, H.S. MACIEL<sup>1,2</sup>, R.S. PESSOA<sup>1</sup>, <sup>2</sup>P.M.S.C.M. LEITE<sup>1</sup>, P.A. RADÍ<sup>1,2</sup>, L.V. SANTOS<sup>1,2</sup>, <sup>1</sup>University of Paraíba Valley IP&D/UNIVAP, São José dos Campos - SP, Brazil; <sup>2</sup>Technologic Institute of Aeronautics, ITA/CTA, São José dos Campos - SP, Brazil

#### **CC:P03 A Study of Friction Coefficient of Ti3SiC2 and TiC Influence on its Behaviour**

**S. BENDAOUDI<sup>1</sup>**, M. BOUNAZEF<sup>2</sup>, E.A. ADDA BEDIA<sup>3</sup>, <sup>1</sup>Department of Mechanical Engineering, University of Sidi Belabbes, Algeria; <sup>2</sup>Laboratory LM&H, University of Sidi Belabbes, Algeria; <sup>3</sup>Laboratory LM&H, University of Sidi Belabbes, Algeria

#### **CC:P04 Deformation and Fracture Features in Mg-PSZ Ceramics**

**D. RYBIN**, V. PESIN, YA. DIATLOVA, VIRIAL Ltd., Saint-Petersburg, Russia

## SYMPORIUM CD

### JOINING INORGANIC MATERIALS AT DIFFERENT LENGTH SCALES

## *Oral Presentations*

#### Session CD-1

##### Basic Issues

#### **CD-1:IL01 Wetting in Brazing of Ceramics**

**N. EUSTATHOPOULOS**, SIMaP/CNRS, Grenoble-INP, France

#### **CD-1:IL02 Towards Better Ceramic Joins via Control of Wetting & Adsorption**

**W.D. KAPLAN**, Department of Materials Science and Engineering, Technion - Israel Institute of Technology, Haifa, Israel

#### **CD-1:IL03 Microstructural Evolution of Active Metal Braze Ag-Cu-Ti/Alumina Interfaces**

**M. ALI**, K.M. KNOWLES, Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK; J.A. FERNIE, PM. MALLINSON, T.R. BARNES, AWE, Aldermaston, Reading, UK

#### **CD-1:IL04 Modeling Surface Tension-driven Shape Changes in Micro- and Nano-scale Systems**

**R.V. ZUCKER**, C.V. THOMPSON, W.C. CARTER, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA

#### **CD-1:IL05 Residual Stress Tensor Distribution around Interface of Braze Ceramics**

**SHUN-ICHIRO TANAKA**, IMRAM, Tohoku University, Sendai, Japan

#### **CD-1:IL06 Wetting and Adhesion of Copper in the Liquid and Solid States on Alumina**

**D. CHATAIN**, Aix Marseille Université, CNRS, CINaM UMR 7325, Marseille, France

#### **CD-1:IL07 Active Metal Brazing of Alumina to Kovar using Copper ABA**

**J.A. FERNIE<sup>1</sup>**, P.M. MALLINSON<sup>1</sup>, M. ALI<sup>2</sup>, T.R. BARNES<sup>1</sup>, K.M. KNOWLES<sup>2</sup>, <sup>1</sup>AWE, Reading, UK; <sup>2</sup>University of Cambridge, UK

#### **CD-1:IL08 Role of the Interfaces in Metal-ceramic Joints**

**A. PASSERONE**, F. VALENZA, C. ARTINI, M.L. MUOLO, IENI-CNR, Genova, Italy

#### **CD-1:IL09 Wetting and Interface Interactions in Ceramic/Metal Systems and their Effect on Ceramics Joining**

**M. AIZENSHTAIN<sup>1</sup>**, N. FROUMIN<sup>2</sup>, N. FRAGE<sup>2</sup>, <sup>1</sup>Department of Material Engineering, Ben-Gurion University, Beer-Sheva, Israel; <sup>2</sup>NRC-Negev, Beer-Sheva, Israel

#### **CD-1:IL10 Sealing of Glass-ceramics to Ti-6Al-4V**

**M.T. STAFF<sup>1</sup>**, P.M. MALLINSON<sup>2</sup>, F.H. MCCARTHY<sup>2</sup>, M.J. WHITING<sup>1</sup>, J.A. YEO-MANS<sup>1</sup>, J.A. FERNIE<sup>2</sup>, <sup>1</sup>University of Surrey, Guildford, UK; <sup>2</sup>AWE, Reading, UK

## Session CD-2

### Macro-joining

#### **CD-2:IL01 A Critical Review on Modeling of Fracture Behavior of Ceramic Joints**

**H. SERIZAWA**, H. MURAKAWA Joining and Welding Research Institute, Osaka University, Osaka, Japan

#### **CD-2:IL02 Joining of Ceramic-metal Composite Materials**

**K. PIETRZAK**, ITME and IPPT PAN, Warsaw, Poland

#### **CD-2:IL03 3D-visualization of Material Flow in Friction Stir Welding**

**Y. MORISADA**, H. FUJII, Joining and Welding Research Institute, Osaka University, Ibaraki, Japan

#### **CD-2:IL04 Effect of TiC on Diffusion Bonding of Ti-6Al-4V to Carbon Steel**

**A. MIRIYEV**, S. KALABUKHOV, E. TUVAL, A. STERN, N. FRAGE, Ben-Gurion University of the Negev, Beer-Sheva, Israel

## Session CD-3

### Micro-/Nano-joining

#### **CD-3:IL01 New Micro-/Nanjoining Concepts using Ceramic Materials**

**J. JANCZAK-RUSCH**, G. PIGOZZI, F. LA MATTINA, G. KAPTAJ\*, S. YOON, J. PATSCHEIDER, R. HAUERT, L.P.H. JEURGENS, Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; \*Bay Zoltan Applied Research Nonprofit Ltd, Department of Nanomaterials, Miskolc, Hungary

#### **CD-3:IL02 Size Effect on Thermodynamic Properties of Nano-systems**

**G. KAPTAJ**, Bay Zoltan Nonprofit Ltd, Department of Nanomaterials, Miskolc, Hungary, and University of Miskolc, Department of Nanotechnology, Miskolc, Hungary

#### **CD-3:IL03 Bonding Process by Sintering of Ag Nanoparticles Derived from Reduction of Ag<sub>2</sub>O**

**A. HIROSE**, S. TAKATA, T. OGURA, Osaka University, Suita, Osaka, Japan

#### **CD-3:IL04 In Situ Transmission Electron Microscopy Characterization of Thin Film/Substrate Interfaces under Externally Applied Stress Fields**

**K. VAN BENTHEM**, Department of Chemical Engineering and Materials Science, University of California, Davis, CA, USA

#### **CD-3:IL05 Modeling Micro-laser Solidification for Microstructure Tailoring during Additive Manufacturing**

**M. BROCHU**, D.W. HEARD, R. GAUVIN, McGill University, Montreal, Canada

#### **CD-3:IL06 Transmission Electron Microscopy of Interfaces in Diffusion Bonded Silicon Carbide Ceramics**

**H. TSUDA**, S. MORI, Osaka Prefecture University, Osaka, Japan; M.C. HALBIG, NASA Glenn Research Center, Cleveland, OH, USA; M. SINGH, Ohio Aerospace Institute, Cleveland, OH, USA; R. ASTHANA, University of Wisconsin-Stout, Menomonie, WI, USA

#### **CD-3:IL07 A Study on the Interfacial Reactions of Ti-6Al-4V and Boro-aluminate Glasses / Glass-ceramics used in Glass to Metal Seals**

**P.M. YATES<sup>1</sup>**, M. STAFF<sup>1,2</sup>, M.J. WHITING<sup>1</sup>, J.A. FERNIE<sup>2</sup>, J.A. YEOMANS<sup>1</sup>, <sup>1</sup>University of Surrey, Guildford, UK; <sup>2</sup>AWE, Reading, UK

## Session CD-4

### Application Engineering

#### **CD-4:IL01 Interfacial Reactivity in Diamond Cutting Tools**

**C. ARTINI**, Department of Chemistry and Industrial Chemistry, University of Genova, and CNR-IENI, Genova, Italy; F. VALENZA, A. PASSERONE, M.L. MUOLO, CNR-IENI, Genova, Italy

#### **CD-4:IL02 Compact, Ceramic Heat Exchangers and Microchannel Devices: Joining and Integration**

**C. LEWINSOHN**, J. FELLOWS, M. WILSON, Ceramatec, Inc., Salt Lake City, UT, USA

#### **CD-4:IL03 Microscale Evaluation of Fracture Toughness and R-curves in Bond Coats and the Role of Platinum**

B.N. JAYA, V. JAYARAM, Indian Institute of Science, Bangalore, India

#### **CD-4:IL04 Joining of UHTC Diborides using Metallic Interlayers**

**N. SAITO**, K. NAKASHIMA, Kyushu University, Fukuoka, Japan; L. ESPOSITO, L. SILVESTRONI, D. SCITI, CNR-ISTEC, Faenza, RA, Italy; S. GUICCIARDI, CNR-ISMAR, Ancona, Italy; A.M. GLAESER, UC Berkeley, Berkeley, CA, USA

#### **CD-4:IL05 Brazing of Metals, Alloys and Ceramics using Rapidly Quenched Ribbon-type Filler Metal STEMET**

**A.N. SUCHKOV**, V.T. FEDOTOV, O.N. SEVRYUKOV, B.A. KALIN, A.A. IVANNIKOV, I.V. FEDOTOV, National Research Nuclear University «MEPhI», Moscow, Russia

#### **CD-4:IL06 Microwelding for Implantable Medical Devices**

**M.W. REITERER**, M.D. BREYEN, Medtronic, Inc., Corp. Core Technologies, Minneapolis, MN, USA

#### **CD-4:IL07 Glass and Glass-ceramic Based Sealants for Solid Oxide Cells**

**F. SMEACETTO**, Politecnico di Torino, Torino, Italy

#### **CD-4:IL08 Biocompatibility of Titanium Dioxide Film Irradiated with Femtosecond Laser**

**M. TSUKAMOTO**, T. SHINONAGA, Joining and Welding Research Institute, Osaka University, Osaka, Japan; P. CHEN, A. NAGAI, T. HANAWA, Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Tokyo, Japan

#### **CD-4:IL09 Mechanical Characterization of Sintered and Laser Solded Monolithic Ceramics and Ceramic Matrix Composites (CMC)**

**J. SCHMIDT**, C. GADELMEIER, M. GÖTHE, Fraunhofer Institute of Silicate Research ISC, Center for High Temperature Materials and Design, Composite Technology Group, Bayreuth, Germany

## Poster Presentations

#### **CD:P01 Size Effects in Multilayer Thermite Materials Based on Aluminum-copper Nitride Composite**

**D.G. GROMOV<sup>1</sup>**, **E.A. LEBEDEV<sup>1</sup>**, **D.I. SMIRNOV<sup>1,2</sup>**, **A.S. SHULIATYEV<sup>1</sup>**, **V.A. GALPERIN<sup>3</sup>**, **E.P. KITSYUK<sup>3</sup>**, **Y.P. SHAMAN<sup>3</sup>**, <sup>1</sup>National Research University of Electronic Technology, Moscow, Zelenograd, Russia; <sup>2</sup>P.N. Lebedev Physical Institute of the Russian Academy of Sciences; <sup>3</sup>SMC "Technological Centre"

#### **CD:P02 Advanced Manufacturing Routes for Metal/Composite Components for Aerospace**

**M. FERRARIS**, **M. SALVO**, and ADMACOM Team, Dept. of Applied Science and Technology, Politecnico di Torino, Torino, Italy

#### **CD:P03 Effects of He Irradiation on Glass Ceramics for Nuclear Applications**

**M. FERRARIS**, **V. CASALEGNO**, **S. RIZZO**; **L. GOZZELINO**, **R. GERBALDO**, **G. GHIGO**, **F. LAVIANO**, Dept. of Applied Science and Technology, Politecnico di Torino, Torino, Italy and INFN Sez. Torino, Torino, Italy

#### **CD:P04 Braze Vacuum Ceramic Tubes for Magnets Applications**

**O. BAGNATO<sup>1</sup>**, **R.F. FRANCISCO<sup>1</sup>**, **A.L. GOBBI<sup>2</sup>**, **T. FALVO<sup>3</sup>**, <sup>1</sup>Brazilian Synchrotron Light Laboratory-LNLS, Campinas, SP, Brazil; <sup>2</sup>Brazilian Nanotechnology National Laboratory - LNNano; <sup>3</sup>Engecer Ltda

## SYMPOSIUM CE

### INNOVATIVE SYNTHESIS AND PROCESSING OF NANOSTRUCTURED, NANOCOMPOSITE AND HYBRID FUNCTIONAL MATERIALS FOR ENERGY AND SUSTAINABILITY

## Oral Presentations

### Session CE-1

#### Innovative Processing of Nano- and Heterostructures and Films of Functional Materials

#### **CE-1:IL01 Compositional and Nanostructure Engineered Thin Film Materials for Electrochemical Devices Prepared by Chemical Solution Deposition**

**T. SCHINELLER**, Institut für Werkstoffe der Elektrotechnik II, RWTH Aachen University of Technology, Aachen, Germany

#### **CE-1:IL02 Fabrication of High-quality Crystal Layers of Lithium Ion Conductors toward All-Crystal-State Lithium Ion Secondary Batteries**

**K. TESHIMA<sup>1,2</sup>**, **N. ZETTSU<sup>1,2</sup>**, **H. WAGATA<sup>1,2</sup>**, **S. OISHI<sup>1</sup>**, <sup>1</sup>Shinshu University, Nagano, Japan; <sup>2</sup>CREST, Japan Society and Technological Agency

**CE-1:L03 Chemical Processing and Microstructures of Thin Films for Li Battery Application**

**Y.H. IKUHARA<sup>1</sup>, XIANG GAO<sup>1</sup>, C.A.J. FISHER<sup>1</sup>, A. KUWABARA<sup>1</sup>, H. MORI-WAKE<sup>1</sup>, R. HUANG<sup>1,2</sup>, Y. IKUHARA<sup>1,3</sup>, H. OKI<sup>4</sup>, K. KOHAMA<sup>4</sup>, <sup>1</sup>Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, Japan; <sup>2</sup>Ministry of Education, East China Normal University, Shanghai, China; <sup>3</sup>Institute of Engineering Innovation, The University of Tokyo, Tokyo, Japan; <sup>4</sup>Toyota Motor Corporation, Susono, Japan**

**CE-1:L04 Amorphous Silicon Nanoparticles Synthesized by Inductive Coupled Plasma for Secondary Lithium-ion Battery**

**BOYUN JANG**, JOONSOO KIM, JINSOEK LEE, Korean Institute of Energy Research, Deajeon, Korea

**CE-1:L05 Pseudocapacitive Properties of ZnO/MnOx Core-Shell Nanostructure**

**CHIN-YI CHEN**, HSIANG-CHUN CHEN, Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan, ROC

**CE-1:L06 Chemically Engineered Functional Nanostructures for Energy and Health Applications**

**S. MATHUR**, Inorganic and Materials Chemistry, Institute of Inorganic Chemistry, University of Cologne, Cologne, Germany

**CE-1:L07 Silicon Nanowires: From Energy Production to (Bio)-Photonics**

**V. SIVAKOV**, Institute of Photonic Technology, Jena, Germany

**CE-1:L08 Submerged Liquid Plasma for the Formation of Polymers and Nanostructured Carbon**

**M. YOSHIMURA, J. SENTHILNATHAN**, Promotion Centre for Global Materials Research (PCGMR), Department of Material Science and Engineering, National Cheng Kung University, Tainan, Taiwan

**CE-1:L09 Fabrication of LaTiO<sub>2</sub>N Crystals by Two-Step Process Consisting of Flux Growth and Nitridation**

**K. KAWASHIMA**, H. WAGATA, N. ZETTSU, S. OISHI, K. TESHIMA, Shinshu University, Nagano, Japan

**CE-1:L10 A New Chamber Design for Synthesis of Carbon Nanostructures of Different Dimensionality Using PLD Technique**

**M. ENACHESCU**, I. BOERASU, M. BADEA, P. M. BOTA, D. DOROBANTU, D. BOJIN, Center for Surface Science and NanoTechnology, University "Politehnica" of Bucharest, Bucharest, Romania

**CE-1:L11 Hybrid Nanomaterials for Electrochemical Devices in Energy Management**

**POOI SEE LEE**, School of Materials Science and Engineering, Nanyang Technological University, Singapore

**CE-1:L12 Template-Free Fabrication of Stripe and Grid Patterns of Colloidal Nanoparticles by Convective Self-Assembly**

**M.T. MIYAHARA**, Y. MINO, S. WATANABE, Dept. Chem. Eng., Kyoto University, Kyoto, Japan

**CE-1:L13 Nanomaterials in the C-B-N System**

**R.N. SINGH**, School of Materials Science and Engineering College of Engineering, Architecture and Technology, Oklahoma State University, Tulsa, OK, USA

**CE-1:L14 Preparation and Growth of ZnO Crystals in Ionic Liquid Flux**

**H. WAGATA**, N. HARATA, N. ZETTSU, S. OISHI, K. TESHIMA, Department of Environmental Science & Technology, Faculty of Engineering, Shinshu University, Nagano, Japan

**CE-1:L15 Carbon Silica Hybrid Nanofibers through Sol-Gel Electro-spinning**

**T. PIRZADA**, Federal Directorate of Education, Islamabad, Pakistan; S. SAKHAWAT SHAH, Department of Chemistry, Hazara University, Mansehra, Pakistan; S.A. KHAN, Department of Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, USA

**Session CE-2****Functional Metal Oxide Nano- and Heterostructures****CE-2:L01 Surface Tuning of Technologically Important Metal Oxides**

**G. THORNTON**, London Centre for Nanotechnology, University College London, London, UK

**CE-2:L02 Nano-structuring of SnO<sub>2</sub> for a Molecular Sensor**

**Y. MASUDA**, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

**CE-2:L03 Nanoscale Hollow Spheres for Sensing, Gas Sorption/ Separation, Drug Delivery**

**C. FELDMANN**, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

**CE-2:L04 Zinc oxide: Morphology and Growth**

**Z. CRNJAK OREL**, National Institute of Chemistry, Ljubljana, Slovenia

**CE-2:L05 Nanostructured Metal Oxides and Organic-inorganic Hybrid Materials with up-conversion Properties**

**F. GONELL<sup>1</sup>, S. GIMÉNEZ<sup>2</sup>, B. JULIÁN-LÓPEZ<sup>1</sup>**, <sup>1</sup>Group of Multifunctional Materials, Dep. Inorganic and Organic Chemistry (ESTCE); <sup>2</sup>Group of Photovoltaic and Optoelectronic Devices, Dep. Physics (ESTCE), Universitat Jaume I, Castellón, Spain

**CE-2:L06 Metal Oxides as Protein Mimics**

**W. TREMEL**, Johannes Gutenberg-Universität Mainz, Mainz, Germany

**CE-2:L07 Synthesis of Metal Oxide Nanostructures for Optoelectronic Devices**

**YOON-BONG HAHN**, School of Semiconductor and Chemical Engineering, Chonbuk National University, Jeonju, Korea

**CE-2:L08 Hydrogen Production from Thermochemical Water-Splitting Using Ferrites Prepared by Solution Combustion Synthesis**

**I. WALTERS, R. SHENDE, J.A. PUSZYNSKI**, South Dakota School of Mines and Technology, Chemical and Biological Engineering Department, Rapid City, SD, USA

**CE-2:L09 Wet Chemical Routes to Metal Oxide Nanocrystals and Thin Films for Chemical Sensing**

**M. EPIFANI**, Consiglio Nazionale delle Ricerche, Istituto per la Microelettronica e Microsistemi (CNR-IMM), Lecce, Italy

**CE-2:L10 Development of Ceramic Dielectric Films for Advanced Power Inverters in Electric Drive Vehicles: Current Status and Challenges**

**U. BALACHANDRAN, M. NARAYANAN, T.H. LEE, S.E. DORRIS, B. MA**, Energy Systems Division, Argonne National Laboratory, Argonne, IL, USA

**CE-2:L11 Metal Oxide Nanopowders for Photocatalytical Applications**

**T. GRAULE<sup>1</sup>, K.A. MICHALOW-MAUKE<sup>1,2</sup>**, <sup>1</sup>Empa Swiss Federal Laboratories for Materials Science and Technology, Laboratory for High Performance Ceramics, Duebendorf, Switzerland; <sup>2</sup>Paul Scherrer Institute, Villigen PSI, Switzerland

**CE-2:L12 Synthesis and Aggregation of In<sub>2</sub>O<sub>3</sub> Nanoparticles: Impact of Process Parameters on Stoichiometry Changes and Optical Properties**

**N. SIEDL, P. GÜGEL**, Institute of Particle Technology, Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany; **O. DIWALD**, Department of Materials Science and Physics, University of Salzburg, Salzburg, Austria

**Session CE-3****Functional Materials and Sustainability****CE-3:L01 Engineering New Properties at Intrinsic and Artificial Oxide Interfaces**

**P. PARUCH**, DPMC-MaNEP, University of Geneva, Geneva, Switzerland

**CE-3:L02 Self-cleaning and Anti-fogging Surfaces Based on Nanostructured Metal Oxides**

**U. LAVRENCIC STANGAR**, F. FRESNO, M. KETE, M. TASBIHI, Laboratory for Environmental Research, University of Nova Gorica, Slovenia; A. GASPAROTTO, C. MACCATO, Department of Chemistry, Padova University and INSTM, Italy; D. BARRECA, IENI-CNR and INSTM, Department of Chemistry, Padova University, Italy

**CE-3:L03 Advanced Fe<sub>2</sub>O<sub>3</sub> Nanomaterials for Solar-Activated H<sub>2</sub> Generation**

**G. CARRARO**, C. MACCATO, A. GASPAROTTO, Department of Chemistry, Padova University and INSTM, Italy; D. BARRECA, IENI-CNR and INSTM, Department of Chemistry, Padova University, Italy; P. FORNASIERO, V. GOMBAC, T. MONTINI, Department of Chemical and Pharmaceutical Sciences, ICCOM-CNR and INSTM, Trieste University, Italy; O.I. LEBEDEV, Laboratoire CRISMAT, CNRS-ENSICAEN, France; S. TURNER, G. VAN TENDELOO, EMAT, Antwerp University, Belgium

**CE-3:L04 Composite Plasmonic Gold/Layered Double Hydroxides and the Derived Solid Solutions as Novel Photocatalysts for Hydrogen Generation under Solar Irradiation**

**G. CARJA<sup>1</sup>, M. BIRSANU<sup>1,2</sup>, K. OKADA<sup>3</sup>, H. GARCIA<sup>2</sup>**, <sup>1</sup>Department of Chemical Engineering, Faculty of Chemical Engineering and Environmental Protection, Technical University "Gh. Asachi" of Iasi, Iasi, Romania; <sup>2</sup>Instituto de Tecnología Química, Univ. Politécnica de Valencia, Valencia, Spain; <sup>3</sup>Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, Tokyo, Japan

**CE-3:L05 Thermoelectric Properties of Cu-Fe-V-P-O Oxide Glass Based Materials**

**A. MATSUDA**, M. YOSHIMOTO, Tokyo Institute of Technology, Yokohama, Japan; T. AOYAGI, T. NAITO, T. FUJIEDA, Hitachi Inc., Hitachi, Japan

**CE-3:L06 EISA, Click Chemistry and Ink-jet printing: a Fruitful Association for the Fabrication of Innovative Biosensors**

**F. ROSSIGNOL**, O. DE LOS COBOS, J. GRAFFION, M. LEJEUNE, M. COLAS, Laboratoire de Science des Procedes Ceramiques et de Traitements de Surface (SPCTS), UMR-CNRS 7315, CEC, Limoges, France; F. LALLOUE, H. AKIL, Homeostasie Cellulaire et Pathologies, EA 3842, Faculte de Medecine, Limoges Cedex, France; C. CARRION, Plateforme Cytometrie-Imagerie-Mathematiques (CIM), UMR-CNRS 6101, Faculte de medecine, Limoges Cedex, France; P. FAUGERAS, Societe DIOPTIK, Ester Technopole, Limoges, France; C. BOISSIERE, C. SANCHEZ, Laboratoire de Chimie de la Matiere Condensee de Paris, UMR CNRS 7574, Universite Pierre et Marie Curie Paris VI, College de France, Paris Cedex, France; X. CATTOEN, M. WONG CHI MAN, J.-O. DURAND, Institut Charles Gerhardt Montpellier (ICGM), UMR-CNRS 5253 (UM2-ENSCM-UM1), Montpellier, France

**CE-3:L07 Novel Adaptive Functional Materials: from Chemo-Mechano-Chemistry to Homeostasis**

X. HE<sup>1,2</sup>, **M. AIZENBERG**<sup>2</sup>, O. KUKSENOK<sup>3</sup>, L.D. ZARZAR<sup>4</sup>, A. SHASTRI<sup>4</sup>, A.C. BALAZS<sup>3</sup>, J. AIZENBERG<sup>1,2,4</sup>, <sup>1</sup>School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA; <sup>2</sup>Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, USA; <sup>3</sup>Department of Chemical and Petroleum Engineering, University of Pittsburgh, Pittsburgh, PA, USA; <sup>4</sup>Department of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, USA

**CE-3:L08 Bifunctional TiO<sub>2</sub>/Ag<sub>3</sub>PO<sub>4</sub>/Graphene Composites with Highly Efficient Visible Light Photocatalytic Performance and Excellent Bactericidal Activity**

**JIELING QIN**, XIAOFEI YANG, School of Materials Science and Engineering, Jiangsu University, Zhenjiang, China

**CE-3:L09 Theoretical Investigation of Electronic Properties of TMD Heterostructures**

**D. KVASHNIN**, P. B. SOROKIN, L.A. CHERNOZATONSKII, Institute of Biochemical Physics of RAS; Technological Institute for Superhard and Novel Carbon Materials; National University of Science and Technology MISIS, Moscow, Russian Federation

**CE-3:L10 Controlled Functionalization of Surfaces towards Molecularily-defined Surface Sites**

**C. COPERET**, Department of Chemistry and Applied Biosciences, ETH Zürich, Switzerland

**CE-3:L11 Defect Control and Photon Management in Metal Oxides and Nitrides for Photoelectrochemical Splitting of Water**

**A. DABIRIAN**, Department of Physics, Sharif University of Technology, Tehran, Iran

**CE-3:L12 Properties of the Metallic Glass Thin Films Synthesized with Multi-component Alloyed Target for Bipolar Plate in PEM Fuel Cell**

**JUHYUN SUN**<sup>1</sup>, J.Y. CHOI<sup>2</sup>, K.I. MOON<sup>2</sup>, C.H. LEE<sup>1</sup>, S.Y. SHIN<sup>1</sup>, <sup>1</sup>Advanced Fusion Process R&D Group, Korea Institute of Industrial Technology, Incheon, Republic of Korea; <sup>2</sup>Plasma Enhanced Technology Development Team, Korea Institute of Industrial Technology, Incheon, Republic of Korea

**CE-3:L13 Carbon-metal Nanocomposites for Supercapacitor Application**

**N.M. SULEIMANOV**, S.M. KHANTIMEROV, I.A. FAIZRAHMANOV, Zavoisky Physical Technical Institute of Russian Academy of Sciences, Kazan, Russia

**Poster Presentations****CE:P01 Surface-Modification of Nanostructured Fe<sub>2</sub>O<sub>3</sub> Polymorphs for Light-Assisted Functional Applications**

**A. GASPAROTTO**, G. CARRARO, C. MACCATO, Department of Chemistry, Padova University and INSTM, Italy; D. BARRECA, IENI-CNR and INSTM, Department of Chemistry, Padova University, Italy; F. ROSSI, G. SALVIATI, IMEM-CNR, Parco Area delle Scienze, Parma, Italy; M. TALLARIDA, C. DAS, D. SCHMEISSER, Brandenburg University of Technology, Germany; F. FRENO, D. KORTE, U. LAURENCIC STANGAR, M. FRANKO, Laboratory for Environmental Research, University of Nova Gorica, Slovenia

**CE:P02 Self-propagation Low Temperature Flameless Combustion**

**Synthesis of Ni and Al Nanoparticles: Time-resolved XRD Study**  
YU. M. MIKHAILOV<sup>1</sup>, V.V. ALESHIN<sup>1</sup>, A.M. KOLESNIKOVA<sup>1</sup>, **D.YU. KOVAL-LEV**<sup>2</sup>, V.I. PONOMAREV<sup>2</sup>; <sup>1</sup>Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia; <sup>2</sup>Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Russia

**CE:P03 Compositional Designs for High Performance Antifingerprint Coated Concealed Cistern Control Panels**

**A. TUNALI**, N. TAMSU SELLI, Eczacibasi Building Product Co., Vitra Innovation Center, Bilecik, Turkey

**CE:P04 Sol-Gel Derived Two-dimensional Nanostructures of Calcium Phosphate Composites**

**A. PRICHODKO**, V. JONAUSKE, M. CEPEJKO, A. BEGANSKIENE, A. KAREIVA, Department of Inorganic Chemistry, Vilnius University, Vilnius, Lithuania

**CE:P05 Preparation and Properties of Silica/poly(vinyl alcohol) Organic-inorganic Hybrid Gas Barrier Films with Cross-linked Structure**

**K. KURAOKA**, R. ABE, Y. KINOSHITA, Kobe University, Kobe city, Hyogo, Japan

**CE:P06 Sol-gel Method for Producing Superconducting Materials of System Y-Ba-Cu-O**

B.I. BOGDANOV, **P.S. PASHEV**, Y.H. HRISTOV, R.S. RAYKOVA, University "Prof. dr Assen Zlatarov", Department of Inorganic Substances and Silicates, Bougas, Bulgaria

**CE:P07 Organic-inorganic Composites and Consolidated Nanomaterials with Specified Properties**

**G. SEMCHENKO**<sup>1</sup>, E.S. GEVORKYAN<sup>2</sup>, S.P. KRIVILYOVA<sup>1</sup>, A.N. ROSSOKHA<sup>1</sup>, <sup>1</sup>National Technical University "Kharkov Polytechnic Institute"; <sup>2</sup>Ukrainian State Academy of Railway Transport, Kharkov, Ukraine

**CE:P08 Preparation of TiN/TiO<sub>2</sub> Double Layer Nanostructured Coating**

**F. DABIR**, **R. SARRAF-MAMOORY**, V. AHMADI, N. RIAHI-NOORI, Department of Materials Engineering, Tarbiat Modares University, Tehran, Iran

**CE:P09 Nanostructures of Sprayed ZnO Films**

**M. BENHALILIBA**, H. MOKHTARI, Y.S. OCAK, M.S. AIDA, Material Department, Physics Faculty, USTO-MB University, Oran, Algeria; Science Department, Education Faculty, Dicle University, Diyarbakir, Turkey; Laboratory of Thin Films and Plasma, Mentouri University, Constantine, Algeria

**CE:P10 Nanostructured Perovskite-like Oxides ANdM207 (A=H,Li,Na,K,Rb,Cs; M=Ta,Nb) for Solar Energy Utilization and Storage**

**M. CHISLOV**, A. BUROVIKHINA, I. ZVEREVA, Saint Petersburg State University, St. Petersburg, Russia

**CE:P11 Some Properties of Uranium Nitrides Produced by Spark-Plasma and Electro Discharge Sintering**

V.G. BARANOV, **D.P. SHORNIKOV**, M.S. YURLOVA, B.A. TARASOV, S.N. NIKITIN, T.V. JAKUTKINA, NRNU MEPhI, Moscow, Russia

**CE:P12 Utilization of Mechano-chemical Activation of Fluidized Fly-Ashes and Recycled Concrete in Cold Recycling Mixtures**

**J. VALENTIN**, J. SUDA, O. KRPÁLEK, Czech Technical University in Prague, Faculty of Civil Engineering, Department of Road Structures, Prague, Czech Republic

**CE:P13 Photocatalytic Water-Splitting using Modified Heterojunction TiO<sub>2</sub> Nanotube Arrays**

**BONGSOO KIM**<sup>1</sup>, SEUNGBUM HONG<sup>1,2</sup>, KWANGSOO NO<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering, KAIST, Daejeon, South Korea; <sup>2</sup>Nano-science and Technology Division, Argonne National Laboratory, Lemont, IL, USA

**CE:P14 Ruthenium Oxide Nanoplates and Their High Performance in Lithium Ion Batteries**

A. NAVULLA, G. STEVENS, **L. MEDA**, Department of Chemistry, Xavier University of Louisiana, New Orleans, LA, USA

**CE:P15 Effects of Particle Size and Solid Solution of Al<sub>2</sub>O<sub>3</sub>(A) / Ce<sub>x</sub>Zr<sub>1-x</sub>O<sub>2</sub>(CZ) on the Oxygen Release Capability of the Composite Powder**

**FU-SU YEN**, CHUNG-CHE WEI, PEI-CHING YU, Department of Resources Engineering, National Cheng Kung University, Taiwan; SHIAN REN YANG, Department of Cosmetic Applications & Management, Far East University, Taiwan

**CE:P16 Thermoelectric Properties of Hexagonal Barium Titanates**

**S. YASUI**, Y. ISHIMOTO, T. SHIMIZU, M. ITOH, Tokyo Institute of Technology, Yokohama, Japan

**CE:P17 Innovative Synthesis of Nanostructured Complex Gadolinium Ferrites with High Temperature Solid State Reactions**

**I.V. CHISLOVA**, I.A. ZVEREVA, Saint-Petersburg University, Saint-Petersburg, Russia; T.F. SHESHKO, Peoples Friendship University of Russia, Moscow, Russia

**CE:P18 Synthesis and Properties of Lithium-ion Electrode Material Nanocomposite**

**V.S. GORSHKOV**, N.A. MUKHINA, B.A. TSAREV, OOO Eliont, Yekaterinburg, Russia; D.G. KELLERMAN, Inst. of Solid State Chem., Urals Div. Russ. Acad. Sci., Yekaterinburg, Russia

**CE:P19 Bioreactor Intensification using Modified Sugarcane Bagasse as Inert Support**

**J.G.C. PRADELLA**<sup>1</sup>, R. RULLER<sup>1</sup>, J.L. IENCZAK<sup>1</sup>, S.C. RABELO<sup>1</sup>, P. MAZZIERO<sup>1</sup>, F.S. MIRANDA<sup>1</sup>, L.V. SANTOS<sup>2,3</sup>, <sup>1</sup>Brazilian Laboratory of Science and Technology of Bioethanol, Campinas SP, Brazil; <sup>2</sup>Technologic Institute of Aeronautics, ITA/CTA, Sao Jose dos Campos - SP, Brazil; <sup>3</sup>University of Paraiba Valley IP&D/UNIVAP, Sao Jose dos Campos - SP, Brazil

**CE:P20 Using of Plasma Reactor with Discharge in Liquid as Pre-treatment of Bagasse Sugar Cane Aiming Production of Second Generation Ethanol**

**F.S. MIRANDA<sup>1</sup>, F.L.C. LUCAS<sup>1</sup>, E.D. SANTOS<sup>1</sup>, R.J. SILVA<sup>3</sup>, C.M. CARLY<sup>2</sup>, S.C. RABELO<sup>2</sup>, C.E.V. ROSSEL<sup>2</sup>, J.G.C. PRADELLA<sup>2</sup>, H.S. MACIEL<sup>1,3</sup>, R.S. PESSOA<sup>1,3</sup>, L.V. SANTOS<sup>1,3</sup>; <sup>1</sup>Nanotechplasma laboratory, University of Paraíba Valley, São José dos Campos, SP, Brazil; <sup>2</sup>Brazilian Bioethanol Science and Technology Laboratory, Campinas - SP, Brazil; <sup>3</sup>Technological Institute of Aeronautics (ITA), São José dos Campos, SP, Brazil**

## SYMPOSIUM CF HIGH AND ULTRA HIGH TEMPERATURE CERAMICS FOR EXTREME ENVIRONMENTS

### Oral Presentations

#### Session CF-1 Synthesis and Processing

**CF-1:IL01 Advances in Ultra-High Temperature Ceramic Research at University of Arizona: Investigating Oxidation Resistant UHTCs Using Relevant Testing Facilities and Direct Current Assisted Processing, Joining, and Physical Properties of Large Scale Complex Shape UHTC Parts**

**E. CORRAL**, Materials Science and Engineering Department, Arizona Materials Laboratory, University of Arizona, Tucson, AZ USA

**CF-1:IL02 Amorphization, Field Activated Sintering and Superplastic Forming of UHTCs**

**H. KIMURA**, Department of Mechanical Engineering, School of Systems Engineering, National Defense Academy, Yokosuka, Kanagawa, Japan

**CF-1:IL03 Bringing Modelling to UHTCs**

**A.I. DUFF**, B. LEE, M. FINNIS, E. GIORGI, Imperial College London, UK; A. GLENSK, B. GRABOWSKI, Max Planck Institut fuer Eisenforschung, Germany

**CF-1:IL04 Nonoxide High-melting Point Compounds as Materials for Extreme Conditions**

**S. ORDANIAN**, Saint-Petersburg State Technology Institute, Technical University, Saint-Petersburg, Russia

**CF-1:IL05 Processing and Properties of UHTC Composites**

**J. BINNER<sup>1</sup>, A. PAUL<sup>1</sup>, S. VENUGOPAL<sup>1</sup>, PENXIANG ZHENG<sup>2</sup>, B. VAIDHYANATHAN<sup>2</sup>, P. BROWN<sup>3</sup>, <sup>1</sup>University of Birmingham, UK; <sup>2</sup>Loughborough University, UK; <sup>3</sup> Defence Science and Technology Laboratory (DSTL), UK**

**CF-1:IL06 Processing and Sintering of Fiber-containing UHTCs**

**D. SCITI**, L. SILVESTRONI, L. ZOLI, V. MEDRI, CNR-ISTEC, Faenza, Italy

**CF-1:IL07 A novel Field Assisted Sintering Technique for Ultra-high Temperature Ceramics**

**E. ZAPATA-SOLVAS**, Materials Science Institute of Seville, CSIC-University of Seville, Seville, Spain; D. GÓMEZ-GARCIA, A. DOMÍNGUEZ-RODRÍGUEZ, Dpt. Condensed Matter Physics, University of Seville, Seville, Spain; R.I. TODD, Dpt. Materials, University of Oxford, Oxford, UK

**CF-1:IL08 Dual Composite Architectures for Toughening of ZrB<sub>2</sub>-MoSi<sub>2</sub> UHTC Composites Produced by Polymer Co-extrusion**

**R.J. GROHSMEYER**, G.E. HILMAS, W.G. FAHRENHOLTZ, Missouri University of Science and Technology, Rolla, MO, USA; A. D'ANGIO, F. MONTEVERDE, CNR-ISTEC, Faenza, Ravenna, Italy

**CF-1:IL09 Design of Grain Growth Resistant Nanograined YSZ**

**R.H.R. CASTRO**, D.V. QUACH, CHI-HSIU CHANG, S. DEY, University of California, Davis, CA, USA

**CF-1:IL10 Densification of UHTCs Assisted by Electromagnetic Fields**

**M.J. REECE**, S. GRASSO, Materials Research Institute, Queen Mary University of London, London, UK

**CF-1:IL11 Electro Discharge Machinable Alumina-based Nanocomposites**

**L.A. DÍAZ<sup>1</sup>, S. RIVERA<sup>2</sup>, A.A. OKUNKOV<sup>3</sup>, Y.U.G. VLADIMIROV<sup>3</sup>, F.J. GOTOR<sup>4</sup>,**

**R. TORRECILLAS<sup>1,3</sup>, <sup>1</sup>Centro de Investigación en Nanomateriales y Nanotecnología (CINN) Consejo Superior de Investigaciones Científicas (CSIC) - Universidad de Oviedo (UO) - Principado de Asturias (PA), Llanera, Asturias, Spain; <sup>2</sup>Nanoker Research, S.L., Polígono de Olloniego, Oviedo, Asturias, Spain; <sup>3</sup>Moscow State University of Technology "STANKIN", Moscow, Moscow Oblast, Russian Federation; <sup>4</sup>Instituto de Ciencia de Materiales de Sevilla (CSIC-US), Sevilla, Spain**

**CF-1:L12 BMT - An Ultra High Temperature Oxide Ceramic for Hyper-sonic Applications**

**B. VAIDHYANATHAN**, S. VENUGOPAL, S. HAMMOUCHE, J. BINNER, Department of Materials, Loughborough University, Loughborough, UK

**CF-1:IL13 Recent Developments of High Pressure Sintering of Advanced High Temperature Nanoceramics**

**V.S. URBANOVICH**, Scientific-Practical Materials Research Centre NAS of Belarus, Minsk, Belarus

**CF-1:IL14 Reaction Bonded Si<sub>3</sub>N<sub>4</sub> (RBSN) / BN Composites for Industrial Applications**

**L. CAVALLI**, Petroceramics spa, Stezzano (BG), Italy

**CF-1:L15 Development and Processing of SiAlON Nano-ceramics by Spark Plasma Sintering**

**A.S. HAKEEM<sup>1</sup>, T. LAOUI<sup>2</sup>, F. PATEL<sup>2</sup>, A.I. BAKARE<sup>1</sup>, S. ALI<sup>2</sup>, <sup>1</sup>Center of Excellence in Nanotechnology, King Fahd University of Petroleum & Minerals Dhahran, Saudi Arabia; <sup>2</sup>Mechanical Engineering Department, King Fahd University of Petroleum & Minerals Dhahran, Saudi Arabia**

**CF-1:L16 Hexagonal BN Encapsulated ZrB<sub>2</sub>-particles by Nitride Boronizing**

**JI ZOU<sup>1,2,3</sup>, JINGJING LIU<sup>3</sup>, GUO-JUN ZHANG<sup>2</sup>, SHUIGEN HUANG<sup>3</sup>, J. VLEUGELS<sup>3</sup>, O. VAN DER BIEST<sup>3</sup>, J. ZHIJIAN SHEN<sup>1</sup>, <sup>1</sup>Dept. of Materials and Environmental Chemistry, Arrhenius Laboratory, Stockholm University, Stockholm, Sweden; <sup>2</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructures, Shanghai Institute of Ceramics, Shanghai, China; <sup>3</sup>Dept. of Metallurgy and Materials Engineering (MTM), KU Leuven, Heverlee, Belgium**

#### Session CF-2

#### Oxidation, Corrosion, and Testing

**CF-2:IL01 Oxidation Mechanisms of ZrB<sub>2</sub> - 30 vol% SiC**

**K.N. SHUGART, E.J. OPILA**, Department of Materials Science and Engineering, University of Virginia, Charlottesville, VA, USA

**CF-2:IL02 Improvement of Thermal Stability and Oxidation Resistance of UHTC above 2000 °C**

**F. REBILLAT<sup>1</sup>, A.-S. ANDRÉANI<sup>1</sup>, A. POULON-QUINTIN<sup>2,3</sup>, <sup>1</sup>Univ. Bordeaux, LCTS, Pessac, France; <sup>2</sup>CNRS, ICMCB, UPR 9048, Pessac, France; <sup>3</sup>Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France**

**CF-1:IL03 Synthesis, Oxidation Resistance, Emittance, and Thermal Conductivity of ZrB<sub>2</sub>-SiC Multiphase Ceramics**

**R.F. SPEYER**, School of Materials Science and Engineering, Georgia Inst. of Technology, Atlanta, GA, USA; FEI PENG, Clemson University, USA

**CF-2:L04 High-temperature Passive Oxidation Mechanism of CVD Silicon Carbide**

**T. GOTO, H. KATSUI**, Institute for Materials Research, Tohoku University, Sendai, Japan

**CF-2:L05 Corrosion Properties of Hafnia Based Silicon Carbonitride Ceramics**

**S. JOTHI**, R. SUJITH, R. KUMAR, Materials Processing Section, Department of Metallurgical & Materials Engineering, Indian Institute of Technology Madras, Chennai, India

**CF-2:IL06 Ultra-High Temperature Materials for Extreme Environments: High Temperature Oxidation Behavior of Boride-based Ceramics**

**YOUNG-HOON SEONG, DO KYUNG KIM**, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

**CF-2:IL07 UHTC Oxidation using Concentrated Solar Energy**

**M. BALAT-PICHELIN**, PROMES-CNRS Laboratory, Font-Romeu Odeillo, France

**CF-2:L08 Influence of Oxidation Processes on Mechanical Properties of Silicon Nitride**

**H. KLEMM**, W. KUNZ, Fraunhofer IKTS Dresden, Germany

**CF-2:L09 Oxidation Behavior of Cf/SiC Composites Protected by SiC-ZrC-LaB<sub>6</sub> Multi-component Coatings**

**LE GAO, XIANGYU ZHANG, SHAOMING DONG, YANMEI KAN, CHUNJING LIAO, YUSHENG DING**, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

#### Session CF-3

#### Mechanical and Thermal Properties

**CF-3:IL01 Nanoceramics for Extreme Environments**

**R.A. ANDRIEVSKI**, Institute of Problems of Chemical Physics, Russian Academy of Sciences, Chernogolovka, Moscow Region, Russia

**CF-3:L02 High-temperature Mechanical Behaviour of Super-hard Carbides: The Special Case of Boron Carbide**

**D. GOMEZ-GARCIA<sup>1</sup>, B.M. MOSHTAGHIOUN<sup>1</sup>, M. CASTILLO-RODRIGUEZ<sup>2</sup>,** A. DOMINGUEZ-RODRIGUEZ, <sup>1</sup>Department of Condensed Matter Physics, University of Seville, Spain; <sup>2</sup>Institute for Materials Science, CSIC-USE, Spain

**CF-3:L03 Cationic Diffusion Coefficient in Ceria-Zirconia from Plasticity Studies**

S. DE BERNARDI-MARTIN, B.M. MOSHTAGHION, D. GOMEZ-GARCIA, **A. DOMINGUEZ-RODRIGUEZ**, Department of Condensed Matter Physics, University of Seville, Seville, Spain

**CF-3:L04 Spark Plasma Sintering of Fine-grained Alumina Polycrystals and their High-temperature Plasticity**

**Y. TAMURA<sup>1</sup>, E. ZAPATA-SOLVAS<sup>2</sup>, D. GOMEZ-GARCIA<sup>1</sup>, A. DOMINGUEZ-RODRIGUEZ<sup>1</sup>**, <sup>1</sup>Department of Condensed Matter Physics, University of Seville, Spain; <sup>2</sup>Institute of Materials Science, CSIC-USE, Seville, Spain

**CF-3:L05 Anisotropic Mechanical Properties and Plasma Sputtering Resistance Performances of Textured h-BN Composite Ceramics**

**XIAOMING DUAN**, DECHANG JIA, NAN JING, ZHIHUA YANG, ZHUO TIAN, SHENGJIN WANG, YU ZHOU, DAREN YU, YONGJIE DING, Institute for Advanced Ceramics, Harbin Institute of Technology, Harbin, China; School of Energy Science and Technology, Harbin Institute of Technology, Harbin, China

**CF-3:L06 Ultra High Temperature Mechanical Testing of ZrB<sub>2</sub> Based Ceramicss**

**G.E. HILMAS**, W.G. FAHRENHOLTZ, E.W. NEUMAN, Missouri University of Science and Technology, Department of Materials Science and Engineering, Rolla, Missouri, USA

**CF-3:L07 Mechanical Behaviour under Fatigue at High Temperature of Ceramic-matrix Composites**

**P. REYNAUD**, N. GODIN, M. R'MILI, G. FANTOZZI, INSA Lyon, MATEIS (UMR CNRS 5510), Villeurbanne, France

**CF-3:L08 Modelling Damage and Creep Crack Growth in Ultra-High Temperature Ceramics**

**M. PETTINA<sup>1</sup>**, K. NIKBIN, Mechanical Engineering Department, Imperial College London, London, UK; A. HEATON, P. BROWN, Defence Science and Technology Laboratory, Porton Down, Salisbury, Wiltshire, UK; W.E. LEE, Materials Department, Imperial College London, London, UK

**CF-3:L09 Superhard Boron Carbide Ceramics with Ultrafine-grained and Dense Microstructures Sintered by Spark Plasma Sintering(SPS)**

A.L. ORTIZ<sup>1</sup>, **B.M. MOSHTAGHIOUN<sup>2</sup>, D. GOMEZ-GARCIA<sup>2</sup>, A. DOMINGUEZ-**

RODRIGUEZ<sup>2</sup>, <sup>1</sup>Department of Mechanical, Energy and Materials Engineering, University of Extremadura, Badajoz, Spain; <sup>2</sup>Department of Condensed Matter Physics, University of Sevilla, Spain

**CF-3:L10 Properties of New Vacuum Insulation Cf/SiC Composites**

**YANG WANG**, ZHAOFENG CHEN, SHENGJIE YU, LILI NIE, Nanjing University of Aeronautics and Astronautics, China

**CF-3:L11 Thermochemistry of Metal Borosilicate Glasses**

**P. KROLL**, Department of Chemistry and Biochemistry, The University of Texas at Arlington, Arlington, TX, USA

**CF-3:L12 Effect of Short Carbon Fiber Addition on Mechanical and Thermal Properties of ZrB<sub>2</sub> Based Composites**

**XIN SUN**, YANCHUN ZHOU, JUNPING LI, YANWEI ZHAO, ZHIHAI FENG, Aerospace Research Inst. of Materials & Processing Technology, Beijing, China

**CF-3:L13 Failure Criticality, Fragmentation Statistics Scaling and Resistivity of Ceramics under Intensive Loading**

**O. NAIMARK**, M. DAVYDOVA, S. UVAROV, Institute of Continuous Media Mechanics UB RAS, Perm, Russia

**Session CF-4****Characterization and Analysis****CF-4:L01 Nanoanalytical Characterisation of Ternary Carbides**

**D.D. JAYASEELAN<sup>1</sup>, O. CEDILLOS BARRAZA<sup>1</sup>, S. GRASSO<sup>2</sup>, W.E. LEE<sup>1</sup>**, <sup>1</sup>Dept of Materials, Imperial College, London, UK; <sup>2</sup>Nanoforce, Dept of Materials, Queen Mary University of London, UK

**CF-4:L02 Characterization of UHTCs Containing Various Kinds of Fibers**

**L. SILVESTRONI**, D. SCITI, CNR-ISTEC, Faenza, Italy

**CF-4:L03 First Principles Calculations of Interfaces in Ultra High Temperature Ceramics**

**V. TOMAR**, School of Aeronautics and Astronautics, Purdue University, West Lafayette, IN, USA

**CF-4:L04 Predictive Numerical Method for Creep and Environmental Degradation of UHTC**

F. BIGLARI<sup>1</sup>, M. PETTINA<sup>1</sup>, F. ABDI<sup>2</sup>, **K. NIKBIN<sup>1</sup>**, <sup>1</sup>Imperial College London, London, UK; <sup>2</sup>Alphastar Corp, Longbeach CA, USA

**CF-4:L05 Micro-structural Approach of the Mechanisms of the Carbo-thermal Reduction of Hafnia by TEM and XRD**

**F. REJASSE**, O. RAPAUD, A. MAITRE, G. TROLLIARD, Laboratoire SPCTS, Limoges Cedex, France

**CF-4:L06 Si<sub>3</sub>N<sub>4</sub>-SiC Nanocomposites Sintered with Various Rare-earth Oxide Additives for High Temperature Applications**

P.TATARO<sup>1</sup>, M. KASIAŘOVÁ<sup>1</sup>, **J. DUSZA<sup>1</sup>, P. SAJGALÍK<sup>2</sup>**, <sup>1</sup>Institute of Materials Research, SAS, Kosice, Slovak Republic; <sup>2</sup>Institute of Inorganic Chemistry, SAS, Bratislava, Slovak Republic

**CF-4.1:L07 Modelling and Experimental Thermodynamic Approach of High Temperature IVB-metal Carbides and Oxy carbides**

**O. RAPAUD**, F. RÉJASSE, N. PRADEILLES, A. MAÎTRE, G. TROLLIARD, SPCTS, Limoges Cedex, France

**Poster Presentations****CF:P01 Two-step Pressureless Sintering of Silicon Carbide-based Materials below 2000 °C**

**G. MAGNANI**, G. SICO, ENEA-UTTMATF, Faenza, Italy; A. BRENTARI, Certimac S.c.a.r.l., Faenza, Italy

**CF:P02 Phase Equilibria in the Systems of Hafnia, Zirconia and Rare-Earth Oxides for Advanced High Temperature Ceramics**

**E.R. ANDRIEVSKAIA**, Frantsevich Institute for Problems of Materials Science of NASU, and National Technical University of Ukraine "Kiev Polytechnic Institute", Kiev, Ukraine

**CF:P03 Dispersion of CNTs in Alumina using a Novel Mixing Technique and Spark Plasma Sintering of the Nanocomposites with Improved Fracture Toughness**

**N. BAKHSH<sup>1</sup>**, F. AHMAD KHALID<sup>1</sup>, A.S. HAKEEM<sup>2</sup>, <sup>1</sup>Faculty of Materials Science and Engineering, GIK Institute of Engineering Sciences and Technology, Topi, Swabi, KPK, Pakistan; <sup>2</sup>Centre of Excellence in Nanotechnology, King Fahd University of Petroleum and Minerals, Dhahran, Kingdom of Saudi Arabia

**CF:P04 Effect of TiO<sub>2</sub> and TiB<sub>2</sub> on Pressureless Sintering of ZrB<sub>2</sub>**

**R.M. ROCHA**, V.A.H. RODRIGUES, Institute of Aeronautics and Space, SP, Brazil; M.O. JULIANI, EEL-USP, SP, Brazil

**CF:P05 Fracture Mechanics of Y<sub>2</sub>O<sub>3</sub> Ceramics at High Temperatures**

**M. BONIECKI**, Z. LIBRANT, W. WESOŁOWSKI, Institute of Electronic Materials Technology, Warsaw, Poland; M. GIZOWSKA, M. OSUCHOWSKI, K. PERKOWSKI, I. WITOSLAWSKA, A. WITEK, Institute of Ceramic and Building Materials, Warsaw, Poland

**CF:P06 Mechanical Properties of Directionally Solidified YAG/Spinel Eutectics**

**S. ABALI**, Çanakkale Onsekiz Mart University, Çanakkale, Turkey; A. EKERIM, Yildiz Technical University, Turkey

**CF:P07 Development of Cordierite Ceramics from Natural Raw Materials**

**M. RUNDANS**, G. SEDMALE, I. SPERBERGA, Riga Technical University, Riga, Latvia; I. PUNDIENE, Vilnius Gediminas Technical University, Vilnius, Lithuania

**CF:P08 Heat Conductivity of Porous Alumina Based Ceramics**

**I. ZAKE-TILUGA**, R. SVINKA, V. SVINKA, Riga Technical University, Institute of Silicate Materials, Riga, Latvia

**CF:P09 Sintering Mechanism and Mechanical Properties of the BN / MAS Composites by Hot Press Sintering**

**ZHIHUA YANG**, DELONG CAI, DECHANG JIA, YU ZHOU, Harbin Institute of Technology, Harbin, P.R. China

**CF:P10 Properties of ZrW<sub>2</sub>O<sub>8</sub> Obtained by Hydrothermal Synthesis**

**E.S. DEDOVA**, S.N. KULKOV, Institute of Strength Physics and Materials Science of the SB RAS, Tomsk, Russia

**CF:P11 The Main Types of Glass Pots, used in the Manufacture of Optical Glass: Problems, Solutions and Perspectives for Future Development**

**E.Y. KREKHOVA**, A.N. IGNATOV, A.E. POZDNYAKOV, JSC LZOS, Lytkarino, Moscow Region, Russia; A.I. ZAHAROV, M.D. GASPARYAN, N.A. POPOVA, D. Mendeleev University of Chemical Techn. of Russia, Moscow, Russia

**CF:P12 Effect of 2.5D Braided (Shallow Bend-joint) Fabric Parameters on the Fiber Volume Fraction**

**TIANRU GUAN**, ZHAOFENG CHEN, College of Material Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing, P.R. China

**CF:P13 Electrical Properties of Liquid-Phase Sintered SiC Ceramics with Small Amount of AlN-RE<sub>2</sub>O<sub>3</sub> (RE= Y, Nd, Er, Lu)**

**KWANG-YOUNG LIM**, YOUNG-WOOK KIM, JOUNG-HYE EOM, Functional Ceramics Laboratory, Department of Materials Science and Engineering, The University of Seoul, Seoul, Republic of Korea

## SYMPOSIUM CG

# PROGRESS IN NANO-LAMINATED TERNARY CARBIDES AND NITRIDES (MAX PHASES) AND DERIVATIVES THEREOF (MXENES)

## Oral Presentations

## Session CG-1

## Transport and Electronic Properties, Ab Initio Calculations and Structural Characterization of MAX and MXene Phases

## CG-1:IL01 Anisotropy of MAX Phase's Transport Properties

**S. DUBOIS**, W. YU, V. MAUCHAMP, V. GAUTHIER-BRUNET, T. CABIOCH, Institut PPRIME, CNRS/Université de Poitiers/ENSMA, UPR 3346, Bât. SP2MI, Futuroscope-Chasseneuil Cedex, France; L. GENCE, L. PIRAUXT, Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, BSMA/FHyN, Louvain-la-Neuve, Belgium

## CG-1:IL02 A Genomic Approach to Properties of MAX Phase Compounds

**WAI-YIM CHING**, S. ARYAL, R. SAKIDJA, University of Missouri, Kansas City, MO, USA; M.W. BARSOUM, Drexel University, Philadelphia, PA, USA

## CG-1:IL03 Atomic Vibration and Anisotropic Transport in MAX phases

**G. HUG**, L. ANDREA, ONERA-CNRS, Chatillon, France; L. CHAPUT, IJL Université de Nancy, France; A. TOGO, Kyoto University, Japan

## CG-1:IL04 Magnetic MAX Phases Based on Mn from First Principles and Thin Film Synthesis

**A.S. INGASON**, J. ROSEN, Thin Film Physics, Department of Physics, Chemistry and Biology (IFM), Linköping University, Linköping, Sweden

## CG-1:IL05 MAX Phases and MXene Valence Electron Excitations with Nanometre Scale Resolution

**V. MAUCHAMP**, D. MAGNE, T. CABIOCH, Institut Pprime, University of Poitiers-CNRS-ENSMA, Poitiers, France; M. BUGNET, G.A. BOTTON, CCEM, Mc Master University, Hamilton, Canada; M.W. BARSOUM, Drexel University, Philadelphia, USA

CG-1:IL06 Physical Insight of Superconductivity of Nb<sub>2</sub>AlC and Ta<sub>2</sub>AlC: in situ Raman Spectrometry and Density Functional Investigations

**JINGYANG WANG**, HUIMIN XIANG, High-performance Ceramics Division, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

CG-1:IL07 Temperature Dependent Phase Stability of Tin+1AlC<sub>n</sub> MAX Phases from First-principles Calculations

**A. THORE**, M. DAHLQVIST, B. ALLING, J. ROSÉN, Linköping University, Linköping, Sweden

## Session CG-2

## Room Temperature Mechanical Properties of the MAX Phases

CG-2:IL01 Neutron Diffraction Evidence for Incipient Kink Bands in Highly Textured Ti<sub>2</sub>AlC

**E.N. CASPI**, O. YEHEZKEL, Nuclear Research Centre - Negev, Beer-Sheva, Israel; M. SHAMMA, S. AMINI, A. ZHOU, V. PRESSER, M.W. BARSOUM, Drexel University, Philadelphia, PA, USA; B. CLAUSEN, S.C. VOGEL, D.W. BROWN, LANL, Los Alamos, NM, USA

## CG-2:IL02 Pressure-enforced Plasticity in MAX Phases: from Single Grains to Polycrystals

**A. GUITTON**, **A. JOULAIN**, L. THILLY, C. TROMAS, Pprime Institute, CNRS - University of Poitiers - ISAE-ENSMA, France; S. VAN PETEGEM, H. VAN SWYGENHOVEN, Paul Scherrer Institute, Villigen, Switzerland

## CG-2:IL03 Microstructure Design of MAX Phases with High Strength and Toughness

**CHUNFENG HU**<sup>1,2</sup>, DONG QU<sup>2</sup>, K. SATO<sup>1</sup>, M. ESTILI<sup>1</sup>, S. GRASSO<sup>3</sup>, H. YOSHIDA<sup>1</sup>, K. MORITA<sup>1</sup>, T. NISHIMURA<sup>1</sup>, T. SUZUKI<sup>1</sup>, B. KIM<sup>1</sup>, Y. SAKKA<sup>1</sup>, <sup>1</sup>National Institute for Materials Science, Japan; <sup>2</sup>Ningbo Institute of Material Technology and Engineering, CAS, China; <sup>3</sup>Queen Mary University of London, UK

CG-2:L04 Mechanical Properties of Ti<sub>3</sub>AlC<sub>2</sub> and Ti<sub>3</sub>AlC<sub>2</sub>/TiC Composites

**T.A. PRIKHNA**<sup>1</sup>, STAROSTINA A.V.<sup>1</sup>, BASYUK T.V.<sup>1</sup>, DUB S.N.<sup>1</sup>, OSADCHIY A.A.<sup>1</sup>, LOSHAK M.G.<sup>1</sup>, CABIOC'H T.<sup>2</sup>, CHARTIER P.<sup>2</sup>, SVERDUN V.B.<sup>1</sup>, KARPETS M.V.<sup>1,3</sup>, DEVIN L.N.<sup>1</sup>, <sup>1</sup>Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Kiev, Ukraine; <sup>2</sup>Université de Poitiers, CNRS/Laboratoire PHYMAT, UMR 6630 CNRS-Université de Poitiers SP2MI, Chasseneuil Futuroscope Cedex, France; <sup>3</sup>Institute for Problems of Materials Science of the National Academy of Sciences of Ukraine, Kiev, Ukraine

## Session CG-3

## High Temperature Mechanical, Oxidation and Thermal Properties of the MAX Phases

## CG-3:IL01 Critical Review of Creep and Oxidation Resistance of the MAX phases

**M.W. BARSOUM**<sup>1</sup>, D. TALLMAN<sup>1</sup>, B. ANASORI<sup>1</sup>, M. RADOVIC<sup>2</sup>, <sup>1</sup>Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA; <sup>2</sup>Department of Mechanical Engineering, Texas A&M University, College Station, TX, USA

CG-3:IL02 Critical Review of the Oxidation of Cr<sub>2</sub>AlC

**DONG BOK LEE**, School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, South Korea

## CG-3:IL03 Decomposition Kinetics of Max Phases In Extreme Environments - A Critical Review

**I.M. LOW**, Department of Imaging & Applied Physics, Curtin University of Technology, Perth, WA, Australia; W.K. PANG, The Bragg Institute ANSTO, Kirrawee DC, NSW, Australia

CG-3:L04 Oxidation and Crack Healing Behavior of Ti<sub>2</sub>Al(1-x)SnxC/Al<sub>2</sub>O<sub>3</sub> Composites

**GUO-PING BEI**, B.J. PEDIMONTE, M. PEZOLDT, T. FEY, P. GREIL, Ceramic and Glass Group, Department of Materials Science, University of Erlangen-Nürnberg, Erlangen, Germany

## CG-3:IL05 Current Understanding of Tribology of MAX Phases and Their Composites during Dry Sliding

**S. GUPTA**, Advanced Materials Research Group, Dept. of Mechanical Engineering, University of North Dakota, Grand Forks, ND, USA

## CG-3:IL06 High Temperature Oxidation, Thermal Shock and Crack Healing Behaviors of MAX Phases

**SHIBO LI**, Center of Materials Science and Engineering, School of Mechanical and Electronic Control Engineering, Beijing Jiaotong University, Beijing, China

CG-3:L07 Study of the Thermal Stability in Air of Ti<sub>2</sub>Al(C<sub>1-x</sub>N<sub>x</sub>) Solid Solutions

**T.A. PRIKHNA**<sup>1</sup>, D. LITZKENDORF<sup>2</sup>, T. CABIOCH<sup>3</sup>, T.V. BASYUK<sup>1</sup>, **A.V. STAROSTINA**<sup>1</sup>, P. CHARTIER<sup>3</sup>, D.V. TURKEVICH<sup>1</sup>, M.V. KARPETS<sup>1,4</sup>, V.V. KOVYLAEV<sup>1</sup>, <sup>1</sup>Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Kiev, Ukraine; <sup>2</sup>Institut für Photonische Technologien, Jena, Germany; <sup>3</sup>Université de Poitiers, CNRS/Laboratoire PHYMAT, UMR 6630 CNRS Université de Poitiers SP2MI, Chasseneuil Futuroscope Cedex, France; <sup>4</sup>Institute for Problems in Material Science of the National Academy of Sciences of Ukraine, Kiev, Ukraine

## CG-3:L08 MAX Phases Approach in Understanding of Erosion, Corrosion and Oxidation Resistance Properties of TiAlSiCN and TiCrSiCN Compositions

**A. MANULYK**, Owens Illinois, Perrysburg, OH USA; K MYKHALENKO, NTUU KPI, Kiev, Ukraine

## Session CG-4

## Synthesis and Fabrication of MAX and MXene Phases and Composites

## CG-4:IL01 Synthesis of the MAX Phases by Pulse Discharge Sintering, a Review

**ZHENGMING SUN**, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

## CG-4:IL02 MAX Phase Single Crystal Synthesis

**T. OUISSE**, E. SARIGIANNIDOU, O. CHAIX, H. ROUSSEL, B. DOISNEAU, D. CHAUSSENDE, LMGP, INPGrenoble, Grenoble, France

## CG-4:IL03 MAX Phases Thin Film Synthesis by Thermal Annealing Techniques

**T. CABIOC'H**, M. JAOUEN, D. MAGNE, M. ALKAZAZ, M. BUGNET, V. MAUCHAMP, Département de Physique et Mécanique des Matériaux, Institut P, University of Poitiers-CNRS-ENSMA, Chasseneuil-Futuroscope, France

**CG-4:IL04 Structure Evolution during Low Temperature Growth of MAX Phase Thin Films**

**J.M. SCHNEIDER**, Materials Chemistry, RWTH Aachen University, Aachen, Germany

**CG-4:IL05 Cold Spraying of MAX Phases**

**F. GAERTNER**, H. GUTZMANN, T. KLASSEN, Faculty of Mechanical Engineering, Helmut Schmidt University, Hamburg, Germany; D. HOECHE, C. BLAWERT, Department of Corrosion and Magnesium Surface Technology, Helmholtz-Zentrum Geesthacht GmbH, Geesthacht, Germany; B. ANASORI, M. W. BARSOUM, Department of Materials Science and Engineering, Drexel University, Philadelphia, USA

**CG-4:IL06 On the MAX-phase Matrix Composites Processed using Spark Plasma Sintering**

**M. RADOVIC**, Department of Mechanical Engineering Materials Science and Engineering Program Texas A&M University, College Station, TX, USA

**CG-4:IL07 Synthesis and Characterization of (Cr<sub>x</sub>V<sub>1-x</sub>)n+1AlC<sub>n</sub> Solid Solutions**

**T.V. BASYUK**, T.O. PRIKHNA, Institute for Superhard Materials, Kyiv, Ukraine; P. CHARTIER, T. CABIOC'H, Institut P' UPR 3346 CNRS, Université de Poitiers, ENSMA, SP2MI, Futuroscope, France

**CG-4:IL08 Towards Understanding the Formation Mechanism of MAX-phase - In Situ TEM Studies on the Crystallization of V<sub>2</sub>AlC Thin Film**

**JIE ZHANG<sup>1\*</sup>**, M. BORNHOEFFT<sup>2</sup>, M. BABEN<sup>1</sup>, L. SHANG<sup>1</sup>, J. MAYER<sup>2</sup>, J.M. SCHNEIDER<sup>1</sup>, <sup>1</sup>Materials Chemistry, RWTH Aachen University, Aachen, Germany; <sup>2</sup>Central Facility for Electron Microscopy, RWTH Aachen University, Aachen, Germany; \*current address: High-performance Ceramic Division, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

**CG-4:IL09 Effects of Spatial Distribution of Reactants on Formation of Ti<sub>3</sub>SiC<sub>2</sub>-based Ceramic Matrix Composites through Combustion Synthesis**

**P.V. ISTOMIN**, A.V. NADUTKIN, V.E. GRASS, Institute of Chemistry KomiSC UrB RAS, Syktyvkar, Russian Federation

**CG-4:IL10 A Novel MAX Phase-derived Composite having Unexpectedly Excellent Wear Resistance and Anomalous Flexural Strength**

H. ZHANG, **XIAOHUI WANG**, Z.J. LI, M.Y. LIU, Y.C. ZHOU, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

**CG-4:IL11 Synthesis and Microstructure of Layered-ternary TiAlN Thin Films**

**A. RIZZO**, M. MASSARO, L. MIRENGHI, R. TERZI, L.TAPFER, D. VALERINI ENEA - Italian National Agency for New Technologies, Energy and the Sustainable Economic Development, Technical Unit for Materials Technologies - Brindisi Research Center, Brindisi, Italy

**CG-4:IL12 Fabrication of Dense TiC-Ti<sub>3</sub>SiC<sub>2</sub> Composites from TiC Powders Chemically Modified with Gaseous SiO**

**E.I. ISTOMINA**, P.V. ISTOMIN, A.V. NADUTKIN, V.E. GRASS, Institute of Chemistry KomiSC UrB RAS, Syktyvkar, Russian Federation

**Session CG-5****Functional Properties and Applications of the MAX and MXene Phases****CG-5:IL01 MXenes: 2D Hosts for Ions in Electrochemical Energy Storage Systems**

**M. NAGUIB**, M. LUKATSKAYA, O. MASHTALIR, Y. GOGOTSI, M. BARSOUM, Department of Materials Science & Engineering, and A.J. Drexel Nanotechnology Institute, Drexel University, Philadelphia, PA, USA

**CG-5:IL02 MAX Phases for Nuclear Applications**

E.N. HOFFMAN, **B.L. GARCIA-DIAZ**, R.L. SINDELAR, Savannah River National Laboratory, Aiken, SC, USA; D.J. TALLMAN, M.W. BARSOUM, Drexel University, Philadelphia, PA, USA

**CG-4:IL03 Ion Irradiation of MAX Phases and Implications for Use in Nuclear Reactors**

**D.P. RILEY**, S.C. MIDDLEBURGH, G.R. LUMPKIN, S. MORICCA, Australian Nuclear Science and Technology Organisation, Lucas Heights, NSW, Australia

**CG-4:IL04 Ion Irradiation of MAX Phase Thin Films: Influence of the Nanolaminated Structure and the Chemical Composition**

**M. BUGNET**, Department of Materials Science and Engineering, CCEM-McMaster University, Hamilton, ON, Canada; V. MAUCHAMP, T. CABIOC'H, F. MORTREUIL, M. JAOUEN, Institut Pprime, CNRS-Université de Poitiers-ENSMA, Poitiers, France; E. OLIVIERO, CSNSM, CNRS-IN2P3-Université Paris-Sud, Orsay, France; P. EKLUND, Thin Film Physics Division, Linköping University, Linköping, Sweden

**CG-4:IL05 Effect of Neutron Irradiation on Select MAX Phases**

**D.J. TALLMAN<sup>1</sup>**, E. HOFFMAN<sup>2</sup>, E.N. CASPI<sup>1\*</sup>, B. GARCIA-DIAZ<sup>2</sup>, G. KOHSE<sup>3</sup>, R.L. SINDELAR<sup>2</sup>, M.W. BARSOUM<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA; <sup>2</sup>Savannah River National Lab, Savannah River Site, Aiken, SC, USA; <sup>3</sup>MIT Nuclear Reactor Laboratory, Massachusetts Institute of Technology, Cambridge, MA, USA; \*On sabbatical leave from the Nuclear Research Centre - Negev, Israel

**CG-4:IL06 Microwave Synthesis of MAX Phase Material and Its conversion to Ultrathin 'MAXene' Nanosheets by Shear-induced Exfoliation: Assessment of Functional Properties**

**K.V. MAHESH**, V. LINSHA, S.S. VAISAKH, S. BALANAND, A. PEERMOHAMED, S. ANANTHAKUMAR, Functional Materials Section, Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology Thiruvananthapuram, Kerala, India

**Poster Presentation****CG-P01 Characterization of Minor Constituents of Ti<sub>3</sub>SiC<sub>2</sub>-based Composites Prepared from Leucoxene Concentrate**

**V.E. GRASS**, P.V. ISTOMIN, A.V. NADUTKIN, Institute of Chemistry KomiSC UrB RAS, Syktyvkar, Russian Federation

**SYMPOSIUM CH****POROUS CERAMICS FOR ENVIRONMENTAL PROTECTION, ENERGY-RELATED TECHNOLOGIES AND ADVANCED INDUSTRIAL CYCLES****Oral Presentations****Session CH-1****Novel Processing and Synthesis of Porous Ceramics (Nano to Macro)****CH-1:IL01 The Application of Fluorotopaz Reaction Route for Fabrication Porous Mullite Ceramics**

**A. PYZIK**, C. HAN, R. NEWMAN, C. TODD, M. MALANGA, The Dow Chemical Company, Midland, MI, USA

**CH-1:IL02 Fabrication, Structure Control and Functional Characteristics of Hierarchically Structured Porous Ceramics**

**CHANG-AN WANG**, State Key Lab of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, Beijing, P.R. China

**CH-1:IL03 Synthesis of MFI Zeolite Membranes by Cross-Flow Seeding Procedure**

**C. ALGIERI**, L. DONATO, A. GAROFALO, E. DRIOLI, National Research Council Institute for Membrane Technology (ITM-CNR) c/o The University of Calabria, Rende CS, Italy; O. ALHARBI, King Abdulaziz City for Science and Technology (KACST), Saudi Arabia

**CH-1:IL04 Applications and Character of Porous Structures Produced Via Robocasting**

**J. CESARANO**, J. STUECKER, M. NIEHAUS, Robocasting Enterprises LLC, Albuquerque, NM, USA

**CH-1:IL05 Synthesis of Particle-stabilized Zirconia Foam: Influence of Amphiphile Concentration on the Agglomeration of Zirconia Particles and Sintering Temperature on the Strut Wall Thickness**

**R. AHMAD<sup>1,2</sup>**, JANG-HOON HA<sup>2</sup>, IN-HYUCK SONG<sup>1,2</sup>, <sup>1</sup>University of Science & Technology (UST), Daejeon, Republic of Korea, <sup>2</sup>Engineering Ceramic Department, Korea Institute of Materials Science, Gyeongnam, Republic of Korea

**CH-1:IL06 Porous Silicate Materials: Synthesis and Control of the Microstructure**

**C.S. PEYRATOUT**, A. DE MARCOS, B. NAIT-ALI, D.S. SMITH, C. PAGNOUX, GEMH-ENSCI Centre Européen de la Céramique, Limoges, France

**CH-1:IL07 Highly Transparent Glass Foams**

**M. SCHEFFLER**, University of Magdeburg, Institute for Materials and Joining Technology, Magdeburg, Germany

**CH-1:L08 Microstructure Control of Particle-Stabilized Mullite Foams and Emulsions**

**E.R. KUPP**, G.L. MESSING, Penn State University, University Park, PA, USA;  
A.J. PYZIK, Dow Chemical Co, Midland, MI, USA

**CH-1:L09 Gelcasting, Microstructures and Mechanical Properties of Porous S-SiC Ceramics**

**HAIBO WU<sup>1,2</sup>**, YINSHENG LIA<sup>2</sup>, YONGJIE YANA, ZHENGREN HUANGA,  
XUEJIAN LIU<sup>1</sup>, <sup>1</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; <sup>2</sup>University of the Chinese Academy of Sciences, Beijing, China

**CH-1:L10 Processing of Ceramic Membranes with successive Macro-, Meso- and Microporous Layers**

**T. VAN GESTEL**, W.A. MEULENBERG, H.P. BUCHKREMER, Forschungszentrum Jülich, IEK-1, Germany

**CH-1:L11 Macroporous Ceramics by Gelation Freezing Route Using Gelatin**

**M. FUKUSHIMA**, T. OHJI, Y.-I. YOSHIZAWA, National Institute of Advanced Industrial Science and Technology, AIST, Nagoya, Japan

**CH-1:L12 Geopolymer Foams by Gelcasting**

**P. COLOMBO<sup>1</sup>**, M. STROZI CILLA<sup>1</sup>, M.R. MORELLI<sup>2</sup>, <sup>1</sup>Dipartimento di Ingegneria Industriale, University of Padova, Padova, Italy; <sup>2</sup>Graduate Program on Materials Science and Engineering, Federal University of São Carlos, Federal University of São Carlos, Brazil

**CH-1:L13 Multi-layered Porous Ceramic Membranes with Tunable Porosity and Zeta-potential for Filtration and Purification Technology**

**C. BRANDES**, L. TRECCANI, K. REZWAN, Advanced Ceramics, University of Bremen, Bremen, Germany

**CH-1:L14 Fabricating of Diatomite Based Ceramic Water Filter by A Novel Casting Method**

**E. AL<sup>1</sup>, U.E. ANIL<sup>1</sup>, K. KAYACI<sup>1</sup>, F. KARA<sup>2</sup>**, <sup>1</sup>Kaleseramik Canakkale Kalebodur Seramik San. A.S., Canakkale, Turkey; <sup>2</sup>Department of Materials Science and Engineering, Anadolu University, Eskisehir, Turkey

**Session CH-2****Physics, Chemistry Structure and Properties of Porous Systems****CH-2:L01 Surface Chemistry of Cellular Glasses**

**B. REINHARDT**, N. ANDERS, C. KUESTER, **D. ENKE**, Universität Leipzig, Institute of Chemical Technology, Leipzig, Germany

**CH-2:L02 Chemistry and Hydrogen Gas Permeation Properties of Microporous Amorphous Silica-based Ceramic Membranes**

**Y. IWAMOTO**, Department of Frontier Materials, Graduate School of Engineering, Nagoya Institute of Technology, Nagoya, Japan

**CH-2:L03 Development and Mechanical Characterization of Novel Ceramic Foams Fabricated by Gelcasting**

**J.M. TULLIANI<sup>1</sup>**, M. LOMBARDI<sup>1</sup>, P. PALMERO<sup>1</sup>, M. FORNABAIO<sup>1</sup>, L.J. GIBSON<sup>2</sup>, <sup>1</sup>PoliTecnicco di Torino, Department of Applied Science and Technology, Torino, Italy; <sup>2</sup>Department of Materials Science and Engineering, MIT, Cambridge, MA, USA

**CH-2:L04 Control of the Thermal Radiative Properties of Ceramic Foams: Application for the Design of Efficient Volumetric Solar Receivers**

**B. ROUSSEAU**, S. GUEVELOU, G. DOMINGUES, LTN UMR 6607, Nantes, France; J. VICENTE, IUSTI UMR 7343, Marseille, France; C. CALIOT, G. FLAMANT, PROMES UPR 8521, Odeillo, France

**CH-2:L05 Thermal Properties of Ceramics**

**D.S. SMITH**, GEMH-ENSCI Centre Européen de la Céramique, Limoges, France

**CH-2:L06 Ceramic Capillary Membranes with Adjustable Pore Size for Controlled Virus Retention**

**J. WERNER**, B. BESSER, S. KROLL, K. REZWAN, University of Bremen, Advanced Ceramics, Bremen, Germany

**CH-2:L07 Thermomechanical Properties of Macro-porous Alumina**

**V.R. SALVINI**, D. SPINELLI, University of São Paulo, São Carlos School of Engineering, Department of Materials Engineering, EESC-USP São Carlos, SP, Brazil; V.C. PANDOLFELLI, Federal University of São Carlos, Department of Materials Engineering, Materials Microstructure Engineering Group, UFSCar, DEMa-GEMM São Carlos, SP, Brazil

**Session CH-3****Advances in the Characterization of the Porous Structure****CH-3:IL01 Recent Advances in the Structural Characterization of Porous Ceramics**

**M. THOMMES**, Quantachrome Corporation, Boynton Beach, FL, USA

**CH-3:IL02 Characterization of Aerogels - Challenges and Prospects**

**G. REICHENAUER**, Bavarian Center for Applied Energy Research, Würzburg, Germany

**CH-3:IL03 Characterization of Porous Materials using High Resolution SEM**

**A. ENDO**, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

**CH-3:IL04 Characterization of Cellular Ceramics and MMC by in Situ Computer Tomography**

**H. BEREK**, J. HUBALKOVA, C.G. ANEZIRIS, TU Bergakademie Freiberg, Institute of Ceramics, Glass and Construction Materials, Freiberg, Germany

**CH-3:IL05 Evaluating Porosity in Cordierite Diesel Particulate Filter Materials: Advanced X-ray Techniques and New Statistical Analysis Methods**

A. KUPSCHE, A. LANGE, M.P. HENTSCHEL, Y. ONEL, T. WOLK, A. STAUDER, K. EHRIG, B.R. MÜLLER, **G. BRUNO**, BAM, Federal Institute for Materials Research and Testing, Berlin, Germany

**Session CH-4****Modelling and Simulation of Porous Structures and Properties****CH-4:IL01 Modelling of Cellular Structures on the Basis of Computer Tomographical Data**

**T. FEY**, B. CERON-NICOLAT, B. ZIERATH, M. STUMPF, F. EICHORN, A. KOSHRAVANI, P. GREIL, University Erlangen-Nürnberg (FAU), Erlangen, Germany

**CH-4:IL02 CFD Approach to Analyze and Design Thermo-fluid Dynamics Properties of Ceramic Foams and Lattices**

**M. BARBATO**, ICIMSI – DTI – SUPSI, Manno, Switzerland

**CH-4:IL03 Adsorption Deformation of Micro- and Mesoporous Solids**

**A.V. NEIMARK**, Rutgers University, Piscataway, USA

**CH-4:IL04 Study of Pore Grain-boundary Interactions in the Final Stage of Sintering using the Phase-field Method**

**J. HOETZER**, G. BARTHELEMY, B. NESTLER, Karlsruhe Institute of Technology (KIT), Baden-Württemberg, Germany

**CH-4:IL05 Modeling the Properties of Cellular Ceramics: From Foams to Lattices and Back to Foams**

**A. ORTONA**, SUPSI, Manno, Switzerland

**CH-4:IL06 Quantitative Morphology-transport Relationships for Disordered Porous Media by Morphological Reconstruction and High-performance Computing of Flow and Transport**

**U. TALLAREK**, Department of Chemistry, Philipps-Universität Marburg, Marburg, Germany

**Session CH-5****Applications of Porous Ceramics****CH-5:IL01 Porous Medium Combustion Technology and its Application to Internal Combustion Engines**

**M. WECLAS**, Georg-Simon-Ohm-University of Applied Sciences Nuremberg, Technische Hochschule Nürnberg, Nuernberg, Germany

**CH-5:IL02 Porous Silicas for Enhanced Drug Release**

**A.M. CREAN<sup>1</sup>**, R.J. AHERN<sup>1</sup>, J.P. HANRAHAN<sup>2</sup>, J.M. TOBIN<sup>2</sup>, K.B. RYAN<sup>1</sup>, <sup>1</sup>School of Pharmacy, University College Cork, Ireland; <sup>2</sup>Glantreo Ltd, Cork, Ireland

**CH-5:IL03 CeO<sub>2</sub>-based Ceramic Foams for Syngas Production by a Solar Driven Redox Cycle**

**A. BONK<sup>1,2</sup>**, M. GORBAR<sup>1</sup>, A. ZUETTEL<sup>1</sup>, A. STEINFELD<sup>3</sup>, U.F. VOGL<sup>1,2</sup>, <sup>1</sup>Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Hydrogen & Energy, Dübendorf, Switzerland; <sup>2</sup>University of Freiburg, Department of Crystallography, Freiburg i. Brsg.; <sup>3</sup>Department of Mechanical and Process Engineering, ETH Zurich, Zurich

**CH-5:L04 Lightweight Bi-layered Ceramic Tiles for Novel Applications**

**R.M. NOVAIS**, M.P. SEABRA, J.A. LABRINCHA, Materials and Ceramic Engineering Department, CICECO University of Aveiro, Aveiro, Portugal

**CH-5:L05 Thermochemical Solar Energy Storage via Functionalized Porous Ceramic Structures**

**C. AGRAFIOTIS**, M. ROEB, C. SATTLER, Deutsches Zentrum für Luft- und Raumfahrt/German Aerospace Center - DLR, Köln, Germany

**CH-5:L06 Ceramic Foams for Energy Related Applications**

**U.F. VOGT**<sup>1,2</sup>, A. BONK<sup>1,2</sup>, M. GORBAR<sup>1</sup>, A. STEINFELD<sup>3</sup>, A. ZUETTEL<sup>1</sup>,

<sup>1</sup>Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Hydrogen & Energy, Dübendorf, Switzerland; <sup>2</sup>University of Freiburg, Institute of Earth and Environmental, Department of Crystallography; <sup>3</sup>Department of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland

**CH-5:L07 Aerogel Materials for Energy**

**A. RIGACCI**, MINES ParisTech, PERSEE - Centre Procédés, Energies Renouvelables et Systèmes Énergétiques CS 10207, Sophia Antipolis Cedex, France

**CH-5:L08 Silver Nanoparticle-doped Ceramic Capillary Membranes for Enhanced Bacterial Filtration**

**S. KROLL**, J. WEHLING, K. REZWAN, University of Bremen, Advanced Ceramics, Bremen, Germany; J. KÖSER, University of Bremen, Central Analytics UFT, Bremen, Germany; P. LINDNER, C. LÜDER, S. BEUTEL, Leibniz University of Hanover, Institute of Technical Chemistry, Hanover, Germany

**CH-5:L09 Preparation of Catalyst with Architectures Dedicated to Heat and Mass Transfer Limited Processes**

**L. MOLINA-JOTEL**<sup>1, 2</sup>, F. ROSSIGNOL<sup>1</sup>, R. FAURE<sup>2</sup>, C. BERTAIL<sup>2</sup>, T. CHARTIER<sup>1</sup>, P. DEL-GALLO<sup>2</sup>, <sup>1</sup>SPCTS Laboratory, UMR CNRS 7315, CEC, Limoges, France; <sup>2</sup>Air Liquide, Centre de Recherche Claude Delorme, Jouy en Josas Cedex, France

**CH-5:L10 Porous Clay Ceramic for Environmental Technologies**

**R. SVINKA**, V. SVINKA, L. DABARE, O. LESCINSKIS, Riga Technical University Institute of Silicate Materials, Riga, Latvia

**CH-5:L11 Porous Wall Hollow Glass Microspheres (PWHGMs).... A Unique Material with Important Applications in Energy, Environmental Remediation, Security and Medicine**

**G.G. WICKS**, Wicks Consulting Services, LLC, Aiken, SC, USA

**CH-5:L12 Ceramics for Filtration**

**J. ADLER**, R. KRIEGEL, U. PETASCH, H. RICHTER, I. VOIGT, M. WEYDT, Fraunhofer IKTS, Dresden/Hermsdorf, Germany

**CH-5:L13 New Technology with SiC Porous Materials; Progress in the Development of the Diesel Vehicle Technology**

**K. OHNO**, IBIDEN Co. Ltd, Ibi-gun, Gifu Pref., Japan

**CH-5:L14 Fabrication and Properties of Ceramic Membranes for Oil Filtration**

**JUNG-HYE EOM**, YOUNG-WOOK KIM, Functional Ceramics Laboratory, Department of Materials Science and Engineering, University of Seoul, Seoul, Republic of Korea; IN-HYUCK SONG, Engineering Ceramic Group, Korea Institute of Materials Science, Changwon, Republic of Korea

**CH-5:L15 New Ultra-divided MgAl2O4-supported Bimetallic Pt-Pd catalyst. Performance Comparison with a Commercial Diesel Oxidation Catalyst (DOC)**

**S. LE BRAS**, F. ROSSIGNOL, Laboratoire de Science des Procédés Céramiques et de Traitements de Surface, UMR CNRS 7315, Centre Européen de la Céramique, Limoges, France; K. LOMBAERT, N. RAOUL, Renault, Centre Technique de Lardy, Lardy, France

**CH-5:L16 Characterization of Novel Designed Tialite-based Ceramic Filter for Aftertreatment Application**

**K. IWASAKI**, Sumika Ceramics Poland Sp.zo.o., Wrocław, Poland

**Poster Presentations****CH:P01 Fabrication of Meso-Macro Porous  $\beta$ -SiC Body by a Direct Reaction between Carbon Black Powders and Metallic Si**

**SANG WHAN PARK**, GYOUNG-SUN CHO, YUNG-CHUL JO, MI-RAE YOUN, SUNG-IL YUN, Interfacial Control Research Center, Korea Institute of Science and Technology, Seoul, Republic of Korea

**CH:P02 Porous S-SiC Membrane Supports Derived from Grain Grading and Partly Pressureless-sintering**

**YONGJIE YAN**<sup>1</sup>, HAIBO WU<sup>1, 2</sup>, YINSHENG LI<sup>1, 2</sup>, ZHENGREN HUANG<sup>1</sup>, XUEJIAN LIU<sup>1</sup>, <sup>1</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; <sup>2</sup>University of the Chinese Academy of Sciences, Beijing, China

**CH:P03 New Router to Creation of Porous Ceramics Based on Zirconia**

**O.O.GORBAN**, **O.G. MYOSLAVSKYY**, S.A. SYNYAKINA, Donetsk Institute for Physics and Engineering named after O.O.Galkin of NAS of Ukraine, Donetsk, Ukraine; Donetsk National University, Donetsk, Ukraine

**CH:P04 Mechanical and Structural Properties of Vitrified Bonded Abrasive Material depending on the Glass Composition**

**C. DURIF**, H.-J. SCHINDLER, T. GRAULE; Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland

**CH:P05 Study of Photocatalytic Degradation of Methyl Orange over CaTi<sub>x</sub>Bi<sub>1-x</sub>O<sub>3</sub> ( $x=0.0\sim0.2$ ) Catalysts**

**Z.J. WU**, X.J. HUANG, X. YAN, Hunan University, Changsha, PR. China

**CH:P06 Al<sub>2</sub>O<sub>3</sub> Preforms with Gradient Porosity for Brake Disk Application**

**A. STROJNY-NEDZA**, K. PIETRZAK, M. CHMIELEWSKI, K. JACH, Institute of Electronic Materials Technology, Warsaw, Poland

**CH:P07 Highly Ordered Magnetic Mesoporous Silicas for Effective Elimination of Carbon Monoxide**

**HYESUN LEE**, JEONG HO CHANG, Korea Institute of Ceramic Engineering and Technology, Seoul, Korea

**CH:P08 High Throughput Separation of Biomolecules with Ni-doped Magnetic Mesoporous Silicas**

**JEONG HO CHANG**, Korea Institute of Ceramic Engineering and Technology, Seoul, Korea

**CH:P09 Porous Ceramics as a Filters for Semivolatile Radionuclides Chemisorption**

**A.S. ALOY**, A.V. STRELNIKOV, E.A. PUSANSKAYA, V.G. Khlopin Radium Institute, Saint-Petersburg, Russia

**SYMPORIUM CI****CERAMIC THIN FILMS AND COATINGS FOR PROTECTIVE, TRIBOLOGICAL AND MULTIFUNCTIONAL APPLICATIONS****Oral Presentations****Session CI-1****Advances in Deposition, Surface Modification and Characterisation Techniques****CI-1:L01 Use of Raman Spectroscopy and Synchrotron Micro-Diffraction to Investigate Stress In Thermal Oxide Films: A Multiscale Approach**

**J.L. GROSSEAU-POUSSARD**<sup>1</sup>, M. GUERAIN<sup>1</sup>, **P. GOUDEAU**<sup>2</sup>, G. GEANDIER<sup>3</sup>, B. PANICAUD<sup>4</sup>, N. TAMURA<sup>5</sup>, M. KUNZ<sup>5</sup>, C. DEJOIE<sup>5</sup>, J.S. MICHA<sup>6</sup>, <sup>1</sup>LEMMA, Université de La Rochelle, France; <sup>2</sup>PPRIME CNRS-ENSMA Université de Poitiers, France; <sup>3</sup>JL CNRS-Université de Lorraine, France; <sup>4</sup>LASMIS CNRS Université Technologique de Troyes, France; <sup>5</sup>ALS Lawrence Berkeley National Laboratory, USA; <sup>6</sup>DSM, INAC/SP2M/NRS-ESRF, France

**CI-1:L02 Low Temperature Growth and Patterning of Metal Oxide Thin Film by photo-induced Chemical Solution Deposition for Printable Electronics**

**T. TSUCHIYA**, T. NAKAJIMA T. SHINODA, T. NAKAMURA, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Central 5, Tsukuba, Ibaraki, Japan

**CI-1:L03 Influence of Application Technology in the Structural Characteristics of Ceramic Coating with Advanced Anticorrosive and Tribological Properties**

**D. VELEZ**, J.M. MUÑOZ, J.A. DÍEZ, Fundación Cidetec, San Sebastián, Spain

**CI-1:L04 X-ray Nanodiffraction Characterization of Residual Stresses and Microstructure in Thin Films**

**M. STEFENELLI**<sup>1</sup>, R. DANIEL<sup>2</sup>, A. RIEDL<sup>1</sup>, M. BURGHAMMER<sup>3</sup>, C. MITTERER<sup>2</sup>, J. TODT<sup>4</sup>, J. KECKES<sup>4</sup>, <sup>1</sup>Materials Center Leoben Forschung GmbH, Leoben, Austria; <sup>2</sup>Department of Physical Metallurgy and Materials Testing, Montanuniversität Leoben, Leoben, Austria; <sup>3</sup>European Synchrotron Radiation Facility, Grenoble, France; <sup>4</sup>Erich Schmid Institute of Materials Science, Austrian Academy of Sciences and Department of Materials Physics, Montanuniversität Leoben, Leoben, Austria

**CI-1:L05 High Power Pulsed Plasma Enhanced Chemical Vapor Deposition**

**H. PEDERSEN<sup>1</sup>, D. LUNDIN<sup>2,3</sup>**, <sup>1</sup>Department of Physics, Chemistry and Biology, Linköping University, Linköping, Sweden; <sup>2</sup>Laboratoire de Physique des Gaz et Plasmas, UMR 8578 CNRS, Université Paris Sud-XI, Orsay Cedex, France; <sup>3</sup>Division of Space and Plasma Physics, School of Electrical Engineering, Royal Institute of Technology, Stockholm, Sweden

**CI-1:L06 Impedance and Dielectric Spectroscopy of Thin Films**

**R. GERHARDT**, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

**CI-1:L07 Amorphous Alumina Coatings on Glass Bottles using Direct Liquid Injection MOCVD: A Barrier Layer for Packaging Applications**

**P.-L. ETCHEPARE<sup>1</sup>, H. VERGNES<sup>2</sup>, D. SAMÉLOR<sup>1</sup>, C. BRASME<sup>3</sup>, B. CAUS-SAT<sup>2</sup>, C. VAHLAS<sup>1</sup>**, <sup>1</sup>Centre Interuniversitaire de Recherche et d'Ingénierie des Matériaux, ENSIACET/INPT, Université de Toulouse, France; <sup>2</sup>Laboratoire de Génie Chimique, ENSIACET/INPT, Université de Toulouse, France; <sup>3</sup>SGD, Mers-les-Bains, France

**CI-1:L08 Development and Durability of Thermal Barrier Systems with Pt-rich Gamma-Gamma prime Bond coatings**

**D. MONCEAU, M. BOIDOT, S. SELEZNEFF, P. AUDIGIÉ, D. OQUAB, C. ESTOURNES, A. ROUAIX-VANDE PUT, CIRIMAT, CNRS, Université de Toulouse, France; S. HAMADI, A. MALIÉ, SNECMA-SAFRAN, France**

**CI-1:L09 Molecular Thin Film Technology Based on Oxide Nanosheets**

**M. OSADA**, T. SASAKI, International Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS), Tsukuba, Japan

**CI-1:L10 Fabrication and Characterization of Optical Ceramic Layers using the Aerosol Deposition Method**

**T.N.H. NGUYEN, S. DENNELER, M. AHLSTEDT, C. SCHUH**, Corporate Technology, Siemens AG, Munich, Germany; R. MOOS, Lehrstuhl Funktionsmaterialien, Universität Bayreuth, Germany

**CI-1:L11 Synthesis by CVD and Characterization of Monolithic SiC Tubes for High Temperature Structural Applications**

**P. DRIEUX, T. CALAIS, G. COUÉGNAT, S. JACQUES, G. CHOLLON**, LCTS, CNRS, Pessac, France

**CI-1:L12 Peculiarities of Bi and In Doping of Ge-Sb-Te Materials for Phase - Change Memory Devices**

**A.A. SHERCHENKOV<sup>1</sup>, S.A. KOZYUKHIN<sup>2</sup>, A.V. BABICH<sup>1</sup>, R.I. LAZARENKO<sup>1</sup>, HUY PHUC NGUYEN<sup>2</sup>, E.N. REDICHEV<sup>1</sup>, V.G. LITVINOV<sup>3</sup>, A.V. ERMA-CHIKHIN<sup>3</sup>, <sup>1</sup>National Research University MITE, Moscow, Russia; <sup>2</sup>Kurnakov Institute of General and Inorganic Chemistry, Moscow, Russia; <sup>3</sup>Ryazan State Radioengineering University, Ryazan, Russia**

**Session CI-2****High Temperature Protective Coatings in Oxidising and Harsh Environments****CI-2:L01 Plasma-sprayed Protective Oxide Coatings in Solid Oxide Fuel Cell**

**K.H. BAIK**, C.H. PARK, H.J. PARK, Chungnam National University, Daejwon, Korea

**CI-2:L02 Self-adaptive Lubrication Mechanisms in Hard Coatings for Different Temperature Regimes**

**R. FRANZ**, C. MITTERER, Department Physical Metallurgy and Materials Testing, Montanuniversität Leoben, Leoben, Austria

**CI-2:L03 Novel Approaches to Erosion-resistant Ceramic Coatings**

**C. LEYENS**, Technische Universität Dresden, Institute of Materials Science, Chair of Materials Engineering, Dresden, Germany

**CI-2:L04 Thin TiN Film for Corrosion Resistance Enhancement in Concrete Reinforcing Steel**

**E. CERRO PRADA<sup>1</sup>, V. TORRES COSTA<sup>2</sup>, G. CECCONE<sup>3</sup>, M. MANSO SILVÁN<sup>4</sup>, <sup>1</sup>Civil Engineering Department, Universidad Politécnica de Madrid, Madrid, Spain; <sup>2</sup>Applied Physics Department, Universidad Autónoma de Madrid, Ciudad Universitaria de Cantoblanco, Madrid, Spain; <sup>3</sup>European Commission DG JRC, Unit Nanobiosciences, Ispra (VA), Italy**

**CI-2:L05 Ultra-thick, Superhard, Nanocomposite Coatings for Severe Environments**

**RONGHUA WEI**, Southwest Research Institute, San Antonio, TX, USA

**CI-2:L06 High-speed Coating by Laser Chemical Vapor Deposition**

**T. GOTO**, A. ITO, H. KATSUI, Institute for Materials Research, Tohoku University, Sendai, Japan

**CI-2:L07 Influence of the Carbon Content on the Structural Properties of Polysilylcarbodiimide-derived SiCN Coatings**

**A. KLAUSMANN**, G. MERA, E. IONESCU, R. RIEDEL, Technische Universität Darmstadt, Darmstadt, Germany

**Session CI-3****Thermal Barrier Coatings****CI-3:L01 Fundamental Challenges in Designing Next Generation Thermal Barrier Coating Systems**

**C.G. LEVI**, Materials Department, University of California, Santa Barbara, CA, USA

**CI-3:L02 Design of Thermal Barrier Coatings for Gas Turbine Applications**

**P. NYLEN**, M. GUPTA, N. CURRY, N. MARKOCSAN, University West, Trollhattan, Sweden

**CI-3:L03 Advanced Processing Methods for TBCs**

**R. VASSEN**, Forschungszentrum Jülich GmbH, IEK-1, Jülich, Germany

**CI-3:L04 Effect of Bondcoat Composition on the Interface Chemistry of YSZ including Re-oxide for TBC by Electron Beam PVD**

**YOON-SUK OH<sup>1</sup>, CHAN-YOUNG PARK<sup>1,2</sup>, YOUNG-HWAN YANG<sup>1</sup>, SEONG-WON KIM<sup>1</sup>, SUNG-MIN LEE<sup>1</sup>, HYUNG-TAE KIM<sup>1</sup>, DAE-SOON LIM<sup>2</sup>, BYUNG-KOOG JANG<sup>3</sup>, <sup>1</sup>KICET, Icheon, Gyeonggi-do, Korea; <sup>2</sup>Korea University, Korea; <sup>3</sup>NIMS, Korea**

**CI-3:L05 Advanced Characterisation of Thermal Barrier Coatings**

**F. CERNUSCHI**, RSE Spa Ricerca sul Sistema Energetico, Milano, Italy

**CI-3:L06 Ceramic Thermal Barrier Coatings on Complex Geometries for Hypersonic Applications**

**M.L. SESSO<sup>1,2</sup>, C.C. BERNDT<sup>1,2,3</sup>, S.Y. KIM<sup>1</sup>, A.S.M. ANG<sup>1</sup>**, <sup>1</sup>Industrial Research Institute Swinburne (IRIS), Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, Australia; <sup>2</sup>Defence Materials and Technology Centre, Melbourne, Australia; <sup>3</sup>Department of Materials Science and Engineering, University of Stony Brook, NY, USA

**CI-3:L07 Structures and Thermal Conductivities of Lanthanum/Gadolinium Zirconate TBCs Fabricated by Suspension Plasma Spray**

**SEONGWON KIM<sup>1</sup>, CHANG-SUP KWON<sup>1</sup>, YOON-SUK OH<sup>1</sup>, SUNG-MIN LEE<sup>1</sup>, HYUNG-TAE KIM<sup>1</sup>, BYUNG-KOOG JANG<sup>2</sup>, <sup>1</sup>Engineering Ceramic Center, Korea Institute of Ceramic Engineering and Technology, Icheon, Korea; <sup>2</sup>High Temperature Materials Unit, National Institute of Materials Science, Tsukuba, Japan**

**Session CI-4****Tribological Thin Films and Coatings****CI-4:L01 State of the Art and Recent Advancements of Thermally Spray Hardmetal Coatings**

**L.-M. BERGER**, Fraunhofer IWS, Dresden, Germany

**CI-4:L02 Nanoindentation Cartography and Tomography for the Determination of Local Mechanical Properties**

**C. TROMAS**, X. MILHET, J.C. STINVILLE, C. TEMPLIER, P. VILLECHASE, Institut Pprime, Département de Physique et Mécanique des Matériaux, UPR 3346 CNRS - Université de Poitiers - ENSMA, SP2MI, Chasseneuil Futuroscope Cedex, France

**CI-4:L03 Supra-lubrication of Zinc Oxide Coatings**

**M. TOSA**, M. SASAKI, M. GOTO, A. KASAHARA, H. SUZUKI, H. HONDA, National Institute for Materials Science (NIMS), Tsukuba, Japan

**CI-4:L04 Advances in the Deposition of Well-adhered Diamond Coatings onto Co-cemented Tungsten Carbides**

**R. POLINI**, Università di Roma Tor Vergata, Dipartimento di Scienze e Tecnologie Chimiche, Roma, Italy

**CI-4:L05 Durability Assessment of Photocatalytically Active Coatings**

**A. SEVER SKAPIN**, V. DUCMAN, Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia

**CI-4:L06 The Effect of Surfactant on Corrosion and Wear Properties on a Electroless NiPW-Al<sub>2</sub>O<sub>3</sub>(particle) Composite Coating**

**S. TASCI**, C. OZDEN, M. ANIK, Eskisehir Osmangazi University, Department of Metallurgical and Materials Engineering, Eskisehir, Turkey

**Session CI-5****Smart and Multifunctional Thin Films and Coatings****CI-5:L01 Recent Progress in the Field of Multicomponent Bioactive Nanostructured Films**

**D.V. SHTANSKY**, E.A. LEVASHOV, I.V. BATENINA, National University of Science and Technology "MISIS", Moscow, Russia; N.A. GLOUSHANKOVA, N.Y. ANISIMOVA, M.V. KISELEWSKI, Blokhin Russian Cancer Research Center of the Russian Academy of Medical Sciences, Moscow, Russia; I.V. RESHETOV, Hertsen Moscow Oncological Research Institute, Moscow, Russia

**CI-5:IL02 Pulsed Magnetron Sputtering of Novel Multifunctional Thin Films and Coatings**

**J. VLCEK**, J. REZEK, J. KOHOUT, University of West Bohemia, Plzen, Czech Republic

**CI-5:IL03 Oxide Layers with Ferro and Ferrimagnetic Characteristics Formed on Aluminum by Plasma Electrolytic Oxidation**

**V.S. RUDNEV**, V.P. MOROZOVA, I.V. LUKIYANCHUK, M.V. ADIGAMOVA, I.A. TKACHENKO, A.YU. USTINOV, Institute of chemistry FEB RAS, Vladivostok, Russia

**CI-5:IL04 Hydrophilic Ceramic Glazes for Sanitary Ware for Single Firing**

**F. KNIES**, T. GRAULE, Empa - Swiss Federal Laboratories for Materials Science and Technology, Duebendorf, Switzerland; L. GAUCKLER, ETH - Swiss Federal Institute of Technology, Zürich, Switzerland; W. FISCHER, Laufen Bathrooms AG, Laufen, Switzerland; C. ANEZIRIS, TU Bergakademie Freiberg, Freiberg, Germany

**CI-5:IL05 Novel Thin Film Nitrides for Applications as Thermoelectric Materials**

**P. EKLUND**, S. KERDSONGPANYA, B. ALLING, Thin Film Energy Materials Group, Thin Film Physics Division, Dept. of Physics, Cehmistry and Biology (IFM), Linköping University, Linköping, Sweden

**CI-5:IL06 Transparent Layered Hybrid Films Possessing Multi-functionalities including Excellent Dynamic Dewetting, Anti-corrosion and Self-healing Properties**

**A. HOZUMI**, C. URATA, B. MASHEDER, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

**CI-5:IL07 Catalytically Active Cobalt-copper Oxide Layers on Aluminum and Titanium**

**I.V. LUKIYANCHUK**, V.S. RUDNEV, L.M. TYRINA, I.V. CHERNYKH, P.M. NEDOZOROV, Institute of Chemistry FEB RAS, Vladivostok, Russia

**CI:P03 Model Research on Deposition of Pure Aluminium Oxide Layers by MOCVD Method**

**A. SAWKA**, A. KWATERA, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Cracow, Poland

**CI:P04 Model Research on Synthesis of Al<sub>2</sub>O<sub>3</sub>-C Layers by MOCVD**

**A. SAWKA**, **A. KWATERA**, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Cracow, Poland

**CI:P05 Mullite-rare Earth Silicate EBC Coatings**

**KEE SUNG LEE**, FAN JIE FEN, School of Mechanical Systems Engineering, Kookmin University, Seoul, Korea

**CI:P06 Oxidation Protective Coatings for Ceramics by Pack Cementation Methods**

**F. BEZZI**, G. MAGNANI, ENEA-UTTMATF, Faenza (RA), Italy; A. BRENTARI, E. BURRESI, CERTIMAC S.C.a.r.l. Faenza (RA), Italy

**CI:P07 Manufacturing of Ceramic Filters Impregnated with Silver Nanoparticles**

**W. ACCHAR<sup>1</sup>**, G. CABALA<sup>2</sup>, <sup>1</sup>Physics Department, Federal University of Rio Grande do Norte, Natal, Brazil; <sup>2</sup>Federal Institut of Education, Science and Technology, Bahia, Brazil

**CI:P08 Mechanical Properties and Oxidation Resistance of Co-sputtering Deposited Zr-Y-N Coatings**

**ZHOUCHEUNG WANG**, ZHENGTAO WU, ZHENG BING QI, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China

**CI:P09 Nanoceramic Coatings for Corrosion Protection of Stainless Steel AISI 4140 in Sulfuric Acid and Chloride Ions**

**A. HORTÊNCIO MUNHOZ**, D. QUERINO DOMINGUES, F. FABIANO TOMÉ, L. FIGUEIREDO DE MIRANDA, T. JOCELEN MASSON, **S. BRAUNSTEIN FALDINI**, Universidade Presbiteriana Mackenzie, Sao Paulo/SP, Brasil

**CI:P10 Plasma Torch for Supersonic Coatings at Atmospheric Pressure**

**F.R. CALIARI**, D.A.P. REIS, Universidade Federal de São Paulo, São José dos Campos, SP, Brazil; **G. PETRACONI**, R. SILVA, Instituto Tecnológico Aeroespacial, São José dos Campos, SP, Brazil; L.I. CHARAKHOSVKI, A. ESSIPTCHOUK, Luikov Heat- and Mass Transfer Institute, Minsk, Belarus

**CI:P11 Comparison of the Ablation Mechanism of C/C-SiC Composite under Atmospheric and Low Pressure**

**R.J. SILVA**, H.S. MACIEL, T.M.B. CAMPOS, A.A. MARTIN, G. PETRACONI, Technological Institute of Aeronautics, Sao José dos Campos, SP, Brazil; **A.M. ESSIPTCHOUK**, Luikov Heat- and Mass Transfer Institute, Minsk, Belarus

**CI:P12 Surface Performance of Ternary Ti<sub>x</sub>Ta<sub>1-x</sub>N Thin Films**

**A. SKARMOUTSOU<sup>1</sup>**, L.E. KOUTSOKERAS<sup>2,3</sup>, **P. PSYLLAKI<sup>4</sup>**, C. CHARITIDES<sup>1</sup>, G. ABADIAS<sup>3</sup>, P.PATSALAS<sup>5</sup>, <sup>1</sup>School of Chemical Engineering, National Technical University of Athens, Athens, Greece; <sup>2</sup>Research Unit for Nanostructured Materials Systems, Department of Mechanical Engineering and Materials Science and Engineering, University of Technology, Limassol, Cyprus; <sup>3</sup>Université de Poitiers, Laboratoire de Métallurgie Physique, UMR CNRS 6630, SP2MI, Futuroscope-Chasseneuil, France; <sup>4</sup>Department of Mechanical Engineering, Technological Education Institute of Piraeus, Egaleo, Greece; <sup>5</sup>Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece

**CI:P13 Oxide Layers Formed on FeCrAl Steel Foil Coated with Pt and Al Films**

**K. RESZKA**, Koszalin University of Technology, Institute of Technology and Education, Koszalin, Poland; Z. ZUREK, A. JARON, Cracow University of Technology, Institute of Inorganic Chemistry, Krakow, Poland; M. SZCZYPLINSKI, TERMEX Ltd., Koszalin, Poland

**Session CI-6****Modelling and Simulation of Coatings and Films****CI-6:IL01 Temperature Dependent 4-, 5- and 6-fold Coordination of Aluminum in MOCVD-grown Amorphous Alumina Films: From Local Coordination to Material Properties**

**A.N. GLEIZES**, CIRIMAT, CNRS-Université de Toulouse, Toulouse, France

**CI-6:IL02 Modeling and Measurement of Thermal Resistance at Interfaces**

**YIBIN XU**, National Institute for Materials Science, Tsukuba, Ibaraki, Japan

**CI-6:IL03 Automated Creep-stress/Water Vapor Degradation Modeling of Ceramic Matrix Composite Combustor Liners**

**M. VAN ROODE**, Mark van Roode & Associates, San Diego, CA, USA; M.K. FERBER, Oak Ridge National Laboratory, Oak Ridge, TN, USA

**CI-6:IL04 Systematic Theoretical Search for Alloys with Increased Thermal Stability for Advanced Hard Coatings Applications**

**H. LIND**, F. TASNADI, I.A. ABRIKOSOV, Department of Physics, Chemistry and Biology (IFM), Linköping University, Linköping, Sweden

**CI-6:IL06 Phase Stability and Elastic Properties of Hard Coating Phases Studied by ab Initio Calculations**

**D. MUSIC**, J.M. SCHNEIDER, Materials Chemistry, RWTH Aachen University, Aachen, Germany

**CI-6:IL07 Theory for Accelerated Materials Design: New Tool for the 3d Millennium Materials Science**

**I.A. ABRIKOSOV**, IFM, Linköping University, Linköping, Sweden

**Poster Presentations****CI:P01 Surface Modification of Ceramic Materials to Improve their Wettability by Metal**

**K. JACH**, A. SIDOROWICZ, A. WAJLER, H. WEGLARZ, U. BRYKALA, Institute of Electronic Materials Technology, Warsaw, Poland

**CI:P02 Deposition and Characterization of Microstructure and Properties of the Powder Coatings TiO<sub>2</sub>+Al<sub>2</sub>O<sub>3</sub> Formed by Multi-chamber Gas-dynamic Accelerator**

**M.G. KOVALEVA**, M.S. PROZOROVA, M.Y. ARSEENKO, Belgorod State National Research University, Belgorod, Russia; Y.N. TYURIN, O.V. KOLIS-NICHENKO, Paton Electric Welding Institute NANU, Kyiv, Ukraine

## SYMPOSIUM CJ ADVANCES IN ELECTROCERAMICS

### Oral Presentations

#### Session CJ-1

##### Dielectrics and Microwave Materials

**CJ-1:L01 Ferroelectricity in Ag(Nb,Ta)O<sub>3</sub> Ceramic System**

**D. SUVOROV**, M. SPREITZER, L. LI, D. KLEMENT, Advanced Materials, Jozef Stefan Institute, Ljubljana, Slovenia

**CJ-1:L02 Dielectric and Piezoelectric Enhancement of Barium Titanate-based Nano-complex Ceramics based on Different Heteroepitaxial Interfaces**

**S. WADA**, University of Yamanashi, Yamanashi, Japan

**CJ-1:L03 NiO and CeO<sub>2</sub> Thin Films as High k Gate Dielectrics for Wide Band Gap Semiconductors**

**R. LO NIGRO**, F. ROCCAFORTE, G. FISICHELLA, G. GRECO, P. FIORENZA, Istituto per la Microelettronica e Microsistemi (IMM)-CNR, Catania, Italy; S. BATTIATO, G. MALANDRINO, Dipartimento di Scienze Chimiche, Università degli Studi di Catania, and INSTM udr Catania, Catania, Italy

**CJ-1:L04 The Effects of Lamination Pressure Variations on Physical Properties of a Low Temperature Co-fired Ceramic Substrate**

**R. ALIAS**, S. MOHD SHAPEE, Advanced Physical Technologies Laboratory, TM Research & Development Sdn. Bhd., TMR&D Innovation Centre, Cyberjaya, Selangor, Malaysia

**CJ-1:L05 Synthesis and Characterization of KNbO<sub>3</sub> Nanomaterials**

**WOONG KIM**, Department of Materials Science and Engineering, Korea University, Seoul, Republic of Korea

**CJ-1:L06 Low-Firing PZT-Multi-Layer Bending Transducer Using Ag Inner Electrodes**

**A.J. MEDESI**, T. HANEMANN, Laboratory for Materials Processing, Department of Microsystems Engineering, IMTEK, University of Freiburg, Germany

**CJ-1:L07 Structural and High Frequency Dielectric Properties of Ba(ZrxTi1-x)O<sub>3</sub> Films prepared by Reactive Magnetron Sputtering using Metal Targets**

**JINWOOONG KIM<sup>1</sup>**, H. FUNAKUBO<sup>2</sup>, H. SHIMA<sup>1</sup>, K. NISHIDA<sup>1</sup>, T. YAMAMOTO<sup>1</sup>, <sup>1</sup>National Defense Academy, Yokosuka, Kanagawa, Japan; <sup>2</sup>Tokyo Institute of Technology, Japan

**CJ-1:L08 Evaluation of Rheological Behavior of Various LTCC Silver Pastes for Screen Printing**

**S. MOHD SHAPEE**, R. ALIAS, Advanced Physical Technologies Lab, TM Research and Development, Selangor, Malaysia

**CJ-1:L09 High Frequency Dielectric Properties of Eu+3-Substituted Li-Mg Ferrites Synthesized by Sol-gel Auto-Combustion Method**

**M. ASIF IQBAL<sup>1,3</sup>**, M.U. ISLAM<sup>1</sup>, IRSHAD ALI<sup>1</sup>, M. AZHAR KHAN<sup>2</sup>, I. SADIQ<sup>1</sup>, IHSAN ALI<sup>1</sup>, <sup>1</sup>Department of Physics, Bahauddin Zakariya University Multan, Pakistan; <sup>2</sup>Department of Physics, Islamia University Bahawalpur, Pakistan; <sup>3</sup>National University of Science and Technology, Islamabad

**CJ-1:L10 Synthesis and Characterization of Li-modified AgTaO<sub>3</sub>**

**H. KHAN**, Institute of Physics & Electronics, University of Peshawar, Pakistan

**CJ-1:L11 SrLn<sub>2</sub>Al<sub>2</sub>O<sub>7</sub> (Ln = La, Nd, Sm) Microwave Dielectric Ceramics and their Modification**

**XIANG MING CHEN**, LEI YI, XIAO QIANG LIU, LEI LI, Laboratory of Dielectric Materials, Department of Materials Science and Engineering, Zhejiang University, Hangzhou, China

**CJ-1:L12 LTCC Integrated Piezoelectric Structures**

**M. SOBOCIŃSKI**, J. JUUTI, **H. JANTUNEN**, Microelectronics and Materials Physics Laboratories, Department of Electrical Engineering, University of Oulu, Oulu, Finland

**CJ-1:L13 Physical Effects of Excimer Laser on Amorphous Perovskite Oxide Thin Films**

**CHONG-YUN KANG<sup>1,2</sup>**, MIN-GYU KANG<sup>1,3</sup>, SAHN NAHM<sup>2,3</sup>, SEOK-JIN YOON<sup>1</sup>, <sup>1</sup>Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, Korea; <sup>2</sup>KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, Korea; <sup>3</sup>Department of Materials Science and Engineering, Korea University, Seoul, Korea

**CJ-1:L14 BaTiO<sub>3</sub> Ceramics Micro Structures new Fractal Frontiers**

**V.V. MITIC**, University of Nis, Faculty of Electronic Engineering, Nis, Serbia, Institute of Technical Sciences of SASA, Belgrade, Serbia; V. PAUNOVIC, Lj. KOCIC, University of Nis, Faculty of Electronic Engineering, Nis, Serbia; S. JANKOVIC, Mathematical Institute, SASA, Belgrade, Serbia; V. LITOVSKI, University of Nis, Faculty of Electronic Engineering, Nis, Serbia

**CJ-1:L15 Magneto-dielectric Materials for Applications in Low Frequency Antenna Miniaturization**

**L.B. KONG**, School of Materials Science and Engineering, Nanyang Technological University, Singapore

#### Session CJ-2

##### Ferroelectrics, Piezoelectrics, Pyroelectrics

**CJ-2:L01 Interplay between Flexoelectricity and Nanodomains**

**G. CATALAN<sup>1,2</sup>**, J. NARVAEZ<sup>2</sup>, N. DOMINGO<sup>2</sup>, S. SAREMINAEINI<sup>1,2</sup>, J. OÉENÁSEK<sup>3</sup>, J. ALCALÁ<sup>4</sup>, B. NOHEDA<sup>5</sup>, HAIDONG LU<sup>6</sup>, A. GRUVERMAN<sup>6</sup>, <sup>1</sup>Institut Català de Recerca i Estudis Avançats (ICREA), Catalunya; <sup>2</sup>Institut Català de Nanociència i Nanotecnologia (ICN2), CSIC-ICN, Campus de Bellaterra, Barcelona, Spain; <sup>3</sup>New Technologies Research Centre, University of West Bohemia in Pilsen, Plzeò, Czech Republic; <sup>4</sup>Department of Materials Science and Metallurgical Engineering, GRICCA, Universitat Politècnica de Catalunya, Barcelona, Spain; <sup>5</sup>Zernike Institute for Advanced Materials, University of Groningen, The Netherlands; <sup>6</sup>Department of Physics and Astronomy, University of Nebraska-Lincoln, NE, USA

**CJ-2:L02 Pyroelectric and Piezoelectric Properties of Nano-crystals grown inside Alumina Pores**

**S. BERGER**, Faculty of Materials Dcience and Engineering, Technion, Haifa, Israel

**CJ-2:L03 Characterization of Nanostructured Phases and Peculiar Phase Transitions in BNBT Lead-free Piezoceramics**

**L. PARDO**, A. GARCIA, Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), Spain; E. MERCADELLI, C. GALASSI, National Research Council, Institute of Sci. & Technol. for Ceramics, Faenza, Italy

**CJ-2:L04 Photoluminescence, Ferroelectric, Dielectric and Piezoelectric Properties of Sol-gel-derived Er-doped KNN-LN Lead-free Multifunctional Ceramics**

**XIAO WU**, CHI MAN LAU, K.W. KWOK, Department of Applied Physics and Materials Research Centre, The Hong Kong Polytechnic University, Kowloon, Hong Kong, China

**CJ-2:L05 Electromechanical Properties and Microstructure of Undoped K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub> Ceramics and KNbO<sub>3</sub>-NaNbO<sub>3</sub> Crystals**

**M. BAH**, F. GIOVANNELLI, G. FEUILLARD, I. MONOT-LAFFEZ, Université François Rabelais de Tours, CNRS, CEA, ENIVL, GREMAN UMR 7347, Blois Cedex, France; Laboratoire des Sciences des Procédés et des Matériaux, CNRS, LSPM - UPR 3407, Université Paris 13, Sorbonne Paris Cité, Villetteaneuse, France; E. LE CLEZIO, Université de Montpellier 2, IES, UMR 5214, Montpellier, France

**CJ-2:L06 Tuning the Chemistry and Architecture of Ferroelectric Thin Films and Multilayers for On-silicon Integration**

**D. LEVASSEUR<sup>1,2</sup>**, E. BOUSSOU<sup>2</sup>, R. DE PAOLIS<sup>3</sup>, A. ROUSSEAU<sup>1</sup>, F. COCCETTI<sup>3</sup>, G. GUEGAN<sup>2</sup>, S. PAYAN<sup>1</sup>, **M. MAGLIONE<sup>1</sup>**, <sup>1</sup>CNRS, Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France; <sup>2</sup>ST Microelectronics, Tours, France; <sup>3</sup>CNRS, Univ. Toulouse, LAAS, Toulouse, France

**CJ-2:L07 Ferroelectrics for Wireless Sensor and Transducer Applications**

**KUI YAO**, CHIN YAW TAN, SZU CHENG LAI, LEI ZHANG, ZHIYUAN SHEN, YIFAN CHEN, Institute of Materials Research and Engineering, A\*STAR (Agency for Science, Technology and Research), Singapore

**CJ-2:L08 Characterization of Material Properties and Functionalities of Lead-free Bismuth-based Ceramics**

**L. BATISTA**, U. RABE, S. HIRSEKORN, Fraunhofer Institute for Nondestructive Testing (IZFP), Saarbrücken, Germany

**CJ-2:L09 Synthesis and Characterization of Tb-Doped (Ba<sub>0.99</sub>Ca<sub>0.01</sub>) (Ti<sub>0.98</sub>Zr<sub>0.02</sub>)O<sub>3</sub> Lead Free Ceramics**

**JINGHAN GAO**, Q. LI, Tsinghua University, Beijing, China

**CJ-2:L10 How can be Realized High Piezoelectricity from Measuring Acoustic Wave Velocities?**

**T. OGAWA**, Department of Electrical and Electronic Engineering, Shizuoka Institute of Science and Technology, Fukuroi, Japan

**CJ-2:L12 Distinctive Contributions to High-temperature Dielectric Response of Relaxor Ferroelectric Lead Scandium Niobate Ceramic System**

**V. BOBNAR**, H. URŠIC, G. CASAR, S. DRNOVSEK, Jozef Stefan Institute, Ljubljana, Slovenia

**CJ-2:L13 Effect of Isovalent B-site Doping on Structural and Electrical Properties of Bismuth-Sodium-Titanate**

**K. REICHMANN**, M. NADERER, J. ALBERING, Christian Doppler Laboratory for Advanced Ferroic Oxides, Graz University of Technology, Graz, Austria; F.A. MAUTNER, Institute of Physical and Theoretical Chemistry, Graz University of Technology, Graz, Austria

**CJ-2:L14 Synthesis and Characterization of Multiferroic BiFeO<sub>3</sub>**  
**J.A. GÓMEZ-CUASPU, A.M. MORALES-RIVERA, D.L. SÁNCHEZ-PINZÓN,**  
 Departamento de Química, Universidad Pedagógica y Tecnológica de Colombia, Tunja-Boyacá, Colombia

### Session CJ-3 Multiferroics

#### CJ-3:IL01 Hybrid Multiferroic Heterostructures

**N.A. PERTSEV**, A.F. Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia

#### CJ-3:IL02 Optical Probing of Ferroelectrics and Multiferroics

**V. GOPALAN**, Materials Science and Engineering, Pennsylvania State University, University Park, PA, USA

#### CJ-3:IL03 Polarization Fatigue and Non-destructive Readout of Ferroelectric Memory

**XI ZOU, RUI GUO, LU YOUNG, JUNLING WANG**, School of Materials Science and Engineering Nanyang Technological University, Singapore

#### CJ-3:IL04 Nonlinear Magnetoelectric Effects in Composite Multiferroics

**Y.K. FETISOV**, Moscow State Technical University of Radio Engineering, Electronics and Automation, Moscow, Russia

#### CJ-3:IL05 Doping Driven Control of the Concomitant Ferroelectric and Magnetic Transition in Bismuth Ferrites

**CHAN-HO YANG**, Department of Physics, KAIST; and KAIST Institute for the NanoCentury, Daejeon, Republic of Korea

#### CJ-3:IL06 Metal-organic Chemical Vapor Deposition of Magnetoelectric BiFeO<sub>3</sub> based Multiferroics: Nanocomposites and Solid Solutions

**G. MALANDRINO**, Dipartimento di Scienze Chimiche, Università di Catania, and INSTM UdR Catania, Catania, Italy

#### CJ-3:IL07 Co-existence of Ferromagnetism and Ferroelectricity in CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>4-x</sub>NdxTi<sub>3</sub>O<sub>12</sub> Composite Structure

**A.C. HERENANDEZ, A. KUMAR, M.S. TOMAR**, Physics Department, University of Puerto Rico, Mayaguez, Puerto Rico

### Session CJ-4 Semiconducting Ceramics

#### CJ-4:IL01 Thermoelectric Properties of TiO<sub>2</sub> Based Materials: Review with Recent Developments

**J. LOCS, K. RUBENIS**, Riga Technical University, Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre, Riga, Latvia

#### CJ-4:IL02 A Transport Perspective on Local Manipulation of Ferroelectric and Complex Oxide Surfaces

**P. MAKSYMOVICH**, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA

#### CJ-4:IL03 Spatially Resolved Photo-detection in Leaky Ferroelectric Oxides

**MOO-HO JO**, Center for Artificial Low-Dimensional Electronic Systems (Institute for Basic Science, IBS) & Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea

#### CJ-4:IL04 Self-assembly of Oxide Nanocubes: a New Approach for the Development of Resistive Random Access Memory Devices

**SEAN LI**, The University of New South Wales, School of Materials Science and Engineering, Sydney, NSW, Australia

#### CJ-4:IL05 P-type Oxide Semiconductors for High Performance Gas Sensors: New Challenges and Opportunities

**JONG-HEUN LEE**, Department of Materials Science and Engineering, Korea University, Seoul, Republic of Korea

#### CJ-4:IL06 Properties of n-type CeO<sub>2</sub> and its Gas Sensor Application

**N. IZU**, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Aichi, Japan

#### CJ-4:IL07 Nano-derived Tungstate and Molybdate Oxides for the Sensing of H<sub>2</sub>, H<sub>2</sub>S and SO<sub>2</sub> at High Temperatures

**E.M. SABOLSKY**, E. CIFTYUREK, K. SABOLSKY, Department of Mechanical and Aerospace Engineering, West Virginia University, Morgantown, WV, USA

#### CJ-4:IL08 High Crystalline Cu<sub>2</sub>O Thin Films Prepared by Electric Current Heating Using Copper Wire

**T. OKAMOTO**, K. YAMAZAKI, Y. KUROKI, Nagaoka University of Technology, Nagaoka, Niigata, Japan; M. TAKATA, Japan Fine Ceramics Center, Atsuta-ku, Nagaoka, Japan, Nagaoka University of Technology, Nagaoka, Niigata, Japan

### Session CJ-5 Fast Ion-conducting Ceramics

#### CJ-5:IL01 Advanced Composite Electrodes for Solid State Li-ion Battery

**K. KANAMURA, M. SHOJI, J. WAKASUGI, H. MUNAKATA**, Department of Applied Chemistry, Tokyo Metropolitan University, Hachioji, Tokyo, Japan

#### CJ-5:IL02 New Interstitial Oxide Ion Conductors for Electrochemical Applications

**S. SKINNER, R. BAYLISS, C. HARRIS, CHENG LI**, Imperial College London, London, UK; M. LAGUNA-BERCERO, Univ. Zaragoza, Spain

#### CJ-5:IL03 Gd(Al,Co)O<sub>3</sub> Additions to Counter the Impact of High Silica Contamination in CGO

**J.C.C. ABRANTES**, E. GOMES, J.R. FRADE, UIDM, ESTG, Polytechnic Institute of Viana do Castelo, Viana do Castelo, Portugal; Ceramics Dep., CICECO, University of Aveiro, Aveiro, Portugal

#### CJ-5:IL04 Modelling of the Oxygen Transport through MIEC Membrane for the Transient Stage

**C. GAZEAU, E. BLOND**, Univ. Orléans, PRISME EA 4229, Orléans, France; M. Reichmann, P.-M. Geffroy and T. Chartier, SPCTS, UMR CNRS 7315, Limoges, France; N. Richet, Air Liquide CRCD, Jouy En Josas, France

#### CJ-5:IL05 Thermal Residual Stress and Biaxial Strength of

**(Y<sub>2</sub>O<sub>3</sub>)<sub>0.08</sub>(ZrO<sub>2</sub>)<sub>0.92</sub> / (Sc<sub>2</sub>O<sub>3</sub>)<sub>0.1</sub>(CeO<sub>2</sub>)<sub>0.01</sub>(ZrO<sub>2</sub>)<sub>0.89</sub> Multi-layered Electrolytes for Intermediate Temperature Solid Oxide Fuel Cells**  
 YAN CHEN<sup>1,2</sup>, A. AMAN<sup>1</sup>, M. LUGOVY<sup>1,3</sup>, N. ORLOVSKAYA<sup>1</sup>, XINYU HUANG<sup>4</sup>, T. GRAULE<sup>5</sup>, J. KUEBLER<sup>5</sup>, <sup>1</sup>Department of Mechanical and Aerospace Engineering, University of Central Florida, Orlando, FL, USA, <sup>2</sup>Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA; <sup>3</sup>Institute for Problems of Materials Science, Kyiv, Ukraine; <sup>4</sup>University of South Carolina, Columbia, SC, USA; <sup>5</sup>Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for High Performance Ceramics, Duebendorf, Switzerland

#### CJ-5:IL06 Electrical Conductivity on Novel Solid Electrolytes based on Scandia-stabilized Zirconia

**R.L. GROSSO, E.N.S. MUCCILLO**, Energy and Nuclear Research Institute, S. Paulo, SP, Brazil

#### CJ-5:IL07 Efficient Search of Fast Lithium Ionic Conductors Through Ab Initio-based Computational Methods and Material Informatics

**M. NAKAYAMA<sup>1,3</sup>, R. JALEM<sup>2</sup>**, <sup>1</sup>Department of Materials Science & Engineering, Nagoya Institute of Technology, Japan; <sup>2</sup>JST-PRESTO program, Japan; <sup>3</sup>ESICB project, Kyoto-University, Japan

#### CJ-5:IL08 Proton Migration at Grain Boundary of Barium Zirconate and Cerate: Space Charge Layer and Structural Disorder Models

**J.-H. YANG, J.-S. KIM, YEONG-CHEOL KIM**, Korea University of Technology and Education, Cheonan, Korea; B.-K. KIM, Korea Institute of Science and Technology, Seoul, Korea

#### CJ-5:IL09 Evaluating Oxygen Diffusion and Surface Exchange Coefficients in La<sub>0.5</sub>Al<sub>0.5</sub>Fe<sub>0.7</sub>Co<sub>0.3</sub>O<sub>3-d</sub> (with A= Ca, Sr and Ba) Perovskite Membranes by Oxygen Semi-permeation Measurements

**M. REICHMANN**, French Environment and Energy Management Agency, Angers, France; PM. GEFFROY, T. CHARTIER, Laboratoire Science des Procédés Céramiques et de Traitements de Surface, Limoges, France; N. RICHET, Air Liquide, Centre de Recherche Claude-Delorme, Jouy-en-Josas, France

#### CJ-5:IL10 Mechanical Properties of Pr<sub>1-x</sub>Dy<sub>x</sub>Co<sub>3</sub> Perovskite Oxides

**N.K. GAUR, R. THAKUR, R.K. THAKUR, A.K. NIGAM**, Department of Physics, Barkatullah University, Bhopal, India

### Poster Presentations

#### CJ:P01 Fabrication and Characterization of (K<sub>0.5</sub>Na<sub>0.5</sub>)NbO<sub>3</sub>-CaZrO<sub>3</sub> Lead-Free Piezoelectric Ceramics

**MYOUNG PYO CHUN, H.S. SHIN, B.I. KIM**, Korea Institute of Ceramic Engineering and Technology (KICET), Seoul, Rep. of Korea

#### CJ:P02 Microstructure and Dielectric Properties of Ba-rich BaTiO<sub>3</sub> Doped with MgO and Y<sub>2</sub>O<sub>3</sub>

**CHE-YUAN CHANG, YUN-SHIUAN HOU, CHI-YUEN HUANG**, Department of Resources Engineering, National Cheng Kung University, Tainan City, Taiwan

#### CJ:P03 Optical and Electrical Properties of As-deposited Lanthanum Oxide Films before and After being Stored in Air

**A. IGITYAN, KAFADARYAN, N. AGHAMALYAN, S. PETROSYAN G. BADALYAN, I. GAMBARIAN, R. HOVSEPYAN**, Institute for Physical Research NAS, Ashtarak, Armenia

**CJ:P04 The Effects of the Annealing Conditions on the Dielectric Properties of the Sol-gel Derived MgNb<sub>2</sub>O<sub>6</sub> Thin Films**

YI-DA HO, KUNG-RONG CHEN, **CHENG-LIANG HUANG**, Department of Electrical Engineering, National Cheng Kung University (NCKU), Tainan, Taiwan

**CJ:P05 PZT Powders Produced from Recycled Ceramics**

**M.V. GELFUSO**, A.C. LANZA, D.TOMAZINI, Universidade Federal de Itajubá-UNIFEI, Itajubá, Brazil

**CJ:P06 CaCu<sub>3</sub>Ti<sub>4</sub>O<sub>12</sub> Ceramics with Deficiency and Excess of Cu<sup>2+</sup>**

**D. THOMAZINI**, P.E. DA FONSECA NETO, G.M. SANCHES VOLPI, M.V.

GELFUSO, Universidade Federal de Itajubá, Itajubá, Brazil

**CJ:P07 Investigation of the Domain Switching in the Bulk and on the Surface of Barium Titanate**

**A. REICHMANN**, Austrian Centre for Electron Microscopy and Nanoanalysis, Graz, Austria; **S. MITSCHE**, A. ZANKEL, P. PÖLT, Institute for Electron Microscopy, Graz University of Technology, Graz, Austria; **K. REICHMANN**, Christian Doppler Laboratory for Advanced Ferroic Oxides, Graz University of Technology, Graz, Austria

**CJ:P08 Photoluminescence and Ferroelectric Properties of Er-doped BNT-BT Ceramics**

**CHI MAN LAU**, K.W. KWOK, The Hong Kong Polytechnic University, Hong Kong, China

**CJ:P09 Local Structure and Phase Transition in Ba(Ti,Sn)O<sub>3</sub> Relaxor Perovskite**

**A. BOOTCHANONT**<sup>1</sup>, S. RUJIRAWAT<sup>1</sup>, R. YIMNIRUN<sup>1</sup>, RUYAN GUO<sup>2</sup>, A. BHALLA<sup>2</sup>; <sup>1</sup>School of Physics, Institute of Science, Suranaree University of Technology, and COE-NANOTEC-SUT on Advanced Functional Nanomaterials, Nakhon Ratchasima, Thailand; <sup>2</sup>Department of Electrical and Computer Engineering, College of Engineering, University of Texas at San Antonio, TX, USA

**CJ:P10 Effect of BT Template Size on Piezoelectric Properties of Textured PMN-PT Ceramics**

**JAESUNG SONG**, JUHYEONG JO, MIN-SOO KIM, IN-SUNG KIM, SOON-JONG JEONG, Korea Electrotechnology Research Institute, Changwon, Rep. of Korea

**CJ:P11 Effectiveness of Magnetic Sheets in Suppressing Magnetic Leakage in Automobile Wireless Energy Transfer Systems**

**T. TAKEO**, M. KAWAGUCHI, Mie University, Tsu, Mie, Japan; **T. ISHIHARA**, T. MATSUZAKI, Kitagawa Ind. Co., Ltd., Kasugai, Aichi, Japan

**CJ:P12 Growth and Characterizations of Lead-free (K, Na)NbO<sub>3</sub> Based Single Crystal**

**HONGLING ZHANG**, H.B. XU, Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China; **M. JIN**, J.Y. XU, School of Materials Science and Engineering, Shanghai Institute of Technology, Shanghai, China; **X.L. DONG**, X.F. CHEN, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

**CJ:P13 Bit Memory in Absorption Spectrum of Piezoelectric Resonators**

**F. TSURUOKA**, Department of Physics, Kurume University, Fukuoka, Japan

**CJ:P14 Synthesis of Multiferroic Thin Films Based on Fluoride Phases**

**S. BATTIATO**, G. MALANDRINO, Dipartimento di Scienze Chimiche, Università di Catania, and INSTM UdR Catania, Catania, Italy

**CJ:P15 Effects of Thickness Variation on LiCoO<sub>2</sub> Cathode for High Capacity All-solid-state Thin Film Battery**

SEUNG-HWAN LEE, EUN-SEOK KWON, **JOOSUN KIM**, High Temperature Energy Materials Research Center, KIST, Seoul, Korea; **JOOHO MOON**, Dept. of Materials Science and Engineering, Yonsei University, Seoul Korea

**CJ:P16 Water Electrolysis Reaction at Ni/YSZ Cermet Fuel Electrode using Density Functional Theory**

**J.-S. KIM**, Y.-C. KIM, Korea University of Technology and Education, Cheonan, Korea; **B.-K. KIM**, Korea Institute of Science and Technology, Seoul, Korea

**CJ:P17 Proton Conductivity of the 12R-Type Hexagonal Perovskites Sr<sub>3</sub>RENb<sub>3</sub>O<sub>12</sub> (RE = La,Nd)**

**A.L. CHINELATTO**<sup>1,2</sup>, C. TABACARU<sup>1</sup>, G.C. MATHER<sup>1</sup>, <sup>1</sup>Instituto de Cerámica y Vidrio, CSIC, Cantoblanco, Madrid, Spain; <sup>2</sup>Department of Materials Engineering, State University of Ponta Grossa, Ponta Grossa, Brazil

**CJ:P18 Microstructural and Electrical Properties of Gadolinium Doped Barium Zirconate Sintered by Liquid Phase**

E.B. MORAES, **D.Z. DE FLORIO**, UFABC, Santo André, SP/Brazil

**CJ:P19 Correlation between Powder Characteristic and Microstructure Development of Y-doped BaCeO<sub>3</sub>**

**H.E. ARAUJO**, D.P.F. DE SOUZA, PPGCEM - DEMA/UFSCar, São Carlos, SP/Brazil

**Special Session CJ-6****STATE-OF-THE-ART DEVELOPMENT AND APPLICATION OF THIN FILM PIEZOELECTRIC MEMS/NEMS****Oral Presentations****Session CJ-6.1****New Piezomaterials Systems, Film Growth, Multilayers, Heterostructures, Characterisation****CJ-6.1:IL01 Giant Piezoelectricity on Si for Hyperactive MEMS**

**SEUNG-HYUB BAEK**<sup>1,2</sup>, J. PARK<sup>3</sup>, D.M. KIM<sup>2</sup>, V.A. AKSYUK<sup>4</sup>, R.R. DAS<sup>2</sup>, S.D. BU<sup>2</sup>, D.A. FELKER<sup>5</sup>, J. LETTIERI<sup>6</sup>, V. VAITHYANATHAN<sup>6</sup>, S.S.N. BHARADWAJA<sup>6</sup>, N. BASSIRI-GHARB<sup>6</sup>, Y.B. CHEN<sup>7</sup>, H.P. SUN<sup>7</sup>, C.M. FOLKMAN<sup>2</sup>, H.W. JANG<sup>2</sup>, D. J. KREFT<sup>3</sup>, S.K. STREIFFER<sup>8</sup>, R. RAMESH<sup>9</sup>, X.Q. PAN<sup>7</sup>, S. TROLIER-MCKINSTRY<sup>6</sup>, D.G. SCHLUM<sup>10</sup>, M.S. RZCHOWSKI<sup>4</sup>, R.H. BLICK<sup>3</sup>, C.B. EOM<sup>2</sup>, <sup>1</sup>Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, Rep.of Korea; <sup>2</sup>Dept. of Materials Science and Engineering, University of Wisconsin, Madison, WI, USA; <sup>3</sup>Dept. of Electrical and Computer Engineering, University of Wisconsin, Madison, WI, USA; <sup>4</sup>Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD, USA; <sup>5</sup>Dept. of Physics, University of Wisconsin, Madison, WI, USA; <sup>6</sup>Dept. of Materials Science and Engineering, Penn State University, University Park, PA, USA; <sup>7</sup>Dept. of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, USA; <sup>8</sup>Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL, USA; <sup>9</sup>Dept. of Materials Science and Engineering, University of California, Berkeley, CA, USA; <sup>10</sup>Dept. of Materials Science and Engineering, Cornell University, Ithaca, NY, USA

**CJ-6.1:IL02 Lead Zirconate Titanate for Nano-electromechanical System Applications**

**D. REMIENS**, J. COSTECALDE, D. DERESMES, D. TROADEC, IEMN - CNRS - UMR 8520 UVHC - Le Mont Houy - Valenciennes Cedex, France

**CJ-6.1:IL03 Enhancement of Piezoelectric Property Using 90° Domain Switching for Tetragonal Pb(Zr, Ti)O<sub>3</sub> Films with Small Dielectric Constant**

**H. FUNAKUBO**, M. NAKAJIMA, T. OIKAWA, S. YASUI, A. WADA, Tokyo Institute of Technology, Tokyo, Japan; **T. YAMADA**, Tokyo Institute of Technology, Tokyo, Japan and Nagoya University, Nagoya, Japan; **T. KOBAYASHI**, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

**CJ-6:IL04 Strain and Substrate Clamping Dependence of Piezoelectric Properties of Epitaxial PMN-PT Relaxor Ferroelectric Thin Films**

**CHANG-BEOM EOM**, Department of Materials Science and Engineering, University of Wisconsin-Madison, Madison, WI, USA

**CJ-6.1:IL05 Fabrication and Characterization of all Perovskite Multi-layer on Si Substrate**

**GENSHUI WANG**<sup>1</sup>, YING CHEN<sup>1</sup>, LIHUI YANG<sup>1</sup>, XIANLIN DONG<sup>1</sup>, D. REMIENS<sup>2</sup>, <sup>1</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; <sup>2</sup>IEMN-DOAE-MIMM, University of Valenciennes, France

**CJ-6.1:IL06 Piezoelectric AlN Thin Films on Kapton**

**F. GUIDO**, M. DE VITTORIO, Center for Biomolecular Nanotechnologies @ UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy and Dip. Ingegneria dell'Innovazione di Università del Salento, Lecce, Italy; **M.T. TODARO**, National Nanotechnology Laboratory Istituto Nanoscienze - CNR, Lecce, Italy; **V. MASTRONARDI**, Dip. Scienza Applicata e Tecnologia, Torino, Italy; **S. PETRONI**, Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy

**Session CJ-6.2****Microfabrication, Device Design****CJ-6.2:IL01 PZFlexCloud: Large Scale FEA for Complex Design of MEMS and cMUTs**

**G. HARVEY**, A. TWEEDIE, Weidlinger Associates, PZFlex Europe, Glasgow, UK

**CJ-6.2:IL02 Screen-printed Ceramic Based MEMS Piezoelectric Cantilever for Harvesting Energy**

**SWEE LEONG KOK**, A.R. OTHMAN, Faculty of Electronic and Computer Engineering, Universiti Teknikal Malaysia Melaka, Melaka, Malaysia; **A. SHAABAN**, Faculty of Manufacturing Engineering, Universiti Teknikal Malaysia Melaka, Melaka, Malaysia

**CJ-6.2:IL03 Piezoelectric MEMs: Fabrication, Testing, & Characterization****J.T. EVANS, Jr.**, Radian Technologies, Inc., Albuquerque, NM, USA**CJ-6.2:IL04 Nanoscale Domains in Ferroelectric PbTiO<sub>3</sub> Films and PbTiO<sub>3</sub>/SrTiO<sub>3</sub> Superlattices****P. ZUBKO**, University College London, London Centre for Nanotechnology, London, UK; S. FERNANDEZ, C. LICHTENSTEIGER, J.-M. TRISCONE, University of Geneva, Geneva, Switzerland**CJ-6.2:IL05 SINTEF PiezoMEMS Competence Centre****F. TYHOLDT**, A. VOGL, H. TOFTEBERG, N.P. OESTBOE, T. BAKKE, F. LAPIQUE, SINTEF, Microsystems and Nanotechnology, Oslo, Norway**CJ-6.2:IL06 The PiezoElectronic Switch: a Path to High Speed, Low Energy Electronics****D.M. NEWNS**, P.M. SOLOMON, B. BRYCE, T.M. SHAW, M. COPEL, L.W. HUNG, A. SCHROTT, T.N. THEIS, W. HAENSCH, S.M. ROSSNAGEL, H. MIYAZOE, B.G. ELMEGREEN, M.A. KURODA, X-H. LIU, G.J. MARTYNA, IBM TJ. Watson Research Center, Yorktown Hgts., NY, USA; S. TROLIER-MCKINSTRY, R. KEECH, S. SHETTY, Department of Material Science and Engineering, Penn State University, College Park, PA, USA**CJ-6.2:IL07 Tunable Electromechanical Coupling in Micromachined Piezoelectric Diaphragm****ZHIHONG WANG**, W. YUE, X. WANG, Y. YAO, J. LI, L. CHEN, X.X. ZHANG, Advanced Nanofabrication Core Lab, King Abdullah University of Science and Technology, Thuwal, Kingdom of Saudi Arabia**Session CJ-6.3****Thin Film Piezoelectric MEMS/NEMS Applications****CJ-6.3:IL01 Applications of Piezoceramic Thick Films****E. RINGGAARD**, T. ZAWADA, K. ASTAFIEV, M. GUIZZETTI, L.M. BORGREGAARD, R. XU, K. ELKJAER, W.W. WOLNY, Meggitt Sensing Systems, Kvistgaard, Denmark**CJ-6.3:IL02 AlN Thin Films for Resonators Applications****E. DEFAY**, A. REINHARDT, S. HENTZ, A. LEFEVRE, J. ABERGEL, G. PARAT, CEA LETI Minatec, Grenoble, France**CJ-6.3:IL03 Micropump with Active Valves Based on Thin Film PZT****H.R. TOFTEBERG**, T. BAKKE, A. VOGL, M. MIELNIK, N.P. OSTBO, SINTEF, Oslo, Norway**CJ-6.3:IL04 Performances of Ferroelectric Printed Films in Sensors and Energy Harvesting****V. FERRARI**, Department of Information Engineering, University of Brescia, Italy**CJ-6.3:IL05 Piezoelectric Micro-machined Ultrasonic Transducer for Medical Imaging****K. SMYTH, SANG-GOOK KIM**, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA**CJ-6.3:IL06 2013-2018 Market Analysis of Thin Film Piezo MEMS****C. TROADEC**, E. MOUNIER, Yole Développement, Lyon-Villeurbanne, France**CJ-6.3:IL07 Comparison of Output Voltage and Power Generated from Tetragonal and MPB Composition PZT Thin Films Integrated on Piezoelectric Microcantilevers with Proof Mass****T. KOBAYASHI**, Y. SUZUKI, N. MAKIMOTO, T. ITOH, R. MAEDA, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Japan; H. FUNAKUBO, Tokyo Institute of Technology, Tokyo Japan**CJ-6.3:IL08 Piezoelectric Films for Next Generation Logic Elements****R. KEECH<sup>1</sup>, S. SHETTY<sup>1</sup>, S. TROLIER-MCKINSTRY<sup>1</sup>, D. NEWNS<sup>2</sup>, GLENN MARTYNA<sup>3</sup>, T. SHAW<sup>2</sup>, B. BRYCE<sup>2</sup>, M. COPEL<sup>2</sup>**, <sup>1</sup>Department of Material Science and Engineering, Pennsylvania State University University Park, PA, USA; <sup>2</sup>IBM TJ Watson Research Center**CJ-6.3:IL09 Sc-doped Aluminum Nitride Thin Films for Energy Harvesting Applications****P. MURALT**, R. MATLOUB, A. MAZZALAI, Ceramics Laboratory, Ecole Polytechnique Fédérale de Lausanne, Switzerland; G. MOULARD, T. METZGER, EPCOS, Munich, Germany**SYMPORIUM CK****FUNCTIONAL MAGNETIC OXIDES****Oral Presentations****Session CK-1****Magnetic Oxide Thin Films Interfaces and Heterostructures****CK-1:IL01 Multiferroic Tunnel Junctions: Revitalizing Half-doped Manganites****G. RADAEILLI<sup>1,2</sup>, D. GUTIERREZ<sup>1</sup>, F. SANCHEZ<sup>1</sup>, R. BERTACCO<sup>2</sup>, J. FONT-CUBERTA<sup>1</sup>**, <sup>1</sup>Institut de Ciencia de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra, Catalonia, Spain; <sup>2</sup>LNESS - Dipartimento di Fisica, Politecnico di Milano, Como, Italy**CK-1:IL02 Spin and Charge Elusive Order in Cuprate Superconductors****G. GHIRINGHELLI**, Dipartimento di Fisica, Politecnico di Milano, Italy**CK-1:IL03 Photovoltaic Effect and Interface Induced Polar State in Heterojunctions of Correlated Electron Oxides****M. NAKAMURA**, RIKEN-CEMS, Wako, Japan; M. KAWASAKI, Y. TOKURA, RIKEN-CEMS, Wako, Japan and Dep. of Appl. Phys. and QPEC, Univ. of Tokyo, Tokyo, Japan**CK-1:IL04 Electric Field Control of Magnetization at Cuprate-manganite Interfaces****J. SANTAMARIA<sup>1</sup>, F.A. CUELLAR<sup>1</sup>, Y.H. LIU<sup>2</sup>, J. SALAFRANCA<sup>1,3</sup>, E. IBORRA<sup>4</sup>, G. SANCHEZ-SANTOLINO<sup>1</sup>, M. VARELA<sup>3,4</sup>, J.W. FREELAND<sup>5</sup>, M. ZHERNEN-KOV<sup>6</sup>, M.R. FITZSIMMONS<sup>6</sup>, S. OKAMOTO<sup>3</sup>, S.J. PENNYCOOK<sup>3</sup>, M. BIBES<sup>7</sup>, A. BARTHÉLÉMY<sup>7</sup>, S.G.E. TE VELTHUIS<sup>2</sup>, Z. SEFRIOU<sup>1</sup>, C. LEON<sup>1</sup>, <sup>1</sup>GFM, Depto. Física Aplicada III, Universidad Complutense de Madrid, Madrid, Spain; <sup>2</sup>Materials Science Division, Argonne National Laboratory, Argonne, IL, USA, <sup>3</sup>Materials Sci. & Technology Div., Oak Ridge National Laboratory, Oak Ridge, TN, USA; <sup>4</sup>GMME Departamento de Tecnología Electrónica. ETSIT. Univ. Politécnica de Madrid, Spain; <sup>5</sup>Instituto de Ciencia de Materiales de Madrid, Cantoblanco, Spain; <sup>6</sup>Advanced Photon Source, Argonne National Laboratory, Argonne, IL, USA; <sup>7</sup>Los Alamos National Laboratory Los Alamos, NM, USA; <sup>8</sup>Unité Mixte de Physique CNRS/Thales, Palaiseau, France****CK-1:IL05 Tailoring Magnetic Properties of Complex Oxides with Single Atomic Layer Control****A. BHATTACHARYA**, Materials Science Division and Center for Nanoscale Materials, Argonne National Laboratory, Darien, IL, USA**CK-1:IL06 Ultrafast Magnetic Dynamics in Nickelates Heterostructures****A.D. CAVIGLIA<sup>1,2</sup>, M. FÖRST<sup>1</sup>, R. SCHERWITZL<sup>3</sup>, V. KHANNA<sup>1,4,11</sup>, H. BROMBERGER<sup>1</sup>, R. MANKOWSKY<sup>1</sup>, R. SINGLA<sup>1</sup>, Y.-D. CHUANG<sup>8</sup>, W.S. LEE<sup>7</sup>, O. KRUPIN<sup>9</sup>, W.F. SCHLITTER<sup>8</sup>, J.J. TURNER<sup>8</sup>, G.L. DAKOVSKI<sup>8</sup>, M.P. MINITI<sup>8</sup>, J. ROBINSON<sup>8</sup>, V. SCAGNOLI<sup>10</sup>, S.B. WILKINS<sup>5</sup>, S.A. CAVILL<sup>11</sup>, M. GIBERT<sup>3</sup>, S. GARIGLIO<sup>3</sup>, P. ZUBKO<sup>3</sup>, J.-M. TRISCONE<sup>3</sup>, J.P. HILL<sup>6</sup>, S.S. DHESIS<sup>11</sup>, AND A. CAVALLERI<sup>1,4</sup>**, <sup>1</sup>Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; <sup>2</sup>Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands; <sup>3</sup>DPMC, University of Geneva, Switzerland; <sup>4</sup>Department of Physics, Clarendon Laboratory, University of Oxford, UK; <sup>5</sup>Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY, USA; <sup>6</sup>Advanced Light Source, Lawrence Berkeley Laboratory, Berkeley, CA, USA; <sup>7</sup>The Stanford Institute for Materials and Energy Sciences (SIMES), Stanford Linear Accelerator Center (SLAC) National Accelerator Laboratory and Stanford University, Menlo Park, CA, USA; <sup>8</sup>Linac Coherent Light Source, Stanford Linear Accelerator Center (SLAC) National Accelerator Laboratory, Menlo Park, CA, USA; <sup>9</sup>European XFEL GmbH, Hamburg, Germany; <sup>10</sup>Swiss Light Source, Paul Scherrer Institute, Villigen PSI, Switzerland; <sup>11</sup>Diamond Light Source, Chilton, Didcot, Oxfordshire, UK**CK-1:IL07 Relationship between Composition, Structure and Magnetic Properties in MBE-grown La<sub>2</sub>MnNiO<sub>6</sub> Double Perovskite Films****S.A. CHAMBERS**, Y. DU, T.C. DROUBAY, V. SHUTTHANANDAN, M. BOWDEN, R. COLBY, Pacific Northwest National Laboratory Richland, WA, USA**CK-1:IL08 Probing Magnetism of Thin Film Oxides with Advanced Electron Microscopy****C. MAGEN**, L.A. RODRÍGUEZ, L. MARÍN, I. LUCAS, L. MORELLÓN, M. R. IBARRA, Instituto de Nanociencia de Aragón, University of Zaragoza, Zaragoza, Spain; E. SNOECK, CEMES-CNRS, Toulouse, France; S. FAROKHIPOOR, C.J.M. DAUMONT, B. NOHEDA, Zernike Institute for Advanced Materials, Univ. Groningen, Netherlands; J.M. DE TERESA, P.A. ALGARABEL, ICMA, University of Zaragoza-CSIC, Zaragoza, Spain

**CK-1:IL09 Magnetic Effects in Spin-triplet Superconductors - Ferromagnets Heterostructures**

**M. CUOCO**, CNR-SPIN, Fisciano (Salerno), Italy and Dipartimento di Fisica "E.R. Caianiello", Università di Salerno, Fisciano (Salerno), Italy

**CK-1:IL10 Emergent Phenomena in Two-dimensional Electron Gases at Oxide Interfaces**

**S. STEMMER**, University of California, Santa Barbara, CA, USA

**CK-1:IL11 Ferromagnetism in the 2DEG Formed at the Polar and Non-polar LaAlO<sub>3</sub>/SrTiO<sub>3</sub> Interfaces**

**J.I. BELTRÁN, M.C. MUÑOZ**, Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Cantoblanco, Madrid, Spain

**CK-1:IL12 Design of a Polar Magnetic Metal with Highly Anisotropic Thermopower**

**J.M. RONDINELLI**, Drexel University, Department of Materials Science and Engineering, Philadelphia, PA, USA

**CK-1:IL13 Unexpected High Conductivity at Twin Boundaries in LSMO Thin Films**

**LL. BALCELLS, M. PARADINAS, R. GALCERAN, Z. KONSTANTINOVIC, A. POMAR, F. SANDIUMENGE, C. OCAL, B. MARTINEZ**, Instituto de Ciencia de Materiales de Barcelona - CSIC, Campus UAB, Bellaterra, Spain; R. MORENO, N. DOMINGO, J. SANTISO, ICN2, Institut Català de Nanociència i Nanotecnologia, Campus UAB, Bellaterra, Spain

## Session CK-2

### Electronic Structure and Correlation Effects

**CK-2:IL01 Topological States Driven by Frustration and Electronic Correlations**

**S. KOURTIS, J.W. VENDERBOS, J. VAN DEN BRINK, M. DAGHOFER**, IFW Dresden, Dresden, Germany

**CK-2:IL02 Electronic Structure of Double Perovskites: Compounds with Promises**

**T. SAHA-DASGUPTA**, Department of Condensed Matter Physics and Materials Science, S.N.Bose National Centre for Basic Sciences, Kolkata, India

**CK-2:IL03 Correlated Oxides: Materials Physics and Electronics**

**S. RAMANATHAN**, Harvard University, Cambridge, MA, USA

**CK-2:IL04 Quantum Mechanical Simulation of Magnetic Alloys: s, p, and d Model Hamiltonians**

**M.E.A. COURY**, W.M.C. FOULKES, A.P. HORSFIELD, Imperial College London, London, UK; S.L. DUDAREV, PW. MA, EUROATOM/UKAEA Fusion Association, Culham Science Centre, Abingdon, UK

**CK-2:IL05 Competing Charge Orders in Magnetite Ultrathin Films**

**I. BERNAL, S. GALLEGOS**, Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

## Session CK-3

### Spin Transport and Interplay between Spin, Charge and Lattice Degree of Freedom

**CK-3:IL01 Spin Pumping from Insulators**

**E. SAITO**, WPI-AIMR, Tohoku University, Sendai, Japan, and Institute for Materials Research, Tohoku University, Sendai, Japan

**CK-3:IL02 Towards Efficient Spin Injection at the LaAlO<sub>3</sub>/SrTiO<sub>3</sub> Interface**

**E. LESNE<sup>1</sup>, N. REYREN<sup>1</sup>, D. DOENNIG<sup>2</sup>, R. MATTANA<sup>1</sup>, F. CHOUEKIAN<sup>3</sup>, V. CROS<sup>1</sup>, F. PETROFF<sup>1</sup>, J.-M. GEORGE<sup>1</sup>, S. COLLIN<sup>1</sup>, C. DERANLOT<sup>1</sup>, P. OHRESSER<sup>3</sup>, R. PENTCHEVA<sup>2</sup>, M. BIBES<sup>1</sup>, H. JAFFRÈS<sup>1</sup>, A. BARTHÉLÉMY<sup>1</sup>, 'Unité Mixte de Physique CNRS/Thales, Palaiseau, France and Université Paris-Sud, Orsay, France; <sup>2</sup>Department of Earth and Environmental Sciences, Section Crystallography and Center of Nanoscience, University of Munich, Munich, Germany; <sup>3</sup>Synchrotron SOLEIL, L'Orme des Merisiers, Saint-Aubin, Gif sur Yvette, France**

**CK-3:IL03 Growth and Properties of Low Dimensional Magneto-electric Ba<sub>2</sub>CuGe<sub>2</sub>O<sub>7</sub> Single Crystals**

**R. FITTIPALDI<sup>1</sup>, V. GRANATA<sup>1</sup>, M. CIOMAGA HATNEAN<sup>2</sup>, G. BALAKRISHNAN<sup>2</sup>, A. VECCHIONE<sup>1</sup>, <sup>1</sup>CNR - SPIN U.O.S. Salerno and Dipartimento di Fisica - Università di Salerno, Fisciano (SA), Italy; <sup>2</sup>University of Warwick, Coventry, UK**

**CK-3:IL04 Coupled Electricity and Magnetism in Solids: Microscopic Mechanisms and Some Novel Effects**

**D.I. KHOMSKII**, Koeln University, Koeln, Germany

**CK-3:IL05 Chirality in Charge and Orbital Ordered Materials**

**J. VAN WEZEL**, University of Bristol, Bristol, UK

**CK-3:IL06 Magnetic Excitations, CDW and Phonon Anomalies in Cuprates: New Insights from Inelastic x-ray Scattering**

**M. LE TACON**, MPI-FKF, Stuttgart, Germany

**CK-3:IL07 Control of the Magnetic Properties of LaMnO<sub>3</sub> Epitaxial Thin Films Grown by Pulsed Laser Deposition**

**J. ROQUETA, J. SANTISO**, ICN2, Institut Català de Nanociència i Nanotecnologia, Campus UAB, Bellaterra, Barcelona, Spain; **A. POMAR**, LL. BALCELLS, C. FRONTERA, Z. KONSTANTINOVIC, F. SANDIUMENGE, B. MARTÍNEZ, Instituto de Ciencia de Materiales de Barcelona, ICMAB-CSIC, Campus UAB, Bellaterra, Spain

## Session CK-4

### Multiferroic and Magnetoelectric Compounds

**CK-4:IL01 Novel Effects at the Domain Walls of Multiferroic Materials**

**J. INIGUEZ**, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra, Spain

**CK-4:IL02 Multiferroics Studied by Resonant x-ray Scattering**

**C. MAZZOLI<sup>1</sup>, A. BOMBARDI<sup>2</sup>, G. GHIRINGHELLI<sup>1</sup>, <sup>1</sup>Politechnico di Milano, Italy; <sup>2</sup>Diamond Light Source, UK**

**CK-4:IL03 Dielectric Properties of Novel Multiferroic Systems**

**S. KROHNS**, P. LUNKENHEIMER, A. RUFF, A. LOIDL, Experimental Physics V, Center for Electronic Correlations and Magnetism, University of Augsburg, Germany; J. MÜLLER, M. LANG, Institute of Physics, Goethe-University Frankfurt, Germany; A.V. PROKOFIEV, Institute of Solid State Physics, Vienna University of Technology, Austria

**CK-4:IL04 Voltage Controlled Magnetic Order and Anisotropy at Ferromagnetic-ferroelectric Interfaces**

**G. RADAElli, C. RINALDI, D. PETTI, M. CANTONI, R. BERTACCO**, Department of Physics - Politecnico di Milano, Como, Italy; P. TORELLI, G. PANACCIONE, TASC Laboratory - Elettra Synchrotron IOM-CNR, Trieste, Italy; E. PLEKHANOV, S. PICOZZI, CNR-SPIN, L'Aquila, Italy; I. FINA, D. GUTIÉRREZ, J. FONTCUBERTA, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra, Catalonia, Spain; M. VARELA, Materials Science & Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA; Dpto. Física Aplicada III, Universidad Complutense de Madrid, Madrid, Spain

**CK-4:IL05 Ex-situ Solid-phase Epitaxy of MOCVD-deposited MeFe<sub>2</sub>O<sub>4</sub> Thin Films. Magnetic and Electric Properties of the Films**

**A. PLOKHikh**, A. KAUL, Moscow State University, Moscow, Russian Federation

**CK-4:IL06 Multifunctional Interfaces in Ferroic Oxides**

**D. MEIER**, M. FIEBIG, ETH Zuerich, Zuerich, Switzerland

**CK-4:IL07 Novel LiNbO<sub>3</sub>-Type ScFeO<sub>3</sub> with Weak Ferromagnetic Behavior at Room Temperature**

**T. KAWAMOTO**, K. FUJITA, T. MATOBA, K. TANAKA, Kyoto Univ., Kyoto, Kyoto, Japan; I. YAMADA, Osaka Prefecture Univ., Sakai, Osaka, Japan and JSP-PRESTO, Chiyoda-ku, Tokyo, Japan; S. KIM, P. GAO, X. PAN, UMich, Ann Arbor, MI, USA; H. ETANI, T. IRIFUNE, Ehime Univ., Matsuyama, Ehime, Japan

**CK-4:IL08 Magneto-electric and Ferroelectric Characterization of Multiferroic BiMn<sub>7</sub>O<sub>12</sub> Polymorphs**

**C. PERNECHELE<sup>1</sup>, F. MEZZADRI<sup>2,3</sup>, M. BUZZI<sup>4</sup>, D. DELMONTE<sup>1</sup>, M. SOLZI<sup>1</sup>, G. CALESTANI<sup>3</sup>, R. CABASSI<sup>2</sup>, F. BOLZONI<sup>2</sup>, <sup>1</sup>Dipartimento di Fisica e Scienze della Terra, Università di Parma, Parma, Italy; <sup>2</sup>IMEM-CNR, Parma, Italy; <sup>3</sup>Dipartimento di Chimica e GIAF, Università di Parma, Parma, Italy; <sup>4</sup>Paul Scherrer Institute, Villigen, Switzerland**

**CK-4:IL09 Multiferroic Composites: Observation of Simultaneous Ferromagnetic and Ferroelectric Phases**

**S.K. MANDAL**, P. DEY, Department of Physics, National Institute of Technology, Agartala, Tripura, India

## Session CK-5

### Coexistence of Superconductivity and Magnetism; Oxides with Diluted Magnetic Moments

**CK-5:IL01 Spin-polarized Supercurrents for Spintronics**

**M. ESCHRIG**, SEPNet and Hubbard Theory Consortium, Department of Physics, Royal Holloway, University of London, Egham, Surrey, UK

**CK-5:IL02 Impurity Effect on the Interplay Between Magnetism and Superconductivity in 1111 Iron-pnictides**

**S. SANNA**, Physics Department, University of Pavia, Pavia, Italy

**CK-5:IL03 Phase Diagrams of Fe Based Superconductors**

**B. BUECHNER**, Institut fuer Festkoerperforschung, IFW Dresden and Institut fuer Festkoerperphysik, TU Dresden, Dresden, Germany

**CK-5:IL04 NMR Studies in Multilayered Cuprates and Fe Pnictides: Toward Understanding the Mechanism of High Temperature Superconductors**

H. MUKUDA, Graduate School of Engineering Science, Osaka University, Toyonaka, Osaka, Japan

**CK-5:IL05 Computational Nano-materials Design of Dynamically Created New Functional Ordered Oxide Nano-superstructures by Spinodal Nano-decomposition: Design vs. Experimental Realizations**

H. KATAYAMA-YOSHIDA, Graduate School of Engineering Science, Osaka University, Osaka, Japan

**CK-5:IL06 Room Temperature Ferromagnetic Oxide Semiconductor**

T. FUKUMURA, Department of Chemistry, University of Tokyo, Tokyo, Japan

### Session CK-6

#### Novel Synthesis, Characterization and Application

**CK-6:IL01 High-pressure Synthesis, Crystal Structure, and Physical Properties of Novel Iron-based Perovskite Oxides**

I. YAMADA, Nanoscience and Nanotechnology Research Center, Research Institutes for the Twenty-First Century, Osaka Prefecture University, Sakai, Japan

**CK-6:IL02 Synthesis of Epitaxial Ultrathin Films Prepared by Polymer-Assisted Deposition**

J.M. VILA-FUNGUERIRÓN, B. RIVAS-MURIAS, F. RIVADULLA, Center for research in Biological Chemistry and Molecular Materials (CQIUS), University of Santiago de Compostela, Santiago de Compostela, Spain

**CK-6:IL03 SPINWIRE®, Magnetism for Security and Traffic Management**

X. MARTÍ, J. GARCÉS, IGS Reserach, La Pobla de Mafumet (Tarragona), Spain

### Poster Presentations

**CK:P01 Resistance Noise in Ultra-thin Films of LaNiO<sub>3</sub>**

J. SCOLA, A. SENEGRAS, B. BERINI, Y. DUMONT, Groupe d'Etude de la Matière Condensée (GEMaC), UMR 8635 du CNRS, UVSQ, Versailles Cedex, France

**CK:P02 Elastic and Mechanical Properties of SrCo<sub>1-x</sub>Ru<sub>x</sub>O<sub>3-δ</sub>**

R. THAKUR, R.K. THAKUR, N.K. GAUR, Department of Physics, Barkatullah University, Bhopal, India

**CK:P03 Structural, Magnetic and Electrical Properties of Spinel Ferrites Synthesized by Soft Mechanochemical Method**

Z.Z. LAZAREVIC<sup>1</sup>, C. JOVALEKIC<sup>2</sup>, D. SEKULIC<sup>3</sup>, M. ROMCEVIC<sup>1</sup>, N.Z. ROMCEVIC<sup>1</sup>, <sup>1</sup>Institute of Physics, University of Belgrade, Zemun, Belgrade, Serbia; <sup>2</sup>The Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia; <sup>3</sup>Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia

**CK:P04 Heteroepitaxial Growth of Pr<sub>0.7</sub>Ca<sub>0.3</sub>MnO<sub>3</sub> Films: MOCVD Synthesis and Characterization**

M.R. CATALANO, E. SCHILIRÒ, E. SMECCA, G. GUIDO CONDORELLI, G. MALANDRINO, Dipartimento di Scienze Chimiche, Università degli Studi di Catania, ISTM-CNR and INSTM UdR di Catania, Catania, Italy; G. CUCINOTTA, M. MANNINI, A. CANESCHI, Dipartimento di Chimica "Ugo Schiff", Università degli Studi di Firenze, INSTM UdR di Firenze, Sesto Fiorentino, (FI), Italy

### SYMPORIUM CL

## INORGANIC MATERIALS SYSTEMS FOR OPTICAL AND PHOTONIC APPLICATIONS

### Oral Presentations

#### Session CL-1

##### Optical Materials and Photonic Structures

**CL-1:IL01 Multifunctional Materials for Electronics and Photonics**

F. ROSEI, Centre for Energy, Materials and Telecommunications, INRS, Varennes (QC), Canada

**CL-1:IL02 Highly Doped Organic-inorganic Hybrid Materials for Memory and Laser Applications**

M. TAKAHASHI, Department of Materials Science, Osaka Prefecture University, Sakai, Osaka, Japan

**CL-1:IL03 Novel Brillouin- and Raman-Suppressing Optical Fibers**

J. BALLATO, T. HAWKINS, Clemson University, Anderson, SC, USA; P. DRAGIC, University of Illinois - Urbana Champaign, USA

**CL-1:IL04 Sintering Yb-doped Lu<sub>2</sub>O<sub>3</sub> Laser Hosts to Transparency Using Commercial Powders**

R.F. SPEYER, B. VITALE, M. SATIN, School of Materials Science and Engineering, Georgia Inst. of Technology, Atlanta, GA, USA

**CL-1:IL05 Structures and Properties of a Novel MgAlON Transparent Ceramics**

HAO WANG, XIAO LIU, BINGTIAN TU, WEIMIN WANG, ZHENGYI FU, State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan, China

**CL-1:IL06 Heterostructures Based on Chalcogenide Glasses for Photonic Applications**

V. NAZABAL<sup>1</sup>, M. CATHELINAUD<sup>1</sup>, B. BUREAU<sup>1</sup>, J. CHARRIER<sup>2</sup>, H. LHERMITE<sup>3</sup>, P. NEMEC<sup>4</sup>, G. RENVERSEZ<sup>5</sup>, M. CHAUVET<sup>6</sup>, E. RINNERT<sup>7</sup>, F. COLAS<sup>7</sup>, M. EICH<sup>8</sup>, M. SCHMIDT<sup>9</sup>, J.-L. ADAM<sup>1</sup>, <sup>1</sup>Chemistry Sciences Institute of Rennes, Glass & Ceramics team, UMR-CNRS 6226, University of Rennes 1, Rennes cedex, France; <sup>2</sup>FOTON, UMR CNRS 6082, Enssat, Lannion, France; <sup>3</sup>IEETR-Microélectronique, Université de Rennes 1, Campus de Beaulieu, Rennes cedex, France; <sup>4</sup>Department of Graphic Arts and Photophysics, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic; <sup>5</sup>Institut Fresnel, CNRS UMR 7249, Université d'Aix Marseille, Campus de Saint Jérôme, Marseille, France; <sup>6</sup>FEMTO-ST, UMR 6174, Université de Franche Comté, Besançon, France; <sup>7</sup>IFREMER, Service Interfaces et Capteurs, Dpt. Recherches et Développements Tech., Plouzané, France; <sup>8</sup>Institute of Optical and Electronic Materials, Hamburg University of Technology, Germany; <sup>9</sup>Institute of Photonic Technology, Jena, Germany

**CL-1:IL07 Optical Applications of Artificial Magnetic Lattices**

M. INOUE, H. TAKAGI, Y. NAKAMURA, PANG BOEY LIM, T. GOTO, Toyohashi University of Technology, Toyohashi, Japan

**CL-1:IL08 Preparation of Fluoride Laser Ceramics**

M.E. DOROSHENKO<sup>1</sup>, P.P. FEDOROV<sup>1</sup>, E.A. GARIBIN<sup>2</sup>, S.V. KUZNETSOV<sup>1</sup>, V.V. OSIKO<sup>1</sup>, <sup>1</sup>Prokhorov General Physics Institute, Moscow, Russia; <sup>2</sup>INCROM Ltd, S.-Peterburg, Russia

**CL-1:IL09 Modeling Small Signal Gain in Active Double-clad Tapered Optical Fibers**

V.E. USTIMCHIK, S.A. NIKITOV, Institute of Radio-engineering and Electronics of the Russian Academy of Sciences, Moscow, Russia; Moscow Institute of Physics and Technology (State University), Dolgoprudnyi, Moscow region, Russia; Y.U.K. CHAMOROVSKII, Institute of Radio-engineering and Electronics of the Russian Academy of Sciences, Moscow, Russia; V.N. FILIPPOV, Optoelectronics Research Centre, Tampere University of Technology, Tampere, Finland

**CL-1:IL10 Precipitation of QDs in Ag+-containing Glasses Induced by Laser Irradiation and Er<sup>3+</sup> Upconversion**

BYOUNGJIN SO<sup>1</sup>, C. LIU<sup>2</sup>, J. HEO<sup>1</sup>, <sup>1</sup>Pohang University of Science and Technology(POSTECH), Pohang, Republic of Korea; <sup>2</sup>State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology, China

**CL-1:IL11 Transparent Nano-glass-ceramic for Photonic Applications: Distribution of RE-doping Elements in the Fluoride Nano-crystals Analysed by XAS and HR-TEM**

A. DE PABLOS-MARTIN<sup>2</sup>, M.J. PASCUAL<sup>1</sup>, A. DURÁN<sup>1</sup>, <sup>1</sup>Instituto de Cerámica y Vidrio (CSIC), Madrid, Spain; <sup>2</sup>Fraunhofer Institute for Mechanics of Materials IWM, Halle, Germany

**CL-1:L12 Nearfield Characterization of Plasmonic Materials**

**R. VOGELGESANG**, Carl von Ossietzky Universität Oldenburg, Oldenburg, Germany

**CL-1:L13 Crystallization Kinetics and Optical Properties of PbS Quantum Dots Precipitated in Re<sup>3+</sup>-ion Containing Glasses**

**JONG HEO**, WON JI PARK, THANH HA CAO, Department of Materials Science and Engineering and Division of Advanced Nuclear Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk, Republic of Korea

**CL-1:L14 Glass-based Photonic Crystals: from Fabrication to Applications**

**A. CHIAPPINI<sup>1</sup>**, A. CHIASERA<sup>1</sup>, C. ARMELLINI<sup>1, 2</sup>, A. CARPENTIERO<sup>1</sup>, A. LUKOVIAK<sup>1, 3</sup>, M. MAZZOLA<sup>1</sup>, S. NORMANI<sup>1, 4</sup>, D. RISTIC<sup>1</sup>, S. VALLIGATLA<sup>1, 5</sup>, I. VASILCHENKO<sup>1, 4</sup>, S. VARAS<sup>1</sup>, G.C. RIGHINI<sup>6, 7</sup>, M. FERRARI<sup>1, 7</sup>, <sup>1</sup>IFN - CNR CSMFO Lab., Povo, Trento, Italy; <sup>2</sup>FBK Center for Materials & Microsystems, Povo, Trento, Italy; <sup>3</sup>Institute of Low Temperature and Structure Research, PAS, Wroclaw, Poland; <sup>4</sup>Dipartimento di Fisica, Università di Trento, Trento, Italy; <sup>5</sup>School of Physics, University of Hyderabad, Hyderabad, India; <sup>6</sup>IFAC - CNR, MiPLa.b, Sesto Fiorentino, Italy; <sup>7</sup>Museo Storico della Fisica e Centro di Studi e Ricerche Enrico Fermi, Roma, Italy

**CL-1:L15 Novel Photo-Thermo-Refractive Glassceramics: Structure, Properties, Photonic and Plasmonic Applications**

**N.V. NIKONOROV**, V.A. ASEEV, V.D. DUBROVIN, A.I. IGNATIEV, A.I. SIDOROV, E.M. SGIBNEV, St. Petersburg National Research University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

**CL-1:L16 Transparent Nanoceramics for Optical Applications**

**W. STREK**, P. GLUCHOWSKI, L. MARCINIAK, D. HRENIAK, Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, Poland

**CL-1:L17 Hybrid ZnO Nanowire Structures: Surface Excitons and Coupling Processes at the Heterointerface**

**T. VOSS**, Institute of Solid State Physics, University of Bremen, Bremen, Germany

**CL-1:L18 Generalized Efficient Exfoliation of Ultra-large Unilamellar LRH Nanosheets and the Effects of Crystallographic Orientation on Photoluminescence**

**QI ZHU**, J.-G. LI, X.D. LI, X. D. SUN, Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), School of Materials and Metallurgy, Northeastern University, Shenyang, Liaoning, China

**CL-1:L19 Recent Research Progress of Phosphors for White Light Emitting Diodes**

**YUHUA WANG**, Lanzhou University, Lanzhou, China

**CL-1:L20 Development of Novel LED Phosphor Materials using New Synthesis Techniques**

**K. TODA**, Niigata University, Niigata, Japan

**CL-1:L21 New Phosphors Based on Gadolinium Aluminate Garnet**

**JI-GUANG LI<sup>1</sup>**, JINKAI LI<sup>2</sup>, XUDONG SUN<sup>2</sup>, YOSHIO SAKKA<sup>1</sup>, <sup>1</sup>National Institute for Materials Science, Tsukuba, Ibaraki, Japan; <sup>2</sup>Northeastern University

**CL-1:L22 The Luminescent Property of Ca<sup>2+</sup> Co-doped Y<sub>2</sub>O<sub>3</sub>:Eu<sup>3+</sup> under UVU Excitation**

**WENJING LIU**, Lanzhou University, Lanzhou, China

**CL-1:L23 Role of Cu<sup>+</sup> and Crystal Water on Blue Luminescence of Copper Doped Hydronium Alunite**

**Y. KUROKI**, S. KIMURA, T. OKAMOTO, Nagaoka University of Technology, Nagaoka, Niigata, Japan; M. TAKATA, Japan Fine Ceramics Center, Nagoya, Japan, and Nagaoka University of Technology, Nagaoka, Niigata, Japan

**CL-1:L24 New Halide Crystals for Solid State Lasers**

**L.I. ISAENKO**, Institute of Geology and Mineralogy, Russian Academy of Sciences, Siberian branch, Russia

**CL-1:L25 Bulk Single Crystal Growth of Oxides and Fluorides for Optical Applications**

**K. SHIMAMURA**, E.G. VÍLLORA, National Institute for Materials Science, Tsukuba, Japan

**Session CL-2****Advances in Characterization Techniques****CL-2:L01 Sm-doped Glasses and Glass-ceramics for use in High-dose, High-resolution Medical Applications**

**S. KASAP**, G. OKADA, C. KOUGHIA, S. VAHEDI, University of Saskatchewan, Canada; G. BELEV, T. WYSOKINSKI, D. CHAPMAN, The Canadian Light Source, Saskatoon, Canada; A. EDGAR, Victoria University of Wellington, New Zealand; J. UEDA, S. TANABE, Kyoto University, Japan

**CL-2:L02 Fabrication and Optical Near-field Imaging of Ultrasmooth Silver Nanolayers**

**T. SZOPLIK**, P. WRÓBEL, T. STEFANIUK, University of Warsaw, Faculty of Physics, Warsaw, Poland

**CL-2:L03 Near- and Mid-infrared Spectroscopic Ellipsometry for Accurate Determination of Optical Parameters of Ge-Sb-Se Glasses**

**P. NEMEC<sup>1</sup>**, M. OLIVIER<sup>1</sup>, E. BAUDET<sup>2</sup>, P. BENDA<sup>3</sup>, A. KALENOVA<sup>3</sup>, V. NAZABAL<sup>1, 2</sup>, <sup>1</sup>Department of Graphic Arts and Photophysics, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic; <sup>2</sup>Institut des Sciences Chimiques de Rennes, UMR CNRS 6226, Equipe Verres et Céramiques, Université de Rennes 1, Rennes, France; <sup>3</sup>Institute of Chemistry and Technology of Macromolecular Materials, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic

**CL-2:L04 Advances in Atomic Scale Characterization of Semiconductor Quantum Dots**

**H. EISELE**, Technische Universität Berlin, Institut für Festkörperphysik, Berlin, Germany

**CL-2:L05 Vibration of Nanoparticles**

**M. IVANDA**, Ruder Boskovic Institute, Zagreb, Croatia

**CL-2:L06 Excitation of Surface Plasmon with High NA Lens with Spherical Aberration**

**K.B. RAJESH**, Department of Physics, Chikkanna Govt. Arts College, Tirupur, Tamil Nadu, India

**Session CL-3****Light Management for Active Applications****CL-3:L01 Persistent Luminescence in ZnGa<sub>2</sub>O<sub>4</sub>:Cr, a Biomarker for Long-term in Vivo Bioimaging**

**B. VIANA<sup>1</sup>**, A. BESSIÈRE<sup>1</sup>, S.K. SHARMA<sup>1</sup>, D. GOURIER<sup>1</sup>, N. BASAVARAJU<sup>2</sup>, K.R. PRIOLKAR<sup>2</sup>, L. BINET<sup>1</sup>, A.J. BOS<sup>3</sup>, P. DORENBOS<sup>3</sup>, T. MALDINEY<sup>4</sup>, C. RICHARD<sup>4</sup>, D. SCHERMAN<sup>4</sup>, <sup>1</sup>Chimie-ParisTech, LCMCP, UMR - CNRS 7574, Paris Cedex, France; <sup>2</sup>Department of Physics, Goa University, Goa, India; <sup>3</sup>Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands; <sup>4</sup>UPCGI; U 1022 Inserm; Université Paris Descartes, Chimie-ParisTech, Paris cedex, France

**CL-3:L02 Transformation Optics and Invisibility Cloaks**

**B. ZHANG**, Nanyang Technological University, Singapore, Singapore

**CL-3:L03 Thermo-Chromo-Luminescent Compounds: Mn(II) doped ZnAl<sub>2</sub>O<sub>4</sub> as Thermal History Sensor**

**L. CORNU**, V. JUBERA, M. DUTTINE, M. MÉNÉTRIER, M. GAUDON, CNRS, Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France

**CL-3:L04 Phosphor in Glass Based on High Refractive Index Glasses Doped with RE and TM Ions for LEDs**

**V.A. ASEEV<sup>1</sup>**, Y.A. NEKRASOVA<sup>1</sup>, N.V. NIKONOROV<sup>1</sup>, E.V. KOLOBKova<sup>1</sup>, O.A. USOV<sup>2</sup>, <sup>1</sup>NRU ITMO, St. Petersburg, Russia; <sup>2</sup>Ioffe Physical-Technical Institute of the RAS, St. Petersburg, Russia

**CL-3:L05 Optical Sensing Properties Based on a Reversible Redox Process**

**L. CORNU**, M. GAUDON, P. VEBER, A. VILLESUZANNE, S. PEDEV, O. TOULEMONDE, M. JOSSE, R. DECOURT, **V. JUBERA**, ICMCB-CNRS, Pessac Cedex, France

**CL-3:L06 Development of Efficient Solar-pumped Laser for Renewable Energy Source**

**S. WADA<sup>1</sup>**, T. OGAWA<sup>1</sup>, M. HIGUCHI<sup>2</sup>, IRIKEN, Saitama, Japan; <sup>2</sup>Hokkaido University, Japan

**CL-3:L07 Femtosecond Laser Processing of Glass Materials for Assembly-free Fabrication of Photonic Microsensors**

**LEI YUAN**, XINWEI LAN, JIE HUANG, **HAI XIAO**, Department of Electrical and Computer Engineering, Clemson University, Clemson, SC, USA

**CL-3:L08 Design and Development of Phosphors for Solid State Lighting**

**J. McKITTRICK**, J.K. HAN, J.I. CHOI, J.B. TALBOT, University of California, San Diego, La Jolla, CA, USA

**CL-3:L09 Nanoscale Chemical Imaging of Plasmonic Hot-spots beyond the Diffraction Limit**

**B. LAHIRI\***, G. HOLLAND, V. AKSYUK, A. CENTRONE, Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, Maryland, USA; \*Present Address: School of Engineering, University of Glasgow, Glasgow, UK

## Session CL-4

### Advances in Research and Applications

#### **CL-4:IL01 Femtosecond Laser Micromachining**

R. OSELLAME, **R. RAMPONI**, IFN-CNR (Institute of Photonics and Nanotechnology of the National Research Council), Department of Physics, Politecnico di Milano, Milano, Italy

#### **CL-4:IL02 Bioanalytics using Single Plasmonic Nanostructures**

J. WIRTH, T. SCHNEIDER, N. JAHR, O. STRANIK, F. GARWE, A. CSAKI, **W. FRITZSCHE**, Institute of Photonic Technology (IPHT), Jena, Germany

#### **CL-4:IL03 A New Promising Scintillator Material, Gd<sub>2</sub>Si<sub>2</sub>O<sub>7</sub>:Ce, for Gamma- and Alpha-rays**

**J.H. KANEKO**, Graduate School of Engineering, Hokkaido University, Sapporo, Japan

#### **CL-4:IL04 Development of Confined Photonic Structures for Sensing**

**S. PELLI**, D. FARNESI, G.C. RIGHINI, Istituto di Fisica Applicata "Nello Carrara" - CNR, Sesto Fiorentino (Firenze), Italy and Museo Storico della Fisica Centro Studi e Ricerche "Enrico Fermi", Roma, Italy; A. BARUCCI, F. BALDINI, S. BERNESCHI, F. COSI, A. GIANNETTI, G. NUNZI CONTI, S. SORIA, S. TOMBELLI, C. TRONO, Istituto di Fisica Applicata "Nello Carrara" - CNR, Sesto Fiorentino (Firenze), Italy

#### **CL-4:IL05 Nanocrystals Based Nanoimprinted Photonic Structures**

**V. REBOUD**, CEA-LETI-Minatec Grenoble, Grenoble, France; C.M. SOTOMAYOR, Catalan Institute of Nanoscience and Nanotechnology ICN2, Campus UAB, Bellaterra, Spain, Catalan Institute for Research and Advanced Studies ICREA, Bellaterra, Barcelona, Spain

### *Poster Presentations*

#### **CL:P01 Fast UV Interconfigurational 5d-4f Luminescence of Pr<sup>3+</sup> in Li<sub>6</sub>Y(BO<sub>3</sub>)<sub>3</sub>**

M. TREVISANI, F. PICCINELLI, I. CARRASCO RUIZ, **M. BETTINELLI**, Dept. Biotechnology, University of Verona, Italy

#### **CL:P02 Preparation and Study of Optical Properties of Transparent Thulium Doped Yttrium-aluminum Garnet Ceramic (Tm:YAG)**

**A. SIDOROWICZ**, Warsaw University of Technology, Warsaw, Poland, Institute of Electronic Materials Technology, Warsaw, Poland; M. NAKIELSKA, A. WAJLER, H. WEGLARZ, Institute of Electronic Materials Technology, Warsaw, Poland; A. OLSZYNA, Warsaw University of Technology, Warsaw, Poland

#### **CL:P03 Investigations on Luminescence Characteristics and Influence of Doping and Co-doping Different Rare Earth Ions of White Phosphorescence Materials Having Different Luminescent Centers**

**E. KARACAOGLU**, B. KARASU, E. ÖZTÜRK, Karamanoglu Mehmetbey University, Karaman, Turkey

#### **CL:P04 Synthesis and Optical Characterization of M- $\alpha$ -SiAlON (M=Ca, Ba, Sr) Doped by Europium**

**D. MICHALIK**, T. PAWLIK, M. SOPICKA-LIZER, R. LISIECKI, Silesian University of Technology, Katowice, Poland

#### **CL:P05 Transparent Tm, Ho:YAG Ceramics Obtained by Reaction Sintering**

A. SIDOROWICZ, Warsaw University of Technology, Warsaw, Poland, Institute of Electronic Materials Technology, Warsaw, Poland; **H. WEGLARZ**, M. NAKIELSKA, A. WAJLER, Institute of Electronic Materials Technology, Warsaw, Poland; A. OLSZYNA, Warsaw University of Technology, Warsaw, Poland

#### **CL:P06 Influence of m and n Parameters of Ca- $\alpha$ -sialon:Eu Solid Solution on Phosphor's Optical Properties**

**T. PAWLIK**, D. MICHALIK, M. SOPICKA-LIZER, S. SERKOWSKI, Department of Material Science, Silesian University of Technology, Gliwice, Poland

#### **CL:P07 Broadband Downshifting Luminescence in Yb<sup>3+</sup>-doped K<sub>2</sub>Y(WO<sub>4</sub>)(PO<sub>4</sub>) for Efficient Photovoltaic Generation**

**LILI HAN**, Department of Material Science, School of Physical Science and Technology, Lanzhou University, Lanzhou, China

#### **CL:P08 Synthesis of Gd<sub>6</sub>WO<sub>12</sub>:Yb, Tm Nanoparticles with Intense blue Upconversion Luminescence**

**SHUANGYU XIN**, Y.H. WANG, Lanzhou University, Lanzhou, Gansu Province, China

#### **CL:P09 Formation and Investigation of the Metallic Particles in the Fluorine Phosphate Glasses**

**E.V. KOLOBKHOVA**, V.A. ASEEV, N.V. NIKONOROV, St. Petersburg State University of Information Technologies, Mechanics, and Optics, Saint-Petersburg, Russia

#### **CL:P10 Phase Formation and Densification Peculiarities of Highly Nd<sup>3+</sup>-doped Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub> Ceramics during Reactive Sintering**

R.P. YAVETSKIY, V.N. BAUMER, A.G. DOROSHENKO, YU.L. KOPYLOV, **D.YU. KOSYANOV**, V.B. KRAVCHENKO, S.V. PARKHOMENKO, A.V. TOLMACHEV, Institute for Single Crystals, STC "Institute for Single Crystals", NASU, Kharkov, Ukraine

#### **CL:P11 Optical Properties of Translucent YAG/YAG-Ce Ceramics**

**J. PLEWA**, T. JÜSTEL, Münster University of Applied Sciences, Steinfurt, Germany

#### **CL:P12 Growth Control of Epitaxial CaMoO<sub>4</sub> Thin Films by Pulsed Laser Deposition**

**T. DAZAI**, Y. HAMASAKI, S. YASUI, M. ITOH, Tokyo Institute of Technology, Yokohama, Japan

#### **CL:P13 Rare Earth Doped Glasses for Displays and Light Generation**

U. CALDIÑO<sup>1</sup>, M. BETTINELLI<sup>2</sup>, M. FERRARI<sup>3</sup>, E. PASQUINI<sup>4, 5</sup>, S. PELLI<sup>14</sup>, A. SPEGHINI<sup>2, 4</sup>, **G.C. RIGHINI**<sup>4, 6</sup>, <sup>1</sup>Departamento de Física, Universidad Autónoma Metropolitana-Iztapalapa, México, D.F., México; <sup>2</sup>Dipartimento di Biotecnologie, Università di Verona, and INSTM, UdR Verona, Verona, Italy; <sup>3</sup>IFN - CNR CSMFO Lab., Povo, Trento, Italy; <sup>4</sup>Istituto di Fisica Applicata Nello Carrara, C.N.R., Sesto Fiorentino (Firenze), Italy; <sup>5</sup>Dipartimento di Fisica e Astronomia, Università di Firenze, Sesto Fiorentino (Firenze), Italy; <sup>6</sup>Museo Storico della Fisica e Centro Studi e Ricerche "Enrico Fermi", Roma, Italy

#### **CL:P14 Structural and Optical Characterization of an Elpasolite Matrix: a new type of Opto-thermo Chemical Sensor**

L. CORNU, **M. GAUDON**, P. VEBER, S. PECHÉV, O. TOULEMONDE, M. JOSSE, R. DECOURT, V. JUBERA, CNRS, Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France

#### **CL:P15 Pure Excitonic Emission of ZnO Nanoparticles: Synthesis and Optical Characterization**

**E. ILIN**, C. AYMONIER, S. MARRE, P. MARTIN, R. BROWN, S. LACOMBE, V. JUBERA, ICMCB-CNRS, Pessac Cedex, France

#### **CL:P16 Performance of DLC and Si-DLC Films on Ti6Al4V for Aerospace Applications**

L.L. FERREIRA<sup>1</sup>, P.A. RADÍ<sup>1</sup>, A.S. DA SILVA SOBRINHO<sup>1</sup>, L.V. SANTOS<sup>2</sup>, **M. MASSI**<sup>1, 3</sup>, <sup>1</sup>Instituto Tecnológico de Aeronáutica, ITA/CTA, São Jose dos Campos - SP, Brazil; <sup>2</sup>Universidade do Vale do Paraíba, IP&D/UNIVAP, São Jose dos Campos - SP, Brazil; <sup>3</sup>Instituto de Ciência e Tecnologia, ICT/UNIFESP, São Jose dos Campos - SP, Brazil

## SYMPORIUM CM INORGANIC POLYMERS (GEOPOLYMERS) AND GEOCEMENTS: ENVIRONMENTALLY FRIENDLY CERAMIC MATERIALS FOR LOW-TECHNOLOGY AND HIGH- TECHNOLOGY APPLICATIONS

### *Oral Presentations*

#### Session CM-1

##### Preparation and Characterization

#### **CM-1:IL01 Exploring the Limits of Possible Geopolymer Precursors**

**A. VAN RIESSEN**, W. RICKARD, Geopolymer Research Group, Curtin University, Perth, Western Australia

#### **CM-1:IL02 Potential of Secondary Resources as Aluminium-silicate Precursors for Geopolymer Synthesis**

**S.L.A. VALCKE**, P. PIPILIKAKI, H.R. FISCHER, TNO, Delft, The Netherlands

#### **CM-1:L03 Interactions between Alkaline Solution and Sand or Metakaolin: Polycondensation Reactions**

**L. VIDAL**, S. ROSSIGNOL, GEMH-ENSCI, Limoges Cedex, France; J.-L. GELET, MERSEN, Saint Bonnet-de-Mure, France

**CM-1:L04 Alkali-activated Fly-ash Foams - Synthesis, Chemo-physical Properties and Microstructure Modeling**

**V. SMILAUER<sup>1</sup>, P. HLAVÁČEK<sup>1</sup>, F. SKVÁRA<sup>2</sup>, R. SULC<sup>1</sup>, L. KOPECKÝ<sup>1</sup>,** <sup>1</sup>Czech Technical University in Prague, Faculty of Civil Engineering, Prague, Czech Republic; <sup>2</sup>Institute of Chemical Technology Prague, Faculty of Chemical Engineering, Department of Glass and Ceramics, Prague, Czech Republic

**CM-1:L05 Siliceous Species Effect from Various Alkaline Solutions on Géopolymérisation Mechanism**

**A. GARZHOUNI**, F. GOUNY, E. JOUSSEIN, S. ROSSIGNOL, GEMH-ENSCI, Limoges Cedex, France

**CM-1:L06 Fabrication and Characterization of Geopolymers from Japanese Volcanic Ashes**

**S. HASHIMOTO**, H. TAKEDA, H. KANIE, S. HONDA, Y. IWAMOTO, Nagoya Institute of Technology, Nagoya, Japan

**CM-1:L07 Influence of Industrial Waste Materials and Chemical Mixing Components on the Durability of Alkali Activated Concrete**

**K. DOMBROWSKI-DAUBE**, H. LANGE, J. SACHL, F. DAHLHAUS, Technical University Bergakademie Freiberg, Freiberg, Germany

**CM-1:L08 Calcium Hydroxide-potassium Carbonate as an Alkali Activator for Kaolinite**

**H. RAHIER**, M. ESAIFAN, J. WASTIELS, Vrije Universiteit Brussel, Brussels, Belgium; H. KHOURY, Materials Research Laboratory, University of Jordan, Amman, Jordan

**CM-1:L09 Heated Clay-based Geopolymer: Preparation and Characterization**

**K. EL HAFID**, Laboratoire de Physico-chimie des Matériaux et Environnement, Unité Associée au CNRST (URAC 20), Département de Chimie, Faculté des Sciences Semlalia, Université Cadi Ayyad, Marrakech, Morocco

**CM-1:L10 The Secret Life of Inorganic Polymers**

**K.J.D. MACKENZIE**, MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, New Zealand

**CM-1:L11 Bayer - Flyash Geopolymers: Development and Application**

**E. JAMIESON**, Alcoa of Australia, Kwinana, WA, Australia; A. VAN RIESSEN, Curtin University, Perth, WA, Australia; H. NIKRAZ, Curtin University, Perth, WA, Australia

**CM-1:L12 Granulation of Industrial Waste with Geopolymer Binders**

**H.W. NUGTEREN<sup>1</sup>, Y. DE GROOT<sup>1</sup>, A. KEULEN<sup>2</sup>, G.M.H. MEESTERS<sup>1</sup>**, <sup>1</sup>Delft University of Technology, Faculty of Applied Sciences, Department of Chemical Engineering, Delft, The Netherlands; <sup>2</sup>Van Gansewinkel Minerals B.V., The Netherlands

**CM-1:L13 Ceramic Waste as New Precursor for Geopolymerization**

**O. FUSCO, A. FREGNI, M.C. BIGNOZZI**, Dipartimento di Ingegneria Civile, Chimica, Ambientale e dei Materiali, University of Bologna, Italy; L. GUARDIGLI, R. GULLI, Dipartimento di Architettura, University of Bologna, Italy

**CM-1:L14 Synthesis of Inorganic Polymers using a CaO-Al2O3-SiO2-FeO Based Slag**

**L. KRISKOVA<sup>1,2</sup>, B. BLANPAIN<sup>1</sup>, P.T. JONES<sup>1</sup>, Y. PONTIKES<sup>1,2</sup>**, <sup>1</sup>High Temperature Processes and Industrial Ecology Research Group, Department of Metallurgy and Materials Engineering, KU Leuven, Leuven, Belgium; <sup>2</sup>Secondary Resources for Building Materials, Consortium in Sustainable Inorganic Materials Management, SIM2, KU Leuven, Leuven, Belgium

**CM-1:L15 Fiber Reinforced Geopolymer Composites**

**W.M. KRIVEN**, S.S. MUSIL, S. CHO, K. SANKAR, T.P. DIETZ, G.P. KUTYLA, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, IL, USA; A.A. KOLCHIN, S.T. MILEIKO, Solid State Physics Institute, Russian Academy of Sciences, Chernogolovka, Moscow District, Russia

**CM-1:L16 Inorganic Polymers (Geopolymers) as Novel Catalysts for Organic Reactions**

**M. ALZEER**, MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

**CM-1:L17 Carbonation in Metakaolin-based Geopolymer**

**R. POUHET**, M. CYR, Université de Toulouse, UPS, INSA, Laboratoire Matériaux et Durabilité des Constructions, Toulouse Cedex, France

**CM-1:L18 Development of Novel Low Alkali Content Activated Fly Ash Cement (LAFAC)**

**S. GUPTA**, M.F. RIYAD, Advanced Materials Research Group, Dept. of Mechanical Engineering, University of North Dakota, Grand Forks, ND, USA

**CM-1:L19 A Taguchi Approach for the Synthesis Optimization of Metakaolin Based Geopolymers**

**A. TSITOURAS, S. TSIVILIS, G. KAKALI**, National Technical University of Athens, School of Chemical Engineering, Zografou Campus, Athens, Greece

**CM-1:L20 Preparation of Fly-ash Modified Magnesium Phosphate Cement-based Composite**

**ZHU DING**, College of Civil Engineering, Shenzhen University, Guangdong Province, China

**CM-1:L21 Corrosion Resistance and Mechanical Performances of Reinforced Fly-ash Geopolymer Mortars**

**M.E. NATALI**, S. MANZI, L. CARABBA, C. CHIAVARI, M.C. BIGNOZZI, Dipartimento di Ingegneria Civile, Chimica, Ambientale e dei Materiali, University of Bologna, Italy; M. ABBOTTONI, A. BALBO, C. MONTICELLI, Centro di Corrosione e Metallurgia "Aldo Dacco", University of Ferrara, Italy

**CM-1:L22 Geopolymer Quality Classification Based on the Acid Resistance Method**

**M. STEINEROVA**, J. KOTAS, L. MATULOVA, IRSM AS CR, v.v.i., Prague, Czech Republic

**CM-1:L23 The Influence of Short Fibres and Foaming Agents on the Physical and Thermal Behaviour of Geopolymer Composites**

**G. MASI<sup>1,2</sup>, W.D.A RICKARD<sup>2</sup>, A. VAN RIESSEN<sup>2</sup>, M.C. BIGNOZZI<sup>1</sup>**, <sup>1</sup>Department of Civil, Environmental and Materials Engineering, University of Bologna, Bologna, Italy; <sup>2</sup>Geopolymer Research Group, Curtin University, Perth, WA, Australia

**CM-1:L24 Effect of Different Activators on the Behavior of Ductile Fiber Reinforced Geopolymer Composite (DFRGC)**

**B. NEMATOLLAHI<sup>1</sup>, J. SANJAYAN<sup>1</sup>, FAIZ UDDIN AHMED SHAIKH<sup>2</sup>**, <sup>1</sup>Center for Sustainable Infrastructure (CSI), Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, Melbourne, Victoria, Australia; <sup>2</sup>Department of Civil Engineering, Curtin University, Perth, Australia

**CM-1:L25 Chemically Activated Cements Based on Ground Granulated Blast Furnace Slag and Fly Ash**

**R.E. GONZÁLEZ, L.Y. GÓMEZ-ZAMORANO**, Universidad Autónoma de Nuevo León, Facultad de Ingeniería Mecánica y Eléctrica, Programa Doctoral en Ingeniería de Materiales, San Nicolás de los Garza, Nuevo León, México; L. STRUBLE, Department of Civil Engineering, University of Illinois at Urbana-Champaign, USA

## Session CM-2

### Applications

**CM-2:L01 Photoactive Inorganic Polymer Composites with Oxide Nanoparticles**

**M. FALAH POORSICHANI**, MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

**CM-2:L02 Geopolymers for Fire Resistant Applications: Recent Results and Future Directions**

**W.D.A. RICKARD**, A. VAN RIESSEN, Geopolymer Research Group, Curtin University, Perth, WA, Australia

**CM-2:L03 Synthesis and "in vivo" Assays of Geopolymers for Use as Bone Biomaterials.**

**H. OUDADESSE<sup>1</sup>, A.C. DERRIEN<sup>1</sup>, J. DAVIDOVIS<sup>2</sup>, G. CATHELINEAU<sup>1</sup>**, <sup>1</sup>Université de Rennes1, UMR-CNRS 6226, Rennes, France; <sup>2</sup>Geopolymer Institute, Saint-Quentin, France

**CM-2:L04 Shape Forming a Meta-kaolin Based Geopolymers Containing PLA Fibers for Membrane Application**

**H.R. RASOULI<sup>1</sup>, F. GOLESTANI FARD<sup>1</sup>, A. MIRHABIBI<sup>1</sup>, G. MOUSAVI NASAB<sup>1</sup>, K. MACKENZIE<sup>2</sup>**, <sup>1</sup>School of Metallurgy and Materials Engineering, Iran University of Science and Technology, Tehran, Iran; <sup>2</sup>MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

**CM-2:L05 Applications of Fly Ash-based Geopolymer for Structural Member and Repair Materials**

**W. YODSUDJAI**, Department of Civil Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand

**CM-2:L06 Porous Geopolymers for Counteracting of Urban Heat Island Effect**

**K. OKADA**, Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, Japan; A. IMASE, T. ISOBE, A. NAKAJIMA, Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, Tokyo, Japan

**CM-2:L07 Humidity Controlling Wall Tiles by Geopolymerisation**

**G. CIGDEMIR KORC<sup>1</sup>, Y. YILDIRIM<sup>2</sup>, A. KARA<sup>1,3</sup>, F. KARA<sup>3</sup>**, <sup>1</sup>Ceramic Research Center, Anadolu University, Eskisehir, Turkey; <sup>2</sup>Kaleseramik Research and Development Centre, Can, Canakkale; <sup>3</sup>Anadolu University, Department of Material Science and Engineering, Eskisehir, Turkey

**CM-2:L08 Solidification/Stabilization of Organic Liquid in Metakaolin-based Sodium Geopolymer**

**D. LAMBERTIN**, A. ROOSES, A. POULESQUEN, F. FRIZON, CEA/DEN/MAR/DTCD/SPDE, Bagnols-sur-Cèze, France

**CM-2:L09 Coating Interface Characteristics of Geopolymers onto Different Metal Substrates****L.C. KUMRUOGLU**, A. OZER, Cumhuriyet University, Sivas, Turkey**CM-2:L10 A research on a Coal Power Plant Fly Ash from Sivas Region for Geopolymer Brick Production****B. CAGLAR**, A. OZER, K. SAHBUDAK, L.C. KUMRUOGLU, Cumhuriyet University, Sivas, Turkey**Poster Presentations****CM:P01 Application of Different Treatment of Illite Clay for Low Temperature Ceramics****G. SEDMALE**, A. KOROVKINS, I. SPERBERGA, M. RUNDANS, Riga Technical University, Institute of Silicate Materials, Riga, Latvia; G. STINKULIS, University of Latvia, Department of Geology, Riga, Latvia**CM:P02 Suitability of Illite Based Clays for Production of Geocements****I. SPERBERGA**, M. RUNDANS, G. SEDMALE, Riga Technical University, Institute of Silicate Materials, Riga, Latvia**CM:P03 Obtaining of Lightweight Geopolymer using Ash from Thermal Power Plants****B.I. BOGDANOV**, P.S. PASHEV, Y.H. HRISTOV, University "Prof. dr Assen Zlatarov", Department of Inorganic Substances and Silicates, Bougas, Bulgaria**CM:P04 Durability of Fly Ash Geopolymer Mortars in Corrosive Environments, Compared to that of Cement Mortars****A. ASPROGERAKAS**, A. KOUTELIA, G. KAKALI, **S. TSIVILIS**, National Technical University of Athens, School of Chemical Engineering, Athens, Greece**CM:P05 Synthesis, Characterization and Application of Geopolymer Catalysts Containing Ni Nanoparticles for Reduction of Nitro Compounds****A.A. NOURBAKHSH<sup>1</sup>**, R.J. KALBASI<sup>2</sup>, M. GHAFFARI<sup>2</sup>, K.J.D. MACKENZIE<sup>3</sup>, <sup>1</sup>Department of Ceramics, Shahreza Branch, Islamic Azad University, Isfahan, Iran; <sup>2</sup>Department of Chemistry, Shahreza Branch, Islamic Azad University, Shahreza, Isfahan, Iran; <sup>3</sup>MacDiarmid Institute for Advanced Materials and Nanotechnology, Victoria University of Wellington, New Zealand

## SYMPOSIUM CN SCIENCE AND TECHNOLOGY FOR SILICATE CERAMICS

**Oral Presentations****Session CN-1****Functionalized Surfaces of Silicate Ceramics****CN-1:L01 Multifunctional Inorganic Glazes: Surfaces Mimicking the Nature****J.J. REINOSA**, A. DEL CAMPO, J.F. FERNÁNDEZ, Glass and Ceramics Institute (CSIC), Madrid, Spain**CN-1:L02 Antibacterial and Self-cleaning Coatings for Silicate Ceramics****F. BONDIOLI**, Department of Materials and Environmental Engineering, University of Modena and Reggio Emilia, Modena, Italy**CN-1:L03 Nanocomposite Photocatalyst Based on Layered Double Hydroxides (LDHs) Associated with TiO<sub>2</sub>****J. RANOJAJEC**, O. RUDIC, S. VUCETIC, University of Novi Sad, Faculty of Technology, Novi Sad, Serbia**CN-1:L04 Superhydrophobic and Superhydrophilic Surfaces: the Way for Self-cleaning Ceramics****M. RAIMONDO**, CNR ISTECH, Faenza, Italy**CN-1:L05 EasyDep - Photocatalytic Surfaces for Silicate Ceramics****D. TOBALDI**, M.P. SEABRA, **J.A. LABRINCHA**, University of Aveiro & CICECO, Aveiro, Portugal**CN-1:L06 Solar Reflectance of Glazed Tiles****T. SUGIYAMA**, H. KAKIUCHIDA, K. KUSUMOTO, M. OHASHI, Materials Research Institute for Sustainable Development, National Institute of Advanced Industrial Science and Technology, Nagoya, Japan**Session CN-2****Sustainability of Silicate Ceramics Manufacturing****CN-2:L01 Sustainability and Competitiveness in the Ceramic Tile Sector: an Overview****G. TIMELLINI**, R. RESCA, Centro Ceramico Bologna, Bologna, Italy**CN-2:L02 Preparation of Flame Retardant Layered Silicate / Polyamide 66 Nanocomposite****K. TAMURA<sup>1</sup>**, S. OHYAMA<sup>1,2</sup>, K. UMEYAMA<sup>3</sup>, <sup>1</sup>National Institute for Materials Science, Tsukuba, Ibaraki, Japan; <sup>2</sup>Department of Chemistry, Toho University, Funabashi, Chiba, Japan; <sup>3</sup>Topy Industries LTD, Toyohashi, Aichi, Japan**CN-2:L03 Development of a Semi-wet Process for Ceramic Floor Tile Granule Production****K. KAYACI**, A. ALTINTAS, Y. YILDIRIM, M. KILIC, E. DURGUT, Kale Ceramic Research & Development Center, Can Canakkale, Turkey, **H. ERGIN**, Mining Engineering Department, Istanbul Technical University, Istanbul, Turkey**CN-2:L04 Lightweight Aggregate from Tunisian Clay****F. JAMOUSSI<sup>1</sup>**, E. FAKHFAKH, B. MOUSSI, M. HACHANI, H.R. CHAFTAR, J. YANS, Centre National de Recherche en Sciences des Matériaux (CNRSM), Technopôle de Borj Cedria, Soliman, Tunisia**CN-2:L05 Energy and Material Efficiency during Firing of Silicate Ceramics****M. HERRERA**, H. BRENDL, F. RAETHER, Fraunhofer Institute for Silicate Research ISC - Center for High Temperature Materials and Design, Bayreuth, Bayern, Germany**CN-2:L06 Functional Glasses and Glass-ceramics Derived from Wastes****F. BERNARDO**, Dipartimento di Ingegneria Industriale, Università degli Studi di Padova, Padova, Italy**CN-2:L07 Mixtures of Metallurgical Slags and Recycled Glasses Converted into Functional Glass-ceramics: Thermally Insulating Foams and Magnetic Monoliths for Induction Heating****I. PONSOT**, M. MARANGONI, E. BERNARDO, Dipartimento di Ingegneria Industriale, Università di Padova, Padova, Italy**CN-2:L08 Determination of Dry Grinding Properties of Floor Tile Wastes****K. KAYACI**, A. ALTINTAS, Y. YILDIRIM, M. KILIC, E. DURGUT, C. YIGIT PALA, Kale Ceramic Research & Development Center, Can Canakkale, Turkey; **H. ERGIN**, Mining Engineering Department, Istanbul Technical University, Istanbul, Turkey**CN-2:L09 The Development of Multi-purpose Ceramic Tile Bodies****A. KARA**, Anadolu University, Department of Materials Science & Engineering, Eskisehir, Turkey; Ceramic Research Center INC, Eskisehir, Turkey; **O.E. SAGLAM**, M.F. OZER, Ceramic Research Center INC, Eskisehir, Turkey**CN-2:L10 Recycling of Wastes in Ceramic Manufacturing****F. ANDREOLA**, L. BARBIERI, I. LANCELLOTTI, Dept. of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia, Modena, Italy**CN-2:L11 Effect of Alternative Materials Added to the Plaster Composition****M. SEYHAN<sup>1</sup>**, A. TAYCU<sup>1</sup>, A. EKER<sup>1</sup>, K. KAYACI<sup>1</sup>, M. GULA<sup>1</sup>, A. KARA<sup>2</sup>, <sup>1</sup>Kaleseramik Canakkale Kalebodur Seramik San. A.S, Can-Canakkale, Turkey; <sup>2</sup>Ceramic Research Center, Eskisehir, Turkey**CN-2:L12 Glass and Glass-ceramics from Natural and Waste Raw Materials****M. MARANGONI**, I. PONSOT, E. BERNARDO, P. COLOMBO, University of Padova, Italy; H. ALTALSI, M. BINMAJED, M. BINHUSSAIN, KACST, Saudi Arabia**Session CN-3****New Products and Challenges for Silicate Ceramics****CN-3:L01 Towards Rational Design of Porcelain Tile Glazes****J.L. AMOROS**, Instituto de Tecnología Cerámica (ITC), Asociación de Investigación de las Industrias Cerámicas (AICE), Universitat Jaume I, Castellón, Spain**CN-3:L02 New Ceramic Pigments for the Coloration of Ceramic Glazes****M. LLUSAR**, G. MONRÓS, C. GARGORI, S. CERRO, J.A. BADENES, Department of Inorganic and Organic Chemistry, University Jaume I, Castellón, Spain**CN-3:L03 Cr<sub>2</sub>O<sub>3</sub> Based Cool Pigments with High IR Reflectance and Different Colors Prepared via the Thermal Decomposition of CrOOH****S.T. LIANG**, H.L. ZHANG, M.T. LUO, P. LI, H.B. XU, Y. ZHANG, Institute of Process Engineering, Chinese Academy of Science, Beijing, China**CN-3:L04 Thermally Comfortable Ceramic Floor Tiles****G.C. KORC**, A. KARA, Ceramic Research Center, Anadolu University, Eskisehir, Turkey; F. KARA, Anadolu University, Department of Material Science and Engineering, Eskisehir, Turkey

**CN-3:IL05 Ink Technology for Digital Decoration: An Overview**  
**D. GARDINI**, M. BLOSI, C. ZANELLI, M. DONDI, CNR-ISTEC, Faenza, Italy  
**CN-3:IL06 Vitrification and Sinter-crystallization of Iron-rich Industrial Wastes**

**A. KARAMANOV**, Institute of Physical Chemistry, Bulgarian Academy of Sciences, Acad., Sofia, Bulgaria

**CN-3:IL07 Design of a Cool Color Glaze for a Solar Reflective Tile**  
**C. FERRARI**, A. LIBBRA, A. MUSCIO, C. SILIGARDI, EELab, Department of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia, Modena, Italy

**CN-3:IL08 Development of an Alternative Whitening System for Zirconium Silicate Substitution in Porcelain Tile Bodies**  
**N. TAMSU SELLI**, A. VEDAT BAYRAK, Eczacibasi Building Product Co., Bilecik, Turkey

## Session CN-4

### Managing the Complexity of Silicate Ceramics

**CN-4:IL01 The Complexities of Sustainable Slip Resistant Ceramic Surfaces**  
**R. BOWMAN**, Intertile Research, Brighton East, VIC, Australia

**CN-4:IL02 Effect of Microstructure on the Technological Properties of Porcelain Stoneware**  
**M. ROMERO**, Eduardo Torroja Institute for Construction Sciences (IETcc-CSIC), Madrid, Spain

**CN-4:IL03 Ceramic Pigments: Prospects and Challenges**  
**M. DONDI**, CNR-ISTEC, Faenza, Italy; G. CRUCIANI, M. ARDIT, Dept. Physics and Earth Sciences, University of Ferrara, Italy

**CN-4:IL04 Towards the Understanding of Surface Optical Effects Provided by Silicate Glazes**  
**A.F. GUALTIERI**, S. POLLASTRI, Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, Modena, Italy

**CN-4:IL05 Characterization of Silicate Ceramics Using Ultrasonics Test Method**  
**S. KURAMA**, E. EREN, Anadolu University, Department of Materials Science and Engineering, Eskisehir, Turkey

**CN-4:IL06 The Laser Furnace: A Revolution in Ceramics and Glass Processing**  
 I. DE FRANCISCO, V.V. LENNIKOV, F. REY-GARCÍA, L.C. ESTEPA, L.A. ANGUREL, **G.F. DE LA FUENTE**, ICMA (CSIC-Universidad de Zaragoza), Zaragoza, Spain

**CN-4:IL07 Microstructure of Ceramic Brick Contaminated by Sulfate Salts**  
**T. STRYSZEWSKA**, S. KANKA, Cracow University of Technology, Cracow, Poland

## Poster Presentations

**CN:P01 Surface Functionalization of Ceramic Glazes**  
**K. GASEK**, J. PARTYKA, M. SITARZ, M. GAJEK, M. LESNIAK, Faculty of Materials Science and Ceramic, AGH University of Science and Technology, Krakow, Poland

**CN:P02 Industrial Waste as Valuable Raw Material to Produce Red Ceramics**  
**L. WIEMES**, UFPR, Curitiba, Paraná, Brazil and IEL São José dos Pinhais, Paraná, Brazil; U. PAWLOWSKY, UFPR, Curitiba, Paraná, Brazil; V. Myrmire, UTFPR, Curitiba, Paraná, Brazil

**CN:P03 Reuse of Traditional Ceramic Industry Residue for Manufacturing of Alternative Products**  
**M.D. CABRELON<sup>1,2</sup>**, G.R. SANTOS<sup>2</sup>, M.R. MORELLI<sup>1</sup>, <sup>1</sup>Federal University of San Carlos, San Carlos, Brazil; <sup>2</sup>INNOVARE Intelligence in Ceramic, San Carlos, Brazil

**CN:P04 Evaluation of Open Porosity of the Ceramic Proppants during Sintering**  
**J. PARTYKA**, M. BUCKO, M. GAJEK, E. WÓJCIK, Faculty of Materials Science and Ceramic, AGH University of Science and Technology, Kraków, Poland

**CN:P05 The Possibility of Use of Sugarcane Bagasse Ash Waste as Raw Material in Floor Tile Formulation**  
 M.A.S. SCHETTINO, **J.N.F. HOLANDA**, Group of Ceramic Materials, Laboratory of Advanced Materials, Northern Fluminense State University, Campos dos Goytacazes-RJ, Brazil

**CN:P06 The Utilization of Waste Dust from Asphaltic Concrete Production in Interlocking Brick**

**J. KHAJORNBOON**, K. DONMUANG, Ceramic Industries Development Center, Lampang, Thailand

**CN:P07 Preparation of Exfoliated the Melamine Modified Mica/polyamide-6 Nanocomposite and its Properties**

**S. OHYAMA<sup>1,2</sup>**, K. TAMURA<sup>1</sup>, T. KITAZAWA<sup>2</sup>, A. YAMAGISHI<sup>2</sup>, <sup>1</sup>National Institute for Materials Science, Tsukuba, Japan; <sup>2</sup>Toho University, Japan

**CN:P08 Formulation of Ceramics Mass by Combined Method of Additivity and Design of Experiments**

**N.M. PEREZ<sup>1</sup>**, G.R. SANTOS<sup>2</sup>, M.D. CABRELON<sup>2,3</sup>, <sup>1</sup>PG Química, Cordeirópolis, São Paulo, Brazil; <sup>2</sup>INNOVARE Intelligence in Ceramic, San Carlos, Brazil; <sup>3</sup>Federal University of San Carlos, San Carlos, Brazil

**CN:P09 Study of the Variables that Leads to Hue Variations on Tiles Decoration Based on Silicon Cylinder Technique Laser Engraving Method**

**F. FERRACO**, A.O. BOSCHI, Federal University of São Carlos, São Paulo, Brazil

**CN:P10 Synthesis and Properties of Inorganic Pigments in Y<sub>2</sub>O<sub>3</sub> - TiO<sub>2</sub>**

**- Mn<sub>3</sub>O<sub>4</sub> and Y<sub>2</sub>O<sub>3</sub> - SiO<sub>2</sub> - Mn<sub>3</sub>O<sub>4</sub> Systems with Pyrochlore Structure**  
**A. GUBERNAT**, N. MIETLA, Z. PEDZICH, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Ceramics and Refractories, Krakow, Poland

**CN:P11 The Effect of Lithium Alumina Silicate Phases on Elastic Modulus of Porcelain Tiles**

**T. AYDIN<sup>1</sup>**, A. KARA<sup>2</sup>, <sup>1</sup>Kırıkkale University, Faculty of Engineering, Department of Metallurgy and Materials Engineering, Kirıkkale, Turkey; <sup>2</sup>Material Science and Engineering Department, Anadolu University, Eskisehir, Turkey

**CN:P12 Study of Processing Techniques for Use of Raw Material Rich in Nepheline**

**C. DEL ROVERI<sup>1</sup>**, A. ZANARDO<sup>2</sup>, L. LUIS DA SILVA<sup>3</sup>, L. HIRATA GODOY<sup>2</sup>, M.M. TORRES MORENO<sup>2</sup>, F. CABANAS NAVARRO<sup>1</sup>, S. CARVALHO MAESTRELLI<sup>1</sup>, <sup>1</sup>UNIFAL - MG, Campus Avançado de Poços de Caldas, ICT, Brazil; <sup>2</sup>UNESP - DPM; <sup>3</sup>Endeka Ceramics

**CN:P13 The Use of Cobaltoxide in Olivine Based Pigments**

**E. TASCI**, Dumluşpınar University, Materials Science and Engineering Department, Kutahya, Turkey

**CN:P14 Identification of Heat Flux of Active and Passive Components in Buildings**

**L. OUHSAIN**, A. MIMET, M. EL GANAOUI, Faculté des Sciences, Tetouan, Morocco

**CN:P15 Composition and Ceramic Characteristics of Cretaceous Clays from Morocco**

**C. SADIK<sup>1</sup>**, A. ALBIZANE<sup>1</sup>, IZ-EDDINE EL AMRANI<sup>2</sup>, <sup>1</sup>Department of Chemistry, Faculty of Science and Technology, University Hassan II, Mohammedia, Morocco; <sup>2</sup>Department of Earth Sciences, University Mohammed V Agdal, Scientific Institute, Rabat, Morocco

## SYMPOSIUM CO

### REFRACTORIES: DEVELOPMENTS IN RAW MATERIAL, PRODUCTION AND INSTALLATION, MODELLING, AND TESTING / PERFORMANCE

## Oral Presentations

### Session CO-1

#### Raw Materials

**CO-1:IL01 New Calcium Magnesium Aluminate binders for High Performance Refractory Castables**

**C. PARR**, F. SIMONIN, C. WÖHRMEYER, C. ZETTERSTROM, Kernos SA, Neuilly sur Seine, France

**CO-1:IL02 Newer High Alumina Based Refractory Aggregates and their Compatibility Studies in Monolithic Castable: A Review in Indian Context**

**S.K. DAS**, M. JANA, Refractory Division, CSIR-Central Glass & Ceramic Research Institute, Kolkata, India

**CO-1:L03 Synthesis of MgO-SiC-C Powder**

**YAOWU WEI**, HUAWEI XU, NAN LI, The Key State Laboratory Breeding Base of Refractories and Ceramics, Wuhan University of Science and Technology, Wuhan, China; BING WU, LUOXIA WANG, LIEYING MA, Zhejiang Zili Co.,Ltd., Shangyu, China

**CO-1:L04 Magnesium Fluoride Role on Alumina-magnesia Cement-bonded Castables**

**T.M. SOUZA**, A.P. LUZ, V.C. PANDOLFELLI, Federal University of São Carlos (UFSCar), São Carlos, SP, Brazil

**CO-1:L05 Use of Bauxite and Lime from Cameroon for Direct Sintering and Characterization of Calcium Dialuminite ( $\text{CaO} \cdot 2\text{Al}_2\text{O}_3$ ) Refractory Cement**

**A.B. TCHAMBA**<sup>1,3,4</sup>, U.C. MELO<sup>1,4</sup>, G. LECOMTE<sup>3</sup>, E. KAMSEU<sup>4</sup>, C. GAULT<sup>3</sup>, R. YONGUE<sup>2,3</sup>, D. NJOPWOOU<sup>1</sup>; <sup>1</sup>Department of Inorganic Chemistry, mineral materials laboratory, Yaoundé, University of Yaoundé 1, Cameroon; <sup>2</sup>Department of Earth Science, University of Yaoundé 1, Yaoundé, Cameroon; <sup>3</sup>Groupe d'Etude des Matériaux Hétérogènes, Centre Européen de la Céramique, Limoges Cedex, France; <sup>4</sup>Laboratory of Materials, Local Materials Promotion Authority, Yaoundé, Cameroon

**Session CO-2****Testing****CO-2:L01 Creep Testing of Refractories at Service Related Load Levels and Application for Material Simulation**

**SHENGLI JIN**, H. HARMUTH, D. GRUBER, Montanuniversität Leoben, Leoben, Austria

**CO-2:L02 Mechanical Properties of Refractories: Multi-scale Composite Approach from Grains to Material Level**

**M. HUGER**, N. TESSIER-DOYEN, T. CHOTARD, SPCTS (UMR CNRS 7315), Centre Européen de la Céramique, Limoges, France

**CO-2:L03 Mould Fluxes Viscosity and Surface Tension Influence on the Wear Mechanisms of  $\text{Al}_2\text{O}_3\text{-C}$  Nozzle**

**E. BRANDALEZE**<sup>1</sup>, M. ÁVALOS<sup>2</sup>, <sup>1</sup>Metallurgical Department-DEYTEMA, Universidad Tecnológica Nacional-FRSN, Argentina; <sup>2</sup>IFIR, Universidad Nacional de Rosario, Argentina

**CO-2:L04 Investigation of the Thermo-mechanical and Ablative Behaviour of Silicon Carbide Based Concretes Exposed to Hybrid Propulsion Environments**

R. D'ELIA<sup>1,2</sup>, G. BERNHART<sup>2</sup>, **T. CUTARD**<sup>2</sup>, G. PERAUDEAU<sup>3</sup>, M. BALAT-PICHELIN<sup>3</sup>, <sup>1</sup>CNES - Direction des lanceurs, Paris Cedex, France; <sup>2</sup>Université de Toulouse; Mines Albi, INSA, UPS, ISAE, ICA; Campus Jarlard, Albi cedex, France; <sup>3</sup>PROMES-CNRS, Font-Romeu Odeillo, France

**CO-2:L05 Simulation of Refractory Fracture as a Tool for Advanced Material Testing**

**D. GRUBER**, S. JIN, H. HARMUTH, Montanuniversität Leoben, Leoben, Austria

**CO-2:L06 Temperature Dependent Thermo-mechanical Behavior of Novel Alumina Based Refractories**

A. BÖHM<sup>1</sup>, C.G. ANEZIRIS<sup>2</sup>, **J. MALZBENDER**<sup>1</sup>, <sup>1</sup>Forschungszentrum Jülich GmbH, IEK-2, Jülich, Germany; <sup>2</sup>Technical University Bergakademie Freiberg, Germany

**CO-2:L07 Digital Image Correlation as a Tool for Monitoring Crack Networks on the Surface of MgO-based Refractory Castable**

R.G.M. SARACURA, R.B. CANTO, F. HILD, V.C. PANDOLFELLI, **N. SCHMITT**, DEMa, UFSCar, São Carlos-SP, Brasil; LMT-Cachan, ENS de Cachan/CNRS/UPMC, Cachan, France

**CO-2:L08 Phosphate-based Anti-hydration Additive for  $\text{Al}_2\text{O}_3\text{-MgO}$  Refractory Castables**

**A.P. DA LUZ**, T.M. SOUZA, V.C. PANDOLFELLI, Federal University of São Carlos (UFSCar), São Carlos, SP, Brazil; M.A.M. BRITO, Magnesita Refratorios S.A., Contagem, MG, Brazil

**CO-2:L09 Crystallographic Texture on High Zirconia Refractories**

C. PATAPY, LMDC INSA Toulouse, Toulouse Cedex, France; **F. GOURAUD**, M. HUGER, R. GUINEBRETIERE, SPCTS UMR 7315 CNRS, Centre Européen de la Céramique, Limoges Cedex, France; N. GEY, M. HUMBERT, A. HAZOTTE, LEM3, UMR 7239 CNRS, Metz Cedex, France; D. CHATEIGNER, CRISMAT ENSICAEN, UMR 6508 CNRS, Caen Cedex, France; T. CHOTARD, SPCTS UMR 7315 CNRS, Centre Européen de la Céramique, Limoges Cedex, France

**CO-2:L10 Corrosion Mechanism Analysis of  $\text{Al}_2\text{O}_3\text{-SiC-C}$  Castables**

**CHIEN-NAN PAN**, Ceramic Materials Section (T62), New Materials Research & Development Dept., China Steel Corporation, Kaohsiung, Taiwan, R.O.C.

**Session CO-3****Products Development, Selection, Design and Use****CO-3:L01 Refractory Castable Engineering**

**V.C. PANDOLFELLI**, A.P. DA LUZ, Federal University of São Carlos, Materials Engineering Department, São Carlos, Brazil

**CO-3:L02 A New Generation of Carbon Bonded Filters for Advanced Metal Melt Filtration**

**C.G. ANEZIRIS**, M. EMMEL, S. Dudczig Institute of Ceramic, Glass and Construction Materials, Technical University of Freiberg, Germany

**CO-3:L03 Hydraulic-setting Bonding Agent in the System  $\text{MgO}\text{-Al}_2\text{O}_3\text{-SiO}_2\text{-H}_2\text{O}$** 

**D. MADEJ**, J. SZCZERBA, K. DUL, AGH University of Science and Technology, Faculty of Materials Science and Ceramics Department of Ceramics and Refractories, Krakow, Poland

**CO-3:L04 Criteria to Select the Refractory Lining in Biomasses Co-combustion Reactors for Energy Production**

**D. OLEVANO**, P. MICELI, U. MARTINI, A. DI DONATO, Centro Sviluppo Materiali SpA, Rome, Italy

**CO-3:L05 Impact of Temperature and Oxygen Partial Pressure on Aluminum Phosphate in High Chrome Oxide Refractories**

**J.P. BENNETT**<sup>1</sup>, K.S. KWONG<sup>1</sup>, J. NAKANO<sup>1,2</sup>, H. THOMAS<sup>1</sup>, A. NAKANO<sup>1</sup>, <sup>1</sup>National Energy Technology Laboratory, Albany, OR, USA; <sup>2</sup>URS Corporation, Albany, OR, USA

**CO-3:L06 Nano Carbon Sources in Carbon Containing Refractories**

**YAWEI LI**, The State Key Laboratory Breeding Base of Refractories and Ceramics, Wuhan University of Science and Technology, Wuhan, P.R.China

**CO-3:L07 Use of Nano-Materials in Refractories for Better Performance**

**S. ADAK**, PB. PANDA, A.K. CHATTOPADHYAY, TRL Krosaki Refractories Limited, Belpahar, Odisha, India

**CO-3:L08 Artificial Aggregates Obtained from Waste Alumina-rich Refractory Powder by the Cold Bonding Process**

**V. DUCMAN**, Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia

**Session CO-4****System Modeling and Simulation; Failure Analysis****CO-4:L01 Multiphysics Modelling Applied to Refractory behaviour in Severe Environments**

**E. BLOND**<sup>1</sup>, T. MERZOUKI<sup>2</sup>, N. SCHMITT<sup>3</sup>, M.-L. BOUCHETOU<sup>4</sup>, T. CUTARD<sup>5</sup>, A. GASSER<sup>1</sup>, E. DE BILBAO<sup>4</sup>, J. POIRIER<sup>4</sup>, <sup>1</sup>Univ. Orléans, PRISME (EA4229), Polytech Orléans, Orléans; <sup>2</sup>Univ. of Versailles Saint-Quentin, LISV (EA4048), Vélisy; <sup>3</sup>ENS Cachan, LMT-Cachan (UMR 8535), Cachan; <sup>4</sup>Univ. Orléans, CEMHTI (UPR3079), Orléans; <sup>5</sup>Ecole des Mines d'Albi Carmaux, ICA-Albi, Campus Jarlard, Albi CT Cédex, France

**CO-4:L02 Thermo-mechanical Modelling of Refractory Masonries**

**A. GASSE**, E. BLOND, N. GALLIENNE, J.L. DANIEL, Univ. Orléans, Orléans, France; S. SINNEMA, Tata Steel, IJmuiden, The Netherlands; M. LANDREAU, CPM, Forbach, France

**CO-4:L03 Numerical Analysis on the Refractory Wear of the Blast Furnace Main Trough**

C.M. CHANG, Y.S. LIN, **WEN-TUNG CHENG**, Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan, R.O.C.; C.N. PAN, China Steel Corporation, Kaohsiung, Taiwan, R.O.C.

**CO-4:L04 Recent Development of the FactSage Thermodynamic Database for Ceramic Refractories**

**IN-HO JUNG**, Mining and Materials Engineering, McGill University, Montreal, Quebec, Canada

**CO-4:L05 Modeling and In-plant Validation of Thermal Stresses in Steelmaking Ladles**

**P. GALLIANO**, L. MARTORELLO, T. SIMARO, L. MUSANTE, M. ROSSI, H. ERNST, D. JOHNSON, Tenaris REDE AR, Argentina

**CO-4:L06 Fine Element Modelling of the Blast Furnace Hearth Lining**

P. PUT, **S. SINNEMA**, J. LIEFHEBBER, Tata Steel Europe, IJmuiden, The Netherlands

**CO-4:L07 Study of Reactive Impregnation and Phase Transformations during the Corrosion of High Alumina Refractories by  $\text{Al}_2\text{O}_3\text{-CaO}$  Slag**

**E. DE BILBAO**<sup>1</sup>, M. DOMBROWSKI<sup>1</sup>, K. COFFIGNIER<sup>2</sup>, N. TRAON<sup>3</sup>, T. TONNESEN<sup>3</sup>, J. POIRIER<sup>1</sup>, E. BLOND<sup>4</sup>, <sup>1</sup>CNRS, CEMHTI UPR3079, Univ. Orléans, France; <sup>2</sup>Polytech Orléans, Univ. Orléans, France; <sup>3</sup>RWTH Aachen University, Germany; <sup>4</sup>Univ. Orléans, PRISME, France

**CO-4:IL08 Mechanisms of SiC Refractory High Temperature Corrosion by Molten Salts (Na, K, Ca, Cl, S) in Waste to Energy Facilities**  
**J. POIRIER<sup>1</sup>, P. PRIGENT<sup>2</sup>, M.L. BOUCHETOU<sup>1</sup>, E. DE BILBAO<sup>1</sup>, E. BLOND<sup>3</sup>, J.M. BROSSARD<sup>4</sup>, <sup>1</sup>CEMHTI, CNRS / University of Orléans, France; <sup>2</sup>TRB, Nesles; <sup>3</sup>PRISME, University of Orléans, France; <sup>4</sup>VEOLIA environment**

**CO-4:IL09 Corrosion of Refractories in Incineration Processes: Changes in Microstructure, Properties and Performance**  
**TH. TONNESEN**, R. TELLE, RWTH Aachen University, Aachen, Germany

### Poster Presentations

**CO:P01 Mechanism of Creation New Phases in Mixture of Natural Andalusite with CaO and ZrO<sub>2</sub> Addition**

**J. SZCZERBA**, E. SNIEZEK, L. MANDECKA-KAMIEN, A. GUZEK, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland

**CO:P02 Microstructures and Corrosion Mechanisms in MgO-C Bricks in Contact with High-basicity and FeO-rich Slags**

**E. BENAVIDEZ**, E. BRANDALEZE, Dto. Metalurgia-Deytema, FRSN-UTN, San Nicolás, Argentina; L. MUSANTE, P. GALLIANO, Tenaris REDE AR, Campana, Argentina

## CP - 7th International Conference ADVANCED INORGANIC FIBRE COMPOSITES FOR STRUCTURAL AND THERMAL MANAGEMENT APPLICATIONS

### Oral Presentations

#### Session CP-1

Production and Properties of Reinforcements, Preforms, and Matrix Materials

**CP-1:IL01 Heat-resistant Inorganic Fibers**

**T. ISHIKAWA**, Ube Industries, Ltd., Ube, Yamaguchi, Japan

**CP-1:IL02 New Developments in Carbon and Ceramic Fibers**

E. FRANK, **B. CLAUSS**, Institute of Textile Chemistry and Chemical Fibers, Denkendorf, Germany; M.R. BUCHMEISER, Institute of Textile Chemistry and Chemical Fibers Denkendorf and University of Stuttgart, Institute of Polymer Chemistry, Stuttgart, Germany

**CP-1:IL03 Porous Silicon Nitride and Sialon Prepared by Reaction Sintering Method**

**HAI-DOO KIM**, Engineering Ceramics Group, Korea Institute of Materials Science, Changwon, Gyeongnam, Korea

**CP-1:IL04 Polisiloxane Impregnation Pyrolysis for the cost-effective production of basalt fibers CFCCs**

**C. MINGAZZINI**, M. SCAFÈ, ENEA - Faenza Technical Unit on Material Technologies (ENEA-UTTMATF), Faenza, Italy; A. BRENTARI, E. BURRESI, Certimac s.c.a.r.l.; D. CARETTI, D. NANNI, University of Bologna, Dipartimento di Chimica Industriale "Toso Montanari", Bologna, Italy

**CP-1:IL05 Processing of Nonoxide Fiber Reinforced Composites with Enhanced Oxidation Stability**

**D. KOCH**, B. MAINZER, M. KOTANI, M. FRIESS, Department of Ceramic Composites and Structures, Institute of Structures and Design, German Aerospace Center, Stuttgart, Germany

**CP-1:IL06 Silicon Carbide Fibers Prepared with Polycarbosilane through the Halide Curing Process**

**DOHYOUNG RIU**, JUNSLUNG HONG, YOUNGJIN KO, KWANG-YEON CHO, DONG-GEUN SHIN, JEONG-IL KIM, Seoul National University of Science and Technology, Seoul, Korea

**CP-1:IL07 Microstructure and Thermal Properties of Ultrafine Glass Fiber Mat**

**ZHOU CHEN**, ZHAOFENG CHEN, JUAN ZHANG, YONG YANG, JIEMING ZHOU, Nanjing University of Aeronautics and Astronautics, Nanjing, China

#### Session CP-2

#### Interfaces and Interphases

**CP-2:IL01 Mechanics of Interfaces/Interphases in CMCs**  
**J. LAMON**, CNRS/LMT/ENS Cachan, Cachan, France

**CP-2:IL02 Studies on Wettability and Infiltration in Ceramic-Metal Joints for Structural and Thermal Management Applications**

**R. ASTHANA<sup>1</sup>**, N. SOBCZAK<sup>2</sup>, M. SINGH<sup>3</sup>, <sup>1</sup>Department of Engineering and Technology, University of Wisconsin-Stout, Menomonie, WI, USA; <sup>2</sup>Center for High-Temperature Studies, Foundry Research Institute, Krakow, Poland; <sup>3</sup>Ohio Aerospace Institute, Cleveland, OH, USA

**CP-2:IL03 Tailoring of the Fiber-Matrix Interface in Ceramic Matrix Composites by the Wet Chemical Deposition of Boron Nitride**

**A. NOETH**, Fraunhofer Institute for Silicate Research, Center for High Temperature Materials and Design, Würzburg, Germany; L.D. TOMA, Fraunhofer Institute for Silicate Research, Center for High Temperature Materials and Design, Bayreuth, Germany

#### Session CP-3

#### Processing and Fabrication of MMCS, CMCS, and C/C Composites

**CP-3:IL01 Advanced CMCs Design for Lightweight and High Temperature Applications**

**W. KRENKEL**, Ceramic Materials Engineering, University of Bayreuth, Bayreuth, Germany

**CP-3:IL02 Fabrication Processes and Properties of Carbon Nanomaterial/Metal Nanocomposites**

**SOON HYUNG HONG**, Dept. Materials Science and Engineering, KAIST, Daejeon, Korea

**CP-3:IL03 Short-fiber Reinforced Oxide/Oxide Composites**

**T. WAMSER**, S. SCHELER, B. MARTIN, W. KRENKEL, Ceramic Materials Engineering, University of Bayreuth, Bayreuth, Germany

**CP-3:IL04 Ultra High Temperature Metal Matrix Composites**

**S.T. MILEIKO**, Institute of Solid State Physics of RAS, Chernogolovka, Russia

**CP-3:IL05 Multilayered Fiber-reinforced Oxide Composites Produced by Lamination of Thermoplastic Prepregs**

**R. JANSEN**, D. PAULA GUGLIELMI, Technische Universität Hamburg-Harburg, Germany; D. BLAESE, M. HABLITZEL, G. NUNES, V. LAUTH, D. GARCIA, H.A. AL-QURESHI, D. HOTZA, Universidade de Santa Catarina at Florianópolis, Brazil

#### Session CP-4

#### Ultrahigh Temperature Ceramic Composites (UHTCCs) and Laminated Composite Structures

**CP-4:IL01 Coating and Matrix Modification with Ultrahigh Temperature Ceramics for Carbon Fiber Reinforced SiC Matrix Composites**

**SHAOMING DONG**, L.R. ZHANG, X.Y. ZHANG, L. GAO, State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

**CP-4:IL02 Fibres Reinforced SiC Matrix Composites Modified by Ti<sub>3</sub>SiC<sub>2</sub>**

**XIAOWEI YIN**, LITONG ZHANG, LAIFEI CHENG, Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University, Xi'an, China

**CP-4:IL03 Ultra-high Temperature Coatings for Oxidation Protection of C/SiC Composites**

**XIANGYU ZHANG**, SHAOMING DONG, LE GAO, CUNJING LIAO, ZHEN WANG, HAIJUN ZHOU, YANMEI KAN, YUSHENG DING, PING HE, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, P.R. China

**CP-4:IL04 Reactive Processes for Diboride-based Ultra High Temperature Ceramics**

**GUO-JUN ZHANG**, Shanghai Institute of Ceramics, Shanghai, China

**CP-4:IL05 Mechanistic Aspects of the Strength and the Fracture Toughness of Laminated Polymer-ceramic Composites**

**K. TUSHTEV**, University of Bremen, Bremen, Germany

## Session CP-5

### Property, Modeling and Characterization

**CP-5:L01 Microstructure and Properties of C/SiC/GH783 Joint Brazed with Cu-Ti + Mo**

SHANGWU FAN, XING WANG, LAIFEI CHENG, LITONG ZHANG, Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University, Xi'an, Shaanxi, China

**CP-5:L02 Effect of Loading Rate on the Behaviour of Partially Pyrolyzed Basalt Fibre Reinforced Composite**

M. HALASOVA<sup>1</sup>, Z. CHLUP<sup>1</sup>, M. CERNY<sup>2</sup>, A. STRACHOTA<sup>3</sup>, Z. SUCHARDA<sup>2</sup>, I. DLOUHY<sup>1</sup>, <sup>1</sup>Institute of Physics of Materials, Academy of Sciences of the Czech Republic, v.v.i., Brno, Czech Republic; <sup>2</sup>Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, v.v.i., Prague, Czech Republic; <sup>3</sup>Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, v.v.i., Prague, Czech Republic

**CP-5:L03 Lifetime Prediction with Acoustic Emission during Static Fatigue Tests on Ceramic Matrix Composite at Intermediate Temperature under Air**

E. MAILLET, N. GODIN, M. R'MILI, PL REYNAUD, G. FANTOZZI, J. LAMON, INSA-Lyon, Laboratoire MATEIS, Villeurbanne, France

**CP-5:L04 Water Vapour Corrosion of Oxide Ceramic Matrix Composites (O-CMC) in Hot Gas Environments**

A. RÜDINGER, C. ECKARDT, F. RAETHER, Fraunhofer Institute for Silicate Research ISC / Centre for High Temperature Materials and Design, Bayreuth, Germany

**CP-5:L05 From Images to Property Computations in Carbon-carbon Composites at Various Scales**

G.L. VIGNOLES, J.-M. LEYSSALE, B. FARBOS, P. WEISBECKER, O. CATY, G. COUÉGNAT, M. CHARRON, P. ENGERAND, Lab. For ThermoStructural Composites (LCTS), University Bordeaux/CNRS, Pessac, France; J.-P. DA COSTA, Institute from Materials to Systems (IMS), University Bordeaux, Talence, France

**CP-5:L06 SiC/SiC Composites for Nuclear Applications**

T. HINOKI, Kyoto University, Uji, Kyoto, Japan

## Session CP-6

### Composites for Thermal Management. Applications of Inorganic Fiber Composites

**CP-6:L01 Mechanical Reliabilities of High-Thermal-Conductivity Silicon Nitride In-Situ Composites**

T. OHJI, Y. ZHOU, H. HYUGA, K. HIRAO, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

**CP-6:L02 Novel High Conductivity Carbon and SiC based Composites**

W. KOWBEL, FMC, Tucson, AZ, USA

**CP-6:L03 Metastable Phases and Microstructures in Alumina-silica Glasses and Mullite Ceramics**

S. RISBUD, University of California, Davis, CA, USA

**CP-6:L04 The Thermal-physical Property of C/SiC Composites**

HAIJUN ZHOU, SHAOMING DONG, PING HE, LIANGRUN ZHANG, LIN LIN, Structural Ceramics and Composites Engineering Research Center, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

**CP-6:L05 C/C and CMC-composites for Industrial Applications**

R. WEISS, Schunk Kohlenstofftechnik GmbH, Heuchelheim, Germany

**CP-6:L06 Joining of SiC-based Materials for Nuclear Applications**

M. FERRARIS, Politecnico di Torino, Department of Applied Science and Technology - DISAT - Institute of Materials Physics and Engineering, Torino, Italy

**CP-6:L07 SiTe-SiCf/SiC Composite for Application in Future Fusion Reactors**

S. NOVAK<sup>1, 2, 3</sup>, A. IVEKOVIC<sup>1, 2, 3</sup>, <sup>1</sup>Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia; <sup>2</sup>Jozef Stefan International Postgraduate School, Ljubljana, Slovenia; <sup>3</sup>Slovenian Fusion Association (SFA) Euratom MESCS

**CP-6:L08 Development of a High-temperature High-efficiency Thermal Energy Storage System for Concentrated Solar Power**

D. SINGH<sup>1</sup>, T. KIM<sup>1</sup>, W. ZHAO<sup>1</sup>, D. FRANCE<sup>1</sup>, W. YU<sup>1</sup>, A. GYEKENYESI<sup>2</sup>, M. SINGH<sup>2</sup>, <sup>1</sup>Argonne National Laboratory, Argonne, IL, USA; <sup>2</sup>Ohio Aerospace Institute, Cleveland, OH, USA

## Poster Presentations

**CP:P01 Microstructure Observation of SiCN-based Composites Fabricated through Polymer Infiltration and Pyrolysis**

ZHEN WANG, SHAOMING DONG, FAN ZHOU, XIANGYU ZHANG, YUSHENG DING, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

**CP:P02 Evaluation of Properties of Glass Wool Reinforced Plastic Composite**

M. TSUKAMOTO<sup>1, 2</sup>, Y. YOSHIMURA<sup>2, 3</sup>, Y. KUROKI<sup>2</sup>, T. OKAMOTO<sup>2</sup>, M. TAKATA<sup>2, 4</sup>, <sup>1</sup>MAG-ISOVER K.K., Kasumigaura, Ibaraki, Japan; <sup>2</sup>Nagaoka University of Technology, Nagaoka, Niigata, Japan; <sup>3</sup>Yoshimura Co., Ltd., Kuki, Saitama, Japan; <sup>4</sup>Japan Fine Ceramics Center, Atsuta-ku, Nagoya, Japan

**CP:P03 Microstructural Characterization of Stone Wool Materials**

L. CHAPELLE<sup>1</sup>, P. BROENDSTED<sup>2</sup>, Y. KUSANO<sup>2</sup>, M. ROSENDAHL FOLD-SCHACK<sup>1</sup>, D. LYBYE<sup>1</sup>, <sup>1</sup>ROCKWOOL International A/S, Frederiksberg, Denmark; <sup>2</sup>DTU Wind Energy

**CP:P04 Fracture Toughness Evaluation of Ceramic Substrates Using Precracked Specimens**

H. MIYAZAKI, Y. YOSHIZAWA, K. HIRAO, T. OHJI, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

**CP:P05 Effect of Temperature and Water Absorption on the ILSS and Flexural Behavior of Hot-pressed CF3052/3238A Woven Composites**

M.U. SAEED, Z.F. CHEN, B.B. LI, Z.H. CHEN, College of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing, China

***Chair*****Pietro Vincenzini**

World Academy of Ceramics

***Co-Chair*****Robert P.H. Chang**

Northwestern University, USA; International Union of Materials Research Societies

***Advisory Boards*****SYMPOSIUM FA - Fuel Cells: Materials and Technology Challenges**

*Programme Chair:* Antonino S. Aricò, Italy *Members:* Radoslav Adzic, USA Giulio Alberti, Italy Vincenzo Antonucci, Italy Sukhvinder Badwal, Australia Vincenzo Baglio, Italy Perla Balbuena, USA Hyuk Chang, Korea Chusheng Chen, China Koichi Eguchi, Japan Juergen Fleig, Austria Thomas F. Fuller, USA Hubert A. Gasteiger, Germany John T.S. Irvine, UK San Ping Jiang, Australia Deborah Jones, France Hasuck Kim, Korea Philippe Knauth, France Carina Lagergren, Sweden Qingfeng Li, Denmark Xianguo Li, Canada Mogens B. Mogensen, Denmark Sri R. Narayan, USA Vijay K. Ramani, USA Ilan Riess, Israel Nigel M. Sammes, Korea Mauro Scagliotti, Italy Günther G. Scherer, Switzerland Pei Kang Shen, China Subhash C. Singhal, USA Robert Steinberger-Wilckens, UK Panagiotis Tsakaras, Greece Hiroyuki Uchida, Japan Sea-Fue Wang, Taiwan Masahiro Watanabe, Japan Zhaoyin Wen, China Harumi Yokokawa, Japan Piotr Zelenay, USA Tianshou Zhao, Hong Kong

**SYMPOSIUM FB - Hydrogen Production and Storage**

*Programme Chair:* Amelia Montone, Italy *Members:* Etsuo Akiba, Japan Marcello Baricco, Italy Ping Chen, China Fermín Cuevas, France Bernard Dam, Netherlands Bill David, UK Petra E. De Jongh, Netherlands Peter P. Edwards, UK Dan Eliezer, Israel Yaroslav Filinchuk, Belgium George E. Froudakis, Greece Z. Xiao Guo, UK Michael J. Heben, USA Michael Hirscher, Germany Jacques Huot, Canada I.P. Jain, India Puru Jena, USA Craig M. Jensen, USA Torben René Jensen, Denmark J. Karl Johnson, USA Yoshitsugu Kojima, Japan Michel Latroche, France Huen Lee, Korea Jeffrey R. Long, USA G.Q. Max Lu, Australia Darius Milcius, Lithuania Nazim Muradov, USA Yumiko Nakamura, Japan Dag Noreus, Sweden Shin-Ichi Orimo, Japan Hongge Pan, China Ewa Ronnebro, USA Aldo Steinfeld, Switzerland Ned Stetson, USA Qiang Sun, China Tejs Vegge, Denmark Gavin Walker, UK Chris Wolverton, USA Irene Yarovskiy, Australia Ragaiy Zidan, USA Andreas Züttel, Switzerland

**SYMPOSIUM FC - Electrochemical Energy Storage Systems: the Next Evolution**

*Programme Chair:* Arumugam Manthiram, USA *Members:* Palani Balaya, Singapore Peter G. Bruce, Scotland Fausto Croce, Italy Claude Delmas, France Bruce S. Dunn, USA Helmer Fjellvag, Norway John Goodenough, USA Steve G. Greenbaum, USA Dominique Guyomard, France Chi-Chang Hu, Taiwan M. Saiful Islam, UK Jari Keskinen, Finland Sehee Lee, USA Jun Liu, USA Katsuhiko Naoi, Japan Linda Nazar, Canada Peter H.L. Notten, Netherlands Petr Novak, Switzerland Zempachi Ogumi, Japan Shigeto Okada, Japan Stefano Passerini, Germany Emanuel Peled, Israel S.R.S. Prabaharan, India Patrice Simon, France Marshall C. Smart, USA M. Stanley Whittingham, USA Margret Wohlfahrt-Mehrens, Germany She-Huang Wu, Taiwan Yu-Ping Wu, China

**SYMPOSIUM FD - Advances in Materials and Technologies for Efficient Direct Thermal-to-electrical Energy Conversion**

*Programme Chair:* Lidong Chen, China *Members:* Kilian Bartholomé, Germany Theodorian Borca-Tasciuc, USA Kefeng Cai, China Siaw Kiang Chou, Singapore Xavier Crispin, Sweden Davide Donadio, Germany Mikhail I. Fedorov, Russia Jean-Pierre Fleurial, USA Ryoji Funahashi, Japan Yaniv Gelstein, Israel Juri Grin, Germany Bo Brummerstedt Iversen, Denmark David C. Johnson, USA Mercouri G. Kanatzidis, USA Il-Ho Kim, Korea Kunihito Koumoto, Japan Jing-Feng Li, China Heiner Linke, Sweden Antoine Maignan, France Ramesh Chandra Mallik, India Natalio Mingo, France Yuzuru Miyazaki, Japan Donald Morelli, USA Takao Mori, Japan George S. Nolas, USA Michitaka Ohtaki, Japan Chan Park, Korea Nini Pryds, Denmark Zhifeng Ren, USA Peter Franz Rogl, Austria Brian C. Sales, USA Hubert Scherrer, France Ali Shakouri, USA Ryosuke O. Suzuki, Japan Daniele Maria Trucchi, Italy Ctirad Uher, USA Rama Venkatasubramanian, USA Anke Weidenkaff, Switzerland Krzysztof T. Wojciechowski, Poland Wenqing Zhang, China Xinbing Zhao, China

**SYMPOSIUM FE - Advances in Photocatalytic Materials for Energy and Environmental Sustainability**

*Programme Chair:* Gabriele Centi, Italy *Members:* M. Sabry Abdel-Mottaleb, Egypt Jan Augustynski, Poland Detlef W. Bahnemann, Germany Artur Braun, Switzerland Xiaobo Chen, USA Zhong Chen, Singapore Ib Chorkendorff, Denmark Zekiye Cinar, Turkey Ulrike Diebold, Austria Dionysios D. Dionysiou, USA Kazunari Domen, Japan Elio Giannello, Italy Ladislav Kavan, Czech Republic Nicolas Keller, France Can Li, China Gianluca Li Puma, UK Samuel S. Mao, USA Bunsho Ohtani, Japan David F. Ollis, USA Gerko Oskam, Mexico Leonardo Palmisano, Italy Hyunwoong Park, Korea Yaron Paz, Israel Maurizio Peruzzini, Italy Krishnan Rajeshwar, USA Benigno Sanchez, Spain Dang Sheng Su, China Koji Takeuchi, Japan Junwang Tang, UK John Turner, USA Roel Van De Krol, Germany Lianzhou Wang, Australia Peng Wang, China Hiromi Yamashita, Japan Jinhua Ye, Japan Yadong Yin, USA Jincai Zhao, China Zhigang Zou, China

**SYMPORIUM FF - Magnetic Materials for Energy**

*Programme Chair: Franca Albertini, Italy Members: Pedro A. Algarabel, Spain Ekkes Brueck, Netherlands Vasilii D. Buchelnikov, Russia K.T. Chau, Hong Kong Zhao-Hua Cheng, China Michael Coey, Ireland Lesley Cohen, UK Peter Entel, Germany Simone Fabbrici, Italy Claudia Felser, Germany Dino Fiorani, Italy Cristina Gomez-Polo, Spain Oliver Gutfleisch, Germany George C. Hadjipanayis, USA Ryusuke Hasegawa, USA Kazuhiro Hono, Japan Vladimir V. Khovaylo, Russia J. Ping Liu, USA Lluis Manosa, Spain Dimitris Niarchos, Greece Paola Tiberto, Italy*

**SYMPORIUM FG - Photovoltaic Solar Energy Conversion: Silicon and Beyond**

*Programme Chairs: Gianluca Farinola, Massimo Mazzer, Italy Members: A. Paul Alivisatos, USA Hironori Arakawa, Japan Gianluca Bacchin, USA Peter Baeuerle, Germany Keith Barnham, UK Jean-Luc Bredas, USA Tim Bruton, UK Aldo Di Carlo, Italy Frank Dimroth, Germany Ken Durose, UK Antonio Facchetti, USA Christian-Herbert Fischer, Germany Francesco Frontini, Switzerland Dirk Guldi, Germany Chain-Shu Hsu, Taiwan René A.J. Janssen, Netherlands Karl Leo, Germany Antonio Luque, Spain Michele Maggini, Italy Nazario Martin, Spain Francesco Matteucci, Italy Iain Mcculloch, UK Nam-Gyu Park, Korea Riccardo Po, Italy Alessandro Romeo, Italy Jean Roncali, France Niyazi Serdar Sariciftci, Austria Ivan Sinicco, Switzerland Natalie Stingelin, UK Guido Viscardi, Italy Paul Wyers, Netherlands Deren Yang, China Luping Yu, USA*

**SYMPORIUM FH - Recent Developments in the Research and Application of Transparent Conducting and Semiconducting Oxides**

*Programme Chair: David S. Ginley, USA Members: Yi-Bing Cheng, Australia Klaus Ellmer, Germany Elvira Fortunato, Portugal Alexander Gaskov, Russia Hao Gong, Singapore Gideon Grader, Israel Claes G. Granqvist, Sweden Hyeongtag Jeon, Korea Jae Kyung Jeong, Korea George Kiriakidis, Greece Andreas Klein, Germany Tobin J. Marks, USA Rodrigo Martins, Portugal Thomas Mason, USA Francis Maury, France Julia E. Medvedeva, USA Tadatsugu Minami, Japan Martyn E. Pemble, Ireland Giorgio Sberveglieri, Italy David O. Scanlon, Ireland David Sheel, UK Yuzo Shigesato, Japan Kazushige Ueda, Japan Chris G. Van De Walle, USA Tim Veal, UK John F. Wager, USA Aron Walsh, UK*

**SYMPORIUM FI - Materials and Technologies for Solid State Lighting**

*Programme Chair: Franky So, USA Members: Hiroshi Amano, Japan P. Daniel Dapkus, USA Robert Davis, USA Martin Dawson, UK Martin Heaney, UK H.T.J.M. (Bert) Hintzen, Netherlands Chennupati Jagadish, Australia Peng Jin, China Jwo-Huei Jou, Taiwan Bernard Kippelen, USA Hao-Chung Kuo, Taiwan Michael Leszczynski, Poland Rongqing Liang, China Michael Lorenz, Germany Nicola Lovergne, Italy Zheng-Hong Lu, Canada Xiangyang Ma, China Ivan Moreno, Mexico Shuji Nakamura, USA Yasushi Nanishi, Japan Nadarajah Narendran, USA Norbert H. Nickel, Germany Boon S. Ooi, Saudi Arabia Jongwook Park, Korea Jamie D. Phillips, USA Matthew Phillips, Australia Angela Piegari, Italy David J. Rogers, France Joseph Shinar, USA Xiaowei Sun, Singapore Nelson Tansu, USA Mark E. Thompson, USA Christian M. Wetzel, USA Magnus Willander, Sweden Chih-Chung Yang, Taiwan Hui-Ying Yang, Singapore*

**SYMPORIUM FJ - Materials Challenges for Future Nuclear Fission and Fusion Technologies**

*Programme Chair: Hua-Tay Lin, USA Members: Jarir Aktaa, Germany Alfredo Caro, USA Michel Chatelier, France Xiaojun Chen, China V.M. Chernov, Russia Yong Dai, Switzerland Xuru Duan, China Sergei Dudarev, UK Eric R. Hodgson, Spain Bong Guen Hong, Korea Ji-Jung Kai, Taiwan Yutai Katoh, USA Akihiko Kimura, Japan Rick Kurtz, USA Marion Le Flem, France Jochen Linke, Germany Guang-Hong Lu, China Guang-Nan Luo, China Nigel Marks, Australia Takeo Muroga, Japan Maylise Nastar, France Robert Odette, USA Ji Yeon Park, Korea Shuming Peng, China Aldo Pizzuto, Italy Baldev Raj, India Marek Rubel, Sweden Leo Sannen, Belgium Tatsuo Shikama, Japan Naoki Soneda, Japan R.E. Stoller, USA Yugang Wang, China Thierry Wiss, Germany Yican Wu, China Michio Yamawaki, Japan Steve J. Zinkle, USA*

**Special Session FJ-10 - Materials Technology for Nuclear Waste Treatment and Disposal**

*Programme Chair: Kevin Fox, USA Members: Dirk Bosbach, Germany Rodney C. Ewing, USA Thorsten Geisler-Wierwille, Germany Russell Hand, UK Kazuya Idemitsu, Japan Hitoshi Mimura, Japan Eric M. Pierce, USA Vincenzo Rondinella, Germany Sergey Stefanovsky, Russia Francesco Troiani, Italy Pierre Van Iseghem, Belgium Eric R. Vance, Australia Luc Vandeperre, UK Etienne Vernaz, France John D. Vienna, USA Yue-Zhou Wei, China Siegfried Weisenburger, Germany Zhentao Zhang, China*

**FK - 5th International Conference "Novel Functional Carbon Nanomaterials"**

*Co-Chairs: Yury Gogotsi, USA (Programme Chair) Sumio Iijima, Japan Jari Kinaret, Sweden Robert Nemanich, USA Members: Alexander Balandin, USA Philippe Bergonzo, France Laszlo P. Biro, Hungary Antonio H. Castro Neto, USA Li-Chyong Chen, Taiwan Ying (Ian) Chen, Australia Yongsheng Chen, China Hui-Ming Cheng, China Luigi Colombo, USA Morinobu Endo, Japan Andrea C. Ferrari, UK Jose Antonio Garrido, Germany Etienne Cheeraert, France Francisco Guinea, Spain Kenji Hata, Japan Mark C. Hersam, USA Karsten Horn, Germany Jisoon Ihm, Korea Richard Jackman, UK Esko I. Kauppinen, Finland Sang Ouk Kim, Korea Vitali I. Konov, Russia Alexander Kromka, Czech Republic Kian Ping Loh, Singapore Richard Martel, Canada Daniel Neumaier, Germany Taiichi Otsuji, Japan Tomas Palacios, USA Vincenzo Palermo, Italy Tapani Ryhänen, Finland Riichiro Saito, Japan Michael S. Strano, USA Yonhua Tzeng, Taiwan Alexander Vul, Russia Andrew Wee, Singapore*

**FL - 4th International Conference "Mass, Charge and Spin Transport in Inorganic Materials. Fundamental to Devices"**

**Co-Chairs:** David Awschalom, USA Yuri Mishin, USA Gerhard Wilde, Germany Han-Il Yoo, Korea (Programme Chair) **Members:** John Agren, Sweden Koji Amezawa, Japan Joerg Appenzeller, USA Boris S. Bokstein, Russia Alessandra Continenza, Italy V.I. Dybkov, Ukraine Doreen D. Edwards, USA Vladimir I. Falko, UK Marco Fanciulli, Italy Robert Filipek, Poland Odila Florencio, Brazil Andriy Gusak, Ukraine John Harding, UK Paul Heitjans, Germany Philip Hofmann, Denmark Thomas Ihn, Switzerland Tatsumi Ishihara, Japan Rodolfo Jalabert, France Janez Jamnik, Slovenia Berend T. Jonker, USA Antonino La Magna, Italy Arne Nylandsted Larsen, Denmark Walter Lengauer, Austria Christopher D. Ling, Australia Daniel Loss, Switzerland Sadamichi Maekawa, Japan Fernando Marques, Portugal Manfred Martin, Germany Eric Jan Mittemeijer, Germany Shuichi Murakami, Japan Ryan O'Hayre, USA Hideo Ohno, Japan Su Ying Quek, Singapore Eugen Rabkin, Israel José Santiso, Spain Richard Sisson, USA Werner Sitte, Austria Felix Von Oppen, Germany Hans-Dieter Wiemhoefer, Germany Shu Yamaguchi, Japan David Young, Australia

**FM - International Conference "Novel Non-volatile Inorganic Memory Devices: materials, concepts and applications"**

**Co-Chairs:** Hideo Ohno, Japan Rainer Waser, Germany H.-S. Philip Wong, USA **Programme Chair:** Sabina Spiga, Italy **Members:** Ritesh Agarwal, USA Marin Alexe, Germany Marco Bernasconi, Italy Gennadi Bersuker, USA Roberto Bez, Italy Caroline Bonafo, France I-Wei Chen, USA Albert Chin, Taiwan Daping Chu, UK Sorin Cristoloveanu, France Panagiotis Dimitrakis, Greece Yoshihisa Fujisaki, Japan Tsuyoshi Hasegawa, Japan Cheol Seong Hwang, Korea Hyunsang Hwang, Korea Bryan D. Huey, USA Daniele Ielmini, Italy Anquan Jiang, China Alexander V. Kolobov, Japan Bart J. Kooi, Netherlands Ming Liu, China Janice H. Nickel, USA Stuart S.P. Parkin, USA Shashi Paul, UK Luca Perniola, France Santiago Serrano-Guisan, Portugal Luping Shi, China Dmitri Strukov, USA Eisuke Tokumitsu, Japan Dirk Wouters, Belgium Matthias Wuttig, Germany

**FN - 7th International Conference "Science and Engineering of Novel Superconductors"**

**Co-Chairs:** Davor Pavuna, Switzerland (Programme Chair) Christos Panagopoulos, Singapore John Wei, Canada **Members:** Henri Alloul, France Yoichi Ando, Japan Evgeny V. Antipov, Russia Elisa Baggio-Saitovitch, Brazil Arun Bansil, USA Mark Blamire, UK Ivan Bozovic, USA Alexandre I. Buzdin, France Paolo Calvani, Italy Paul C.W. Chu, USA Tord Claeson, Sweden John Clarke, USA Guy Deutscher, Israel Takeshi Egami, USA Ali Gencer, Turkey Fedor Gomory, Slovakia Renato Gonnelli, Italy Hideo Hosono, Japan Yoshihiro Iwasa, Japan Hugo Keller, Switzerland Peter B. Littlewood, USA Victor V. Moshchalkov, Belgium Masato Murakami, Japan Yung Woo Park, Korea Marina Putti, Italy Bernard Raveau, France Paul Seidel, Germany Yuh Shiohara, Japan Frank Steglich, Germany Denis Sunko, Croatia Jeff Tallon, New Zealand Yoshinori Tokura, Japan Yasutomo J. Uemura, USA Dirk Van Der Marel, Switzerland Andrei Varlamov, Italy Harald W. Weber, Austria Lu Yu, China

**FO - 10th International Conference "Medical Applications of Novel Biomaterials and Nano-biotechnology"**

**Co-Chairs:** Luigi Ambrosio, Italy Paul Ducheyne, USA Teruo Okano, Japan Xingdong Zhang, China **Programme Chair:** Aldo R. Boccaccini, Germany **Members:** Serena Best, UK Marc Bohner, Switzerland Yilin Cao, China Jiang Chang, China Jinwoo Cheon, Korea Smadar Cohen, Israel Dermot Diamond, Ireland Peter Fratzl, Germany Paul Gatenholm, Sweden Vasif Hasirci, Turkey Larry Hench, USA Kazuhiko Ishihara, Japan Esmail Jabbari, USA John A. Jansen, Netherlands Ali Khademhosseini, USA Michael Khor, Singapore Robert Langer, USA Cato Laurencin, USA Andreas Lendlein, Germany Leandro Lorenzelli, Italy Dan Luo, USA Antonio Mastino, Italy Patrick T. Mather, USA Hamish Meffin, Australia Silvestro Micera, Switzerland Antonios G. Mikos, USA Yannis F. Missirlis, Greece Roger Jagdish Narayan, USA Showan N. Nazhat, Canada Jun Ohta, Japan Chikara Ohtsuki, Japan Akiyoshi Osaka, Japan Abhay Pandit, Ireland Heinz Redl, Austria Philippe Renaud, Switzerland Christian Rey, France Alexander Seifalian, UK Jukka Seppala, Finland Gabriel A. Silva, USA Molly Stevens, UK Min Wang, Hong Kong Thomas J. Webster, USA Hanein Yael, Israel Ke Yang, China Jackie Ying, Singapore Nobuhiko Yui, Japan Zhiyuan Zhong, China Christian A. Zorman, USA

**Special Session FO-8 - Smart Polymers for Biomedical Applications**

**Programme Chair:** Andreas Lendlein, Germany **Members:** Guillermo A. Ameer, USA Mitsuhiro Ebara, Japan Yakai Feng, China Ken Gall, USA Jeffrey M. Karp, USA Pavel A. Levkin, Germany Duncan J. Maitland, USA Pier Paolo Pompa, Italy U. Gianfranco Spizzirri, Italy Nicola Tirelli, UK

**Special Session FO-9 - Wearable and Implantable Sensors and Body Sensor Networks**

**Programme Chair:** Danilo De Rossi, Italy **Members:** Ilangko Balasingham, Norway Paolo Bonato, USA Lorenzo Chiari, Italy Shirley Coyle, Ireland Robert Istepanian, UK Roozbeh Safari, USA Emil Jovanov, USA Steffen Leonhardt, Germany Rita Paradiso, Italy Kwang Suk Park, Korea Mohamad Sawan, Canada Toshiyo Tamura, Japan Chris Van Hoof, Belgium Vijay Varadan, USA Peter Veltink, Netherlands Malte Von Krshiwoblozki, Germany Lei Wang, China Guang-Zhong Yang, UK Eric Yeatman, UK Haixia (Alice) Zhang, China Yuan-Ting Zhang, Hong Kong

# OUTLINE FORUM

## SYMPORIUM FA

Fuel Cells: Materials and Technology Challenges

## SYMPORIUM FB

Hydrogen Production and Storage

## SYMPORIUM FC

Electrochemical Energy Storage Systems: the Next Evolution

## SYMPORIUM FD

Advances in Materials and Technologies for Efficient Direct Thermal-to-Electrical Energy Conversion

## SYMPORIUM FE

Advances in Photocatalytic Materials for Energy and Environmental Sustainability

## SYMPORIUM FF

Magnetic Materials for Energy

## SYMPORIUM FG

Photovoltaic Solar Energy Conversion: Silicon and Beyond

## SYMPORIUM FH

Recent Developments in the Research and Application of Transparent Conducting and Semiconducting Oxides

## SYMPORIUM FI

Materials and Technologies for Solid State Lighting

## SYMPORIUM FJ

Materials Challenges for Future Nuclear Fission and Fusion Technologies

### *Special Session FJ-10*

*Materials Technology for Nuclear Waste Treatment and Disposal*

## *Serial Conferences*

### FK

#### **5<sup>th</sup> International Conference**

Novel Functional Carbon Nanomaterials

### FL

#### **4<sup>th</sup> International Conference**

Mass, Charge and Spin Transport in Inorganic Materials: Fundamentals to Devices

### FM

#### **International Conference**

Novel Non-volatile Inorganic Memory Devices: materials, concepts and applications

### FN

#### **7<sup>th</sup> International Conference**

Science and Engineering of Novel Superconductors

### FO

#### **10<sup>th</sup> International Conference**

Medical Applications of Novel Biomaterials and Nano-biotechnology

### *Special Session FO-8*

*Smart Polymers for Biomedical Applications*

### *Special Session FO-9*

*Wearable and Implantable Sensors and Body Sensor Networks*

# SESSIONS TIMETABLE

## 6th Forum on New Materials - June 15-19, 2014

### Sunday June 15

11.00-13.00 15.00-19.00

#### REGISTRATION

Palazzo dei Congressi  
Via Amendola, 2  
Montecatini Terme, Pistoia, Italy

### Monday June 16

**Morning:** 9.30-13.00

#### Opening Session

Welcome Addresses

Plenary Lectures (F:PL1-PL3)

**Afternoon:** 15.00-19.30

Symposium FA (FA-1:IL01-IL03)  
(FA-2:IL01-L04)

Symposium FB (FB-1:IL01-IL04)  
(FB-2.1:IL01-L05)

Symposium FC (FC-1:IL01-L05)  
(FC-1:IL06-L09)

Symposium FD (FD-1:IL01-IL03)  
(FD-1:IL04-L07)

Symposium FE (FE-1:IL01-L04)  
(FE-1:IL05-L08)

Symposium FF (FF-1:IL01-IL04)  
(FF-1:L05-IL07)

Symposium FG (FG-1:IL01-L03)  
(FG-2:IL01-L04)

Symposium FH (FH-1:IL01-IL03)  
(FH-1:IL04-IL06)

Symposium FJ (FJ-1:IL01-IL03)  
(FJ-3:IL01-IL04)

Conference FK (FK-1:IL01-IL04)  
(FK-1:IL05-IL08)

Conference FL (FL-1:IL01-IL04)  
(FL-1:IL05-IL07)

Conference FM (FM-2:IL01-L04)  
(FM-2:IL05-L08)

Conference FN (FN-1:IL01-L04)  
(FN-1:IL05-L07)

Conference FO (FO-1:IL01-IL04)  
(FO-1:IL05-IL07)

8.30-13.00

15.00-19.00

POSTER MOUNTING

20.30-22.30  
*Welcome Party*

## Tuesday June 17

**Morning:** 8.30-13.00

Symposium FA	(FA-1:IL04-L09)
	(FA-3:IL01-IL03)
Symposium FB	(FB-2.1:IL06-L11)
	(FB-2.4:IL01-L04)
Symposium FC	(FC-1:IL10-L14)
	(FC-1:IL15-L20)
Symposium FD	(FD-2:IL01-IL04)
	(FD-2:IL05-IL08)
Symposium FE	(FE-1:IL09-L13)
	(FE-2:IL01-L05)
Symposium FF	(FF-1:IL08-L12)
	(FF-1:IL13-L14)
	(FF-2:IL01-L03)
Symposium FG	(FG-2:IL05-L08)
	(FG-3:IL01-IL04)
Symposium FH	(FH-2:IL01-IL04)
	(FH-2:IL05-L09)
Symposium FJ	(FJ-2:IL01-L06)
	(FJ-5:IL01-L03)
Conference FK	(FK-1:IL09-IL11)
	(FK-2:IL01-IL05)
Conference FL	(FL-1:IL08-IL11)
	(FL-3:IL01-L04)
Conference FN	(FN-2:IL01-IL04)
	(FN-2:IL05-L08)
Conference FO	(FO-1:IL08-L12)
	(FO-1:L13-L19)
	(FO-2:IL06-L09)
	(FO-4:L05-L09)

**Afternoon:** 15.00-19.30

Symposium FA	(FA-2:IL05-IL07)
	(FA-2:IL08-L11)
Symposium FB	(FB-1:IL08-L12)
	(FB-2.2:IL01-L03)
Symposium FC	(FC-1:IL21-L23)
	(FC-1:IL24-L28)
Symposium FD	(FD-2:IL09-L12)
	(FD-2:IL13-L16)
Symposium FF	(FF-2:IL04-L09)
	(FF-3:IL01-L04)
Symposium FG	(FG-3:IL05-L09)
	(FG-3:IL10-L13)
Symposium FH	(FH-1:IL07-L09)
	(FH-2:IL10-L14)
Symposium FJ	(FJ-1:IL04-L08)
	(FJ-4:IL01-L04)
Conference FK	(FK-2:IL06-IL10)
	(FK-3:IL01-L04)
Conference FL	(FL-1:IL12-L16)
	(FL-1:IL17-L20)
Conference FM	(FM-2:IL09-L11)
	(FM-3:IL01-IL04)
Conference FN	(FN-3:IL01-L05)
	(FN-4:IL01-IL02)
Conference FO	(FO-2:IL01-L05)
	(FO-4:IL01-IL04)
	(FO-8.1:IL01-L04)
	(FO-8.1:IL05-L08)

## Wednesday June 18

**Morning:** 8.30-13.00

Symposium FA	(FA-1:IL10-L12) (FA-2:IL12-L18)
Symposium FB	(FB-2.2:IL04-IL07) (FB-2.3:IL01-L03)
Symposium FC	(FC-1:IL29-L31) (FC-2:IL01-L06)
Symposium FD	(FD-2:IL17-L21) (FD-3:IL01-IL04)
Symposium FE	(FE-2:IL06-L10) (FE-3:IL01-IL03)
Symposium FF	(FF-3:IL05-L09) (FF-3:L10-L15)
Symposium FI	(FI-1:IL01-IL04) (FI-1:IL05-IL07)
Symposium FJ	(FJ-5:IL04-L08) (FJ-6:IL01-L04)
Conference FK	(FK-3:IL05-IL08) (FK-3:IL09-IL12)
Conference FL	(FL-2:IL01-L05) (FL-3:IL05-IL07)
Conference FM	(FM-1:IL05-IL07) (FM-3:IL05-L09)
Conference FN	(FN-3:IL06-L09) (FN-4:IL03-L07)
Conference FO	(FO-3:IL01-L06) (FO-5:IL01-L03) (FO-8.2:IL01-L05) (FO-8.3:IL01-L05) (FO-9.1:IL01-L03) (FO-9.2:IL01-L06)

**Afternoon:** 15.00-19.30

Symposium FA	(FA-2:IL19-L22) (FA-2:IL23-L25)
Symposium FB	(FB-1:IL05-L07)
Symposium FE	(FE-1:L14-L19) (FE-1:L20-L25)
Symposium FF	(FF-3:L16-IL20) (FF-3:IL21-L24)
Symposium FG	(FG-3:IL14-L18) (FG-4:IL01-IL04)
Symposium FH	(FH-1:IL10-L13) (FH-2:IL15-L19)
Symposium FI	(FI-1:IL08-L13) (FI-2:IL01-IL03)
Symposium FJ	(FJ-7:IL01-L03) (FJ-10.1:IL01-IL04) (FJ-10.4:IL01-IL04)
Conference FK	(FK-1:L12-L15) (FK-2:L11-L13) (FK-4:L13-L18) (FK-4:L19-L23)
Conference FL	(FL-3:IL08-IL10)
Conference FM	(FM-1:IL08-L11) (FM-1:L12-L15)
Conference FN	(FN-5:IL01-IL04) (FN-6:IL01-L04)
Conference FO	(FO-5:L05-L07) (FO-7:IL01-L04) (FO-8.4:IL01-L05) (FO-8.4:IL06-L09) (FO-9.3:IL01-L04) (FO-9.3:IL05-L08)

21.30-23.00

*Gala Concert*

## Thursday June 19

**Morning:** 8.30-13.00

Symposium FA	(FA-4:IL01-L04)
	(FA-4:IL05-L11)
Symposium FB	(FB-2.4:IL05-IL08)
	(FB-2.5:IL01-L05)
Symposium FC	(FC-1:IL32-L34)
Symposium FD	(FD-2:IL22-L25)
	(FD-3:IL05-L09)
Symposium FE	(FE-3:IL04-IL07)
	(FE-3:L08-L11)
Symposium FF	(FF-4:IL01-IL04)
	(FF-4:IL05-L08)
Symposium FH	(FH-3:IL01-IL04)
	(FH-3:IL05-L08)
Symposium FI	(FI-2:IL04-L08)
	(FI-3:IL01-L04)
Symposium FJ	(FJ-6:IL05-L08)
	(FJ-7:IL04-IL06)
	(FJ-10.1:IL05-L07)
	(FJ-10.2:IL01-IL05)
Conference FK	(FK-4:IL01-IL05)
	(FK-4:IL06-IL08)
Conference FM	(FM-1:IL01-IL04)
	(FM-4:IL01-L05)
Conference FN	(FN-6:IL05-L07)
	(FN-7:IL01-L06)
Conference FO	(FO-5:IL08-IL10)
	(FO-6:IL01-L04)
	(FO-8.5:IL01-L05)
	(FO-9.4:IL01-L04)
	(FO-9.5:IL01-IL04)

**Afternoon:** 14.45-18.30

Symposium FA	(FA-4:IL12-L16)
Symposium FB	(FB-2.5:IL06-L10)
Symposium FC	(FC-2:IL07-L12)
Symposium FE	(FE-3:IL12-IL14)
Symposium FI	(FI-3:IL05-L08)
Symposium FJ	(FJ-8:IL01-L03)
	(FJ-10.3:IL01-L05)
Conference FK	(FK-4:IL09-IL12)
Conference FM	(FM-4:IL06-IL09)
Conference FN	(FN-7:IL07-IL11)
Conference FO	(FO-6:IL05-IL08)
	(FO-8.6:IL01-IL04)

17.00-18.30

**POSTER DISCUSSION**

20.00-23.30

*Conference Dinner*

## Code Number of contributions by Presenting Author (in alphabetical order)

The Code Number XY-W:Z00 includes: XY Symposium; W Session; Z Type of presentation (PL, IL, L, P)\*; 00 Paper number

\* PL Plenary IL Invited Lecture L Contributed Lecture P Poster presentation

*NOTE: Due to the restructuring of some symposia, the session number included in the Code may differ from the one selected by the Presenting Author in the Abstract Submission Form.*

Agostino Raffaele G.	FB-2.4:L06	Barawi Moran Mariam	FB-1:L10	Brown Thomas	FG-4:IL03
Agou Takuya	FN:P04	Barbera Orazio	FA-4:L09	Brück Ekkes	FF-3:IL05
Agoudjil Nouria	FG:P05	Barbieri Giuseppe	FA-2:L16	Brunn Nadine	FA-2:L15
Aiche-Hamane Lilia	FB:P09	Barboux Philippe	FC-2:IL01	Buasri Achanai	FO-8:P02
Ajayan Pulickel M.	F:PL2	Baricco Marcello	FB-2.5:L02	Bubak Grzegorz	FK-4:L22
Akbulut Ozge	FO-2:L05	Barnham Keith	FG-4:IL01	Buchelnikov Vasiliy	FF:P12
Akiba Etsuo	FB-2.1:IL07	Barolo Claudia	FG-3:IL14	Bukaemskiy Andrey	FJ-10.1:IL03
Al Halafi Zahra	FM:P07	Bassil Maria	FO-7:IL03	Bulat Lev	FD-2:L21
AlArfaj Esam	FE-1:L08	Battaglia Giuseppe	FO-8.6:IL02	Bussmann-Holder Annette	FN-4:IL04
Alario-Franco Miguel A.	FN-1:L04	Beatrice Cinzia	FF-2:L06	Buzdin Alexander	FN-5:IL01
Albrecht Martin	FI-2:IL03	Behl Marc	FO-8.1:IL07	Bychkov Igor	FF:P15
Al-Jawhari Ala	FH-3:L08	Bellet Daniel	FH-2:IL18	Byun Eunkyoung	FO-8:P11
Al-Muhamadi Jamila	FO-1:L15	Bellingeri Emilio	FN-2:IL03	Byun Thak Sang	FJ-1:IL03
Alonso-Vante Nicolas	FA-4:IL05	Belova Irina	FL-1:L14	Caillat Thierry	FD-3:IL06
Alotaibi Sattam	FM:P08	Benhebal Hadj	FE:P14	Caldarelli Aurora	FA-1:L09
Alpas Ahmet T.	FC-1:L23	Benito-Lopez Fernando	FO-9.3:IL05	Calderon Marcelo	FO-8.5:IL02
Amaral Joao	FF:P07	Berger Thomas	FE-2:L05	Canela Maria Cristina	FE-1:IL02
Amaral Vitor	FF-3:L04	Bergonzo Philippe	FK-4:IL02	Cantoni Matteo	FL-3:L04
Ameer Guillermo	FO-8.4:IL01	Bernasconi Marco	FM-2:IL02	Capone Mauro	FJ-10:P02
Amezawa Koji	FL-1:IL08	Bersuker Gennadi	FM-1:IL02	Carbonera Chiara	FG:P04
Andrievski Rostislav	FJ-6:L03	Bertoldi Massimo	FA-3:IL03	Carmezim Maria Joao	FC:P12
Angstrom Jonas	FB-2.1:L08	Bertolla Luca	FO-4:L05	Caron Luana	FF-3:L07
Anikeeva Polina	FO-6:IL07	Besland Marie-Paule	FM:P03	Caruana A.	FF-4:L08
Araujo Daniel	FK-2:IL01	Besmann Theodore	FJ-5:IL01	Casalegno Andrea	FA-4:IL12
Aricò Antonino	FA-4:L02	Best Serena	FO-4:IL02	Casiraghi Cinzia	FK-3:IL10
Arita Ryotaro	FN-4:IL05	Bez Roberto	FM-2:IL09	Cassir Michel	FA-1:IL10
Armiento Craig	FK-4:L14	Bhattacharya Pallab	FI-3:IL03	Cavalu Simona	FO:P09
Arnault Jean-Charles	FK-3:IL08	Bichara Christophe	FK-1:IL11	Cedervall Johan	FF:P17
Arnold Zdenek	FF-3:IL03	Bignozzi Carlo Alberto	FG-3:IL01	Celino Massimo	FB-2.5:L07
Arrouvel Corinne	FC:P11	Biliskov Nikola	FB-2.2:IL03	Cerri Isotta	FA-2:IL07
Artioli Gianluca Andrea	FN-6:L03	Björkvik Leena	FO-4:L06	Chadeyron Genevieve	FI-1:L12
Arvind D.K.	FO-9.2:IL05	Blanchard Didier	FB-2.3:IL03	Chambers Lily	FO-8.4:L07
Augustynski Jan	FE-1:L14	Blanco Jesus Angel	FF-3:L16	Chang Zhen-Qi	FJ-5:IL05
Awschalom David	FL-1:IL01	Blanita Gabriela	FB:P12	Chaput Laurent	FD-1:IL05
Azad Aryan	FB:P01	Blokhin Anatoly	FJ-6:IL05	Charpentier Ludovic	FJ-1:L07
Baglio Vincenzo	FA-4:L16	Boaro Marta	FA-1:L07	Chen An	FM-1:IL13
Bahloul Ahmed	FC:P15	Boccaccini Aldo	FO-1:IL09	Chen Chienchih	FI-1:IL10
Bahnemann Detlef	FE-2:IL02	Boccardi Elena	FO-5:L05	Chen George	FC-1:IL33
Baidakova Marina	FK-2:IL09	Bokshteyn Boris	FL-1:IL11	Chen Li-Chyong	FK-4:L16
Balandin Alexander A.	FK-4:IL08	Bongiorno Angelo	FA-1:IL05	Chen Ping	FB-2.2:IL05
Balasingham Ilangko	FO-9.5:IL04	Borgschulte Andreas	FB-2.2:IL07	Chen Rongrong	FA-4:L04
Balasubramanian Preethi	FO-4:L07	Bosowski Patrycja	FO-9.1:IL03	Chen Yun-Hsuan	FO-9.3:L07
Balaya Palani	FC-1:IL21	Botton Gianluigi	FN-6:IL02	Chen Zhihong	FL-3:IL01
Balbuena Perla	FA-2:IL01	Boucheham Abdelghani	FG:P01	Cheng Yong	FK:P01
Balducci Andrea	FC-2:IL04	Bousack Herbert	FO-3:IL01	Chernikova Anna	FM:P10
Bali Ashoka	FD-2:L12	Boutard Jean-Louis	FJ-8:IL01	Chernov Viacheslav	FJ-8:IL02
Balk Maria	FO-8.4:L09	Bozovic Ivan	FN-1:IL02	Chiari Lorenzo	FO-9.3:IL01
Balke Benjamin	FD-2:IL18	Bracht Hartmut	FL-2:IL04	Chin Albert	FM-1:L12
Ballerini Laura	FO-6:IL03	Braune Steffen	FO-8.4:L08	Chiriac Horia	FF-4:L07
Banhart Florian	FK-2:IL07	Brayden David	FO-5:IL08	Chiu Cheng-Yao	FI:P06
Bansil Arun	FN-4:IL03	Brivio Stefano	FM-1:L10	Chizhik Alexander	FF-2:L03
Baranoff Etienne	FI-2:IL02	Brousse Thierry	FC-2:IL09	Choi Jung-Hae	FH-1:L09
Baranov Pavel	FH-1:L13	Brouzgou A.	FA:P20	Christiansen Niels	FA-1:IL01

Chu Paul K.	F:PL1	Durupthy Olivier	FE-1:L23	Gasteiger Hubert	FA-2:IL19
Chun Young-Bum	FJ:P03	Dyba Kalina	FB:P02	Gatto Irene	FA-2:L18
Cinar Zekiye	FE-1:IL06	Ebara Mitsuhiro	FO-8.1:IL03	Gelbstein Yaniv	FD-2:IL04
Ciupinski Lukasz	FJ:P04	Echegoyen Luis	FK-2:IL10	Ghane-Motlagh Bahareh	FO-6:L04
Cohen Lesley	FF-3:L14	Egdell Russell	FH-1:IL05	Gheeraert Etienne	FK-4:IL04
Cohen Smadar	FO-1:IL05	Egorov Konstantin	FM-1:L15	Giamello Elio	FE-2:IL06
Collini Elisabetta	FG-3:IL12	Eisaki Hiroshi	FN-6:IL06	Giboire Isabelle	FJ-10.2:IL04
Collins Reuben	FH-2:IL05	Eliaz Noam	FO-7:IL01	Gimenez-Lopez M.Carmen	FC:P13
Colombo Luigi	FK-1:IL01	Eliezer Dan	FB-2.4:IL07	Gin Stephane	FJ-10.3:IL04
Conley John	FH-1:IL06	Ellmer Klaus	FH-1:IL01	Ginley David	FH-3:IL01
Conrad Olaf	FA-2:IL02	Endo Kazuhiro	FN:P01	Giordani Silvia	FK-4:L19
Coors W. Grover	FL-3:IL10	Erkmen Ziya Engin	FJ-5:L08	Girard Hugues	FK-3:IL05
Cornogolub Alexandru	FO-9.4:IL04	Eslami Parisa	FO:P03	Gogotsi A.	FK:P03
Coué Martin	FM-2:L03	Essiptchouk Alexei	FB:P08	Gogotsi Yury	FK-4:L13
Craciun Monica	FO-9.4:IL02	Es-Souni Mohammed	FK-1:L12	Goldacker Wilfried	FN-7:IL08
Cuevas Fermin	FB-2.4:L03	Etzold Bastian J.M.	FK-4:IL12	Goldberg Alexander	FB-2.5:IL01
Cui Yongfei	FE-2:L04	Eugenio Sonia	FB-1:L11	Golodnitsky Diana	FC-1:L13
Da Dalt Silvana	FK:P17	Fabbrici Simone	FF-3:L02	Gomez-Polo Cristina	FF-3:L23
Damascelli Andrea	FN-3:IL02	Fabretti Savio	FM:P11	Gomory Fedor	FN-7:IL05
Dapkus Daniel	FI-1:IL02	Fazio Concetta	FJ-1:IL01	Gondoni Paolo	FH-2:L14
Davies Gemma-Louise	FO-3:IL03	Felez Marissol	FF-3:L11	Gong Hao	FH-2:IL03
Dawson Martin	FI-3:IL02	Felser Claudia	FF-3:IL20	Gonzalez-Torres Veronica	FO:P04
De Angelis Giorgio	FJ-10.1:IL06	Feng Xinliang	FK-4:IL07	Gorria Pedro	FF-3:L17
De Cola Luisa	F:PL3	Feng Yakai	FO-8.4:IL06	Granozzi Gaetano	FA-4:L06
De Colvenaer Bert	FA-3:IL01	Fenniri Hicham	FO-1:IL06	Greenbaum Steve	FC-1:IL01
De Groot Huub	FB-1:IL09	Ferdeghini Carlo	FN-7:IL03	Griessen Ronald	FB-2.1:IL02
De Jongh Petra	FB-2.4:IL01	Ferekides Chris	FG:P02	Grollier Julie	FM-4:IL07
de Julian Fernandez Cesar	FF-1:L14	Ferenc Jaroslaw	FF:P11	Grundmann Marius	FH-3:IL06
De Stefano Luca	FO-2:L09	Ferrara Maria Cristina	FE:P03	Gruverman Alexei	FM-3:IL03
Degueldre Claude	FJ-10.2:IL02	Fidler Josef	FF-1:L05	Grzebielucka Edson Cezar	FA:P11
Deignan Jennifer	FO-9:P01	Figueiredo de Miranda L.	FK:P05	Gueorguiev Gueorgui	FK-1:L13
Del Campo Aranzazu	FO-8.2:IL02	Filippetti Alessio	FG-3:L08	Guilmeau Emmanuel	FD-2:IL17
Delgado Juan L.	FG-3:IL02	Fischer Christian-Herbert	FG-2:L07	Gusak Andriy	FL-1:IL06
Delmas Claude	FC-1:IL24	Florea Larisa	FO-8.2:L03	Gutfleisch Oliver	FF-1:IL01
Demin Victor	FG-3:L09	Flükiger René	FN-7:IL07	Gutierrez Gaelle	FJ-10.3:IL05
Demirhan Yasemin	FN:P06	Focarete Maria Letizia	FO-1:L12	Guyomard Dominique	FC-1:IL15
Dermkov Alex	FM-3:L09	Foord John	FK-3:IL06	Guzik Matylda N.	FF-1:L11
Dempsey Nora	FF-1:IL08	Fortunato Elvira	FH-3:IL05	Hadjipanayis George	FF-1:IL06
D'Epifanio Alessandra	FA:P16	Frade Jorge	FL-3:IL06	Haenen Ken	FK-1:IL02
Derby Brian	FO-2:IL01	Francis Wayne	FO-8:P09	Hamana Yoshiaki	FK:P15
Derek Vedran	FG-3:L07	Francisco Cristina Santana	FF:P18	Hanada Nobuko	FB-1:IL06
Deretzis Ioannis	FL-1:IL10	Frangini Stefano	FB-1:L12	Hannappel Thomas	FG-1:IL01
Di Castro Daniele	FN-3:IL07	Frascaroli Jacopo	FM:P01	Hartmann Thomas	FJ-10.1:IL02
Di Francesco Fabio	FO-9.3:IL06	Frayret Christine	FC-1:L03	Hasegawa Masataka	FH-3:IL07
Di Vona Maria Luisa	FA-2:IL14	Friedrich K. Andreas	FA-2:IL06	Hasegawa Ryusuke	FF-2:IL04
Diamond Dermot	FO-9.2:IL03	Friess Fabian	FO-8.4:L05	Hasegawa Tsuyoshi	FM-4:IL02
Diaz Luis Antonio	FO-7:L04	Frohlich Karol	FM-1:L14	Hassan Omar Omar	FE-3:L08
Ding Hong	FN-2:IL07	Froning Dieter	FA-2:L25	Hata Kenji	FK-1:IL09
Ding Junwang	FF-2:IL05	Fu Chu-Chun	FJ-7:IL06	Hauback Bjorn C.	FB-2.2:IL06
Ding Shi-Jin	FM-4:L05	Fujimori Atsushi	FN-3:IL01	Hautier Geoffroy	FH-1:L08
Dinner Omry	FH:P09	Fujioka Hiroshi	FI-1:IL03	Hawelek Lukasz	FF:P09
Divinski Sergiy	FI-1:IL03	Funahashi Ryoji	FD-3:IL05	He Tao	FE-1:L18
Djedjiga Hatem	FG-3:L13	Funashima Hiroki	FD:P01	Heitjans Paul	FL-1:IL05
Dollé Mickael	FC-1:IL29	Fung Kuan-Zong	FA-1:L06	Henderson James H.	FO-8.1:IL05
Dornheim Martin	FB-2.2:IL01	Furukawa Hidemitsu	FO-8.5:L05	Hermannsson Leif	FO-1:L14
Dove Andrew	FO-8.4:IL02	Furukawa Nobuo	FM:P09	Hersam Mark	FK-3:IL09
Dudarev Sergei	FJ-7:IL05	Fusco Roberto	FG-4:IL02	Hertleer Carla	FO-9.5:IL01
Dumas Jean	FO-9.3:IL08	Gaganidze Ermile	FJ-6:IL02	Ho Dean	FK-4:IL01
Dunn Bruce	FC-1:IL06	Galperin Yuri	FN-5:IL04	Hoffmann Axel	FI-3:IL07
Dunne Aishling	FO-8:P01	Gama Sergio	FF-3:L12	Hoffmann Michael	FE-3:IL13
Durose Ken	FG-2:IL03	Gannoruwa Asangi	FE-1:L19	Höglin Viktor	FF-3:L08

Holleitner Alexander	FK-2:IL06	Kawada Tatsuya	FL-3:IL05	Landfester Katharina	FO-8.6:IL03
Holtappels Peter	FA-3:IL02	Kawano-Furukawa Hazuki	FN-5:IL02	Laniecki Marek	FB:P07
Hong Eun-Ok	FC-1:L28	Keller Nicolas	FE-2:IL07	Lanzani Guglielmo	FG-3:IL10
Hong Sang Hyeon	FO-8:P10	Khamngoen Kiattipong	FH:P03	Laurencin Cato	FO-4:IL03
Horita Teruhisa	FA-1:IL03	Kharitonova Elena	FH:P08	Laurita Romolo	FC-1:L09
Hosono Hideo	FN-2:IL01	Khlebtsov Nikolai	FO-3:L06	Lauth Victor Rafael	FO-5:L07
Hou Yanglong	FF-1:IL13	Khovaylo Vladimir	FF:P06	Lazaro Maria Jesus	FA-2:IL20
Hsieh You-Lo	FO-8.1:LO8	Khushalani Deepa	FO-1:L18	Le Donne Alessia	FG-2:L08
Hsu Chain-Shu	FG-3:IL11	Kikuchi Yuta	FD-1:L06	Lebouc Afef	FF-4:IL02
Hsu Julia	FH-2:IL01	Kim Chulhee	FO:P06	Lee Chang-Hoon	FJ-2:L06
Huang Hefei	FJ-6:L08	Kim Do-Heyoung	FE:P13	Lee Haeshin	FO-8.4:LO3
Huang Wei Min	FO-8.3:IL01	Kim Dong-Jin	FJ-1:L08	Lee Hee Young	FH:P10
Huang Xin	FC-1:L26	Kim Il-Ho	FD:P02	Lee Jeong-Ik	FI-3:IL01
Huot Jacques	FB-2.1:L11	Kim Jeong-Joo	FH:P07	Lee Kwan Hyi	FO-1:L10
Hwang Cheol Seong	FM-1:IL05	Kim Joon-soo	FC:P05	Lee Kyueui	FK-1:L15
Hyatt Neil	FJ-10.4:IL02	Kim Kee-Bum	FB-2.2:L02	Lee Kyungeun	FK:P12
Iba Hideki	FC-1:IL02	Kim Kwang-Bum	FC-2:IL08	Lee Sang Yeol	FH-1:IL02
Ibrahim Ahmed	FK:P02	Kim Sang Ouk	FK-1:IL05	Lee Seunghun	FB-2.5:LO3
Ielmini Daniele	FM-1:IL06	Kim Sangtae	FL-1:IL13	Lemoine Pierric	FD-2:L20
Ievtukh Valerii	FM:P13	Kim Seong Hun	FK-4:L20	Lenaerts Silvia	FE-2:L10
Ignatiewa Lidia	FK:P07	Kim Sundong	FB:P04	Lenardi Cristina	FO-4:L08
Imao Hiroya	FN:P03	Kim Tae Kyu	FJ:P01	Lendlein Andreas	FO-1:IL08
Irie Hiroshi	FE-1:L11	Kim Weon-Ju	FJ-5:L07	Leszczynski Juliusz	FD:P04
Irvine John	FA-1:IL02	Kim Woochul	FD-3:L07	Leszczynski Mike	FI-3:L08
Ishihara Tatsumi	FL-3:IL02	Kim Young Jin	FI:P01	Levartoski de Araujo C.I.	FL-1:L16
Isnard Olivier	FF-1:IL07	Kinoshita Kentaro	FM:P05	Levin Evgenii	FD-1:IL04
Ivanovic Nenad	FB:P13	Kiriakidis George	FH-3:IL02	Levkin Pavel	FO-8.2:IL01
Iwasa Yoshi	FN-1:IL06	Kishida Satoru	FM:P04	Lewis Laura H.	FF-1:IL04
Iwasaki Yasuhiko	FO-2:IL06	Klenk Reiner	FG-2:IL05	Lex-Baldacci Alexandra	FC-1:LO7
Jabbari Esmaiel	FO-7:IL02	Knaster Juan	FJ-7:IL02	Li Qingfeng	FA-2:L04
Jaksic Milan M.	FA-2:L21	Knauth Philippe	FA-2:L17	Li Rong	FE-1:L13
Janaky Csaba	FE-3:IL06	Koblischka Michael	FN-3:L04	Liang Zhenxing	FA-2:IL12
Jang Gun Hyuk	FO:P02	Kohl Manfred	FF-4:IL05	Liao Changzhong	FJ-10.1:LO7
Jang Gun-Eik	FE:P08	Kohri Hitoshi	FD-2:L19	Liao Liang-Sheng	FI-3:IL06
Jang Jinsung	FJ-1:L06	Koida Takashi	FH-2:IL02	Liguori Anna	FO-2:L04
Jannasch Patric	FA-2:IL09	Kolano-Burian Alksandra	FF:P01	Lim Joonwon	FC:P14
Janod Etienne	FM-1:IL03	Kolb Gunther	FA-1:IL11	Lin Hsin	FN-6:IL05
Januszko Kamila	FD-2:L25	Kolobov Alexander	FM-2:IL05	Lin Mei	FC-1:L18
Jayakumar Tammana	FJ-2:IL01	Kolunova Lidia	FO-8:P08	Linares-Solano Angel	FB-2.4:IL05
Je Jung Ho	FO-8.2:LO4	Komine Shigeki	FC:P07	Lindner Bonde Jacob	FA-4:L03
Jena Purusottam	FB-2.5:IL06	Komsitsyska Lidiya	FC:P04	Linke Jochen	FJ-3:IL04
Jensen Peter Bjerre	FB-2.5:L08	Konashi Kenji	FJ-4:IL01	Linsmeier Christian	FJ-3:IL02
Jeong Se-Young	FL-1:L20	König Jan D.	FD-3:IL03	Litsardakis George	FF-3:L18
Jiang Tao	FO-5:IL02	Korattanawittaya Sasithorn	FK:P13	Liu J. Ping	FF-1:IL10
Jiang Zhen	FE-1:L24	Kotsionopoulos Nikolaos	FB:P06	Liu Ming	FM-1:IL07
Jimenez Pablo	FC-1:L14	Koumoto Kunihito	FD-2:IL13	Liu Shaojun	FJ-2:IL04
Jin Haibo	FE:P02	Kovac Pavol	FN-7:L06	Llorca Marta	FB:P14
Johnson Karl	FB-2.3:IL01	Kovalenko Maksym	FC-1:IL11	Lo Faro Massimiliano	FA:P01
Jones Deborah	FA-2:IL13	Kowalczyk Maciej	FF:P05	Lodziana Zbigniew	FB-2.5:LO5
Jou Jwo-huei	FI-2:L07	Kowalska Ewa	FE-3:IL02	Lommens Petra	FE-1:L16
Julich-Gruner Konstanze K.	FO-8.5:LO3	Kozikov Aleksey	FL-1:IL02	Longo Massimo	FM-2:IL06
Jungwirth Tomas	FI-3:IL09	Kozyrev Artem	FN-6:L04	Lorenzana Jose	FN-4:IL02
Kafadaryan Yevgenia	FH:P02	Kramer Matthew	FF-1:IL03	Loryuenyong Vorrada	FK:P06
Kakanakova-Georgieva A.	FI-1:L13	Krasheninnikov Arkady	FK-2:IL03	Low Jim	FE:P01
Kamantsev Alexander	FF-4:L03	Kropman Daniel	FL:P01	Lumpkin Greg	FJ-10.3:IL02
Kang Hway Chuan	FK-4:IL06	Kubouchi Masataka	FD:P05	Lungu Claudiu	FK-4:L21
Kang Jinfeng	FM-1:IL04	Kuzmin Dmitry	FF:P13	Luprano Jean	FO-9.5:IL02
Kang Suk Hoon	FJ-1:L05	Kuznetsov Vladimir	FH-2:L07	Lupu Nicoleta	FF-2:L02
Kaskel Stefan	FK-1:IL10	Labaiz Mohamed	FO:P10	Luque Priscy	FH:P06
Katoh Yutai	FJ-2:IL03	Lacerda Armando	FE-1:L17	Ma Nan	FO-8.1:L04
Kavan Ladislav	FE-2:L03	Lahewil Abdulwahab	FD-1:L07	Machluf Marcelle	FO-5:IL01

Madkikar Pankaj	FA-4:L11	Molina Soler Marina	FO-8:P06	Ozturk Tayfur	FB-2.1:L05
Maeda Mizuo	FO-2:IL08	Montemor Fatima	FO-8.4:L04	Ozyuzer Lutfi	FN-7:IL11
Maitland Duncan	FO-8.1:IL01	Montone Amelia	FB:P11	Pacheco Monica	FK:P11
Makino Akihiro	FF-2:IL01	Moon Joonoh	FJ-2:L05	Paglione Johnpierre	FN-2:IL04
Mallik Ramesh Chandra	FD-2:IL02	Morawski Antoni W.	FE-3:IL12	Pal Sudipto	FE:P05
Mancini Alessandro	FC-1:L08	Morelli Donald	FD-2:IL22	Palacin M. Rosa	FC-1:IL32
Manoharan Hari	FN-3:IL03	Morelli Marco	FF-4:IL04	Pan Shuheng	FN-2:IL06
Manosa Lluis	FF-3:IL01	Mori Takao	FD-2:IL03	Panagopoulos Christos	FN-1:IL01
Manthiram Arumugam	FC-1:L31	Moriyama Takumi	FM:P02	Panich Alexander	FK-2:L11
Mao Hui	FK:P04	Morrison Kelly	FF-3:L10	Pankov Vladimir	FA:P10
Marchi Juliana	FO-8:P03	Mortalo Cecilia	FA:P13	Pappacena Alfonsina	FB-1:L07
Marian Jaime	FJ-3:IL03	Moya Xavier	FF-3:IL21	Paquet Bernard	FO-9.2:L06
Marinaro Mario	FC-1:L27	Müller Martin	FA-4:IL01	Paradiso Rita	FO-9.2:IL02
Marino Armando Carlos	FJ-5:L06	Muralidhar Miryala	FN-6:L07	Parak Wolfgang	FO-8.3:IL02
Marques Fernando	FL-3:IL08	Murch Graeme	FL-1:IL04	Pardo Enric	FN-7:IL02
Martin Manfred	FL-1:IL09	Nakamura Atsutomu	FH-2:L08	Park Hyunwoong	FE-1:IL10
Martin Nazario	FG-3:IL04	Nakazato Kenta	FN:P05	Park Ji Yeon	FJ-5:L03
Martin-Gonzalez Marisol	FD-3:IL02	Nam Yoon Sung	FO-5:L06	Park Jongwook	FI-1:IL07
Martins Rodrigo	FH-3:IL04	Nanishi Yasushi	FI-1:IL08	Park Yung Woo	FN-1:IL05
Mason Thomas	FH-1:IL10	Naoi Katsuhiko	FC-2:IL02	Parra Carolina	FN-3:L05
Massi Marcos	FG:P03	Narayan Roger	FO-1:IL04	Parrino Francesco	FE-1:L07
Mathieu Stephane	FJ-8:IL03	Navarra Maria Assunta	FA-2:L10	Pasquini Luca	FA:P18
Matovic Ljiljana	FB:P10	Nazarov Andrei	FL-1:L15	Passerini Stefano	FC-1:IL25
Matsusaki Michiya	FO-6:IL08	Negro Emanuela	FA-4:L14	Pastor Elena	FA-2:IL24
Matteucci Francesco	FG-4:IL04	Nelson Weker Johanna	FC-1:L05	Pavuna Davor	FN-1:L07
Mattoni Alessandro	FG-3:L15	Nemanich Robert	FK-3:IL07	Paz Yaron	FE-1:L25
Matveyev Yury	FM-4:L03	Nguyen Huu Tan	FM-2:L07	Pedroza-Montero Martin	FO:P07
Matyas Josef	FJ-10.2:IL05	Ni Meng	FA-1:IL04	Pelaz Lourdes	FL-3:IL03
Maximenko Sergey	FG-1:L03	Nickel Janice	FM-4:IL06	Peled Emanuel	FC-1:IL10
Mazierska Janina	FN-3:L09	Nicotera Isabella	FA-4:L10	Pembble Martyn	FH-1:IL11
Mazzolini Piero	FH-2:L12	Niehörster Stefan	FM:P12	Perez-Juste Jorge	FO-8.3:IL03
McDaniel Anthony	FB-1:IL02	Nieroda Pawel	FD-2:L15	Perkins John D.	FH-2:IL10
Mecheri Barbara	FA:P15	Niki Shigeru	FG-2:IL01	Pessoa Rodrigo	FG:P06
Medvedeva Julia	FH-1:IL07	Nishida Kenji	FJ-6:L04	Petrova Elena	FO-3:L05
Mehta Rutvik	FD-3:IL04	Noh Sanghoon	FJ:P02	Peuget Sylvain	FJ-10.3:IL01
Meire Mieke	FE-3:L11	Noheda Beatriz	FM-3:IL02	Philippart Anahi	FO-5:L03
Melnik Roderick	FK-3:L02	Nolas George	FD-2:IL01	Phillips Matthew	FI-2:L06
Mendoza-Sanchez Beatriz	FC-2:L12	Nonemacher Julianne	FC:P10	Pianmanakij Monchai	FA:P19
Meor Yusoff M.S.	FE-3:L10	Novick-Cohen Amy	FL-2:IL01	Pigot Thierry	FE-1:L22
Mercadelli Elisa	FC:P01	Nunes Kirchner Carolina	FC:P02	Pikalova Elena	FA:P14
Mertin Wolfgang	FK-2:IL04	Odgaard Madeleine	FA-2:IL23	Pino Lidia	FA:P04
Messersmith Phillip	FO-8.6:IL04	Oganisian Karen	FN:P02	Pintsuk Gerald	FJ-6:IL06
Miao Xuefei	FF-3:L09	Ogawa Yukiko	FM:P06	Podmiljsak Benjamin	FF-3:L19
Mican Sever	FF-1:12	Oh Suhk-Kun	FF:P04	Polak Marcin	FF:P08
Michael M. Siluvai	FC-2:L11	Ohno Hideo	FM-3:IL01	Poon Carmen C.Y.	FO-9.3:L04
Mikolajick Thomas	FM-3:IL06	Ohta Jun	FO-2:IL02	Popov Vladimir	FK-2:L12
Milanese Chiara	FB-2.4:L04	Ohtaki Michitaka	FD-2:L23	Prabaharan S.R.S.	FC-1:IL30
Miletic Goran	FB-2.5:L04	Ohtani Bunsho	FE-2:IL01	Prejbeanu Ioan Lucian	FM-3:IL05
Mimura Hitoshi	FJ-10.1:IL01	Okada Shigeto	FC-1:L16	Presser Volker	FK-4:IL10
Mirabile Gattia Daniele	FB-2.1:L10	Okano Teruo	FO-4:IL01	Prikhna Tatiana	FN-3:L08
Misra Dinesh	FD-2:IL11	Ollis David	FE-1:IL05	Prinz Christelle	FO-6:IL02
Misture Scott	FE-2:L09	Op de Beeck Maaike	FO-1:L13	Priyadharsini Natarajan	FC-2:L06
Mitri S.	FA:P12	Operamolla Alessandra	FE-3:L07	Puchalski Michal	FK:P14
Mittermeier Thomas	FA-4:L08	Orellana Pedro	FK:P09	Pullar Robert	FE-1:L03
Miura Yoshiko	FO-8.3:L04	Orimo Shin-ichi	FB-2.1:IL01	Putti Marina	FN-2:IL05
Miyake Hideto	FI-1:IL06	Orlov Alexander	FE-1:IL01	Quartarone Eliana	FA-2:IL08
Myaoka Hiroki	FB-1:IL03	Orr Robert S.	FN-7:IL01	Rabkin Eugen	FL-1:IL12
Miyata Toshihiro	FH-2:IL11	Osmieri Luigi	FA-4:L13	Radovic Zoran	FN-6:IL01
Mizuno Yusuke	FC-1:L12	Osswald Sebastian	FK-2:IL08	Randriamahazaka H.	FO-8.5:L04
Mochalim Vadym	FK-3:IL01	Osters Oliver	FC:P06	Ranzieri Paolo	FF-3:L22
Moeslang Anton	FJ-1:IL02	Ozolins Vidvuds	FD-1:IL03	Ravelosona Dafine	FM-3:IL04

Razzaq M.Y.	FO-8.3:IL05	Sezen Meltem	FB-2.5:L09	Teisseyre Henryk	FI-1:L11
Recupero Vincenzo	FA:P21	Sgroi Mauro Francesco	FA:P22	Teng Hsi-Sheng	FC-2:IL03
Regonini Domenico	FE-1:L12	Shahabi Shakiba	FO-2:L07	Terasaki Ichiro	FD-1:IL01
Reis Rafael	FA:P09	Shakhov Fedor	FK-1:IL03	Terranova Maria Letizia	FK-4:IL09
Ren Wencai	FK-1:IL08	Shakouri Ali	FD-3:IL01	Thomas Andy	FM-4:IL08
Ren Zhifeng	FD-2:IL09	Sheka Elena	FK-3:IL11	Thorngkham Pornwalai	FO-8:P05
Resendiz Hernandez P. J.	FO-1:L17	Shi Xun	FD-2:IL07	Tiberto Paola	FF-1:L09
Revesz Adam	FB-2.1:IL04	Shibauchi Takasada	FN-7:IL04	Tien Li-Chia	FH:P04
Rezek Bohuslav	FK-2:IL02	Shikama Tatsuo	FJ-4:IL03	Tinku Sajina	FO-9.3:IL03
Ribeiro de Araujo Daniele	FO-8:P04	Shim Jong-In	FI-2:IL01	Tirelli Nicola	FO-8.6:IL01
Riess Ilan	FM-1:IL09	Shin Mikyung	FO-8:P07	Tiwari Ayodhya N.	FG-2:IL02
Rieth Michael	FJ-1:IL04	Shinya Hikari	FD:P03	Tokarev Oleg	FC-1:L04
Rinaldi Christian	FL-1:L19	Shlyakhtina Anna	FA:P06	Tomar Maharaj	FG-3:L18
Robinson Jason	FN-4:IL01	Shlyk Larysa	FN-2:L08	Tominaga Junji	FM-2:IL10
Rodrigues Daisy	FC:P09	Shokuhfar Ali	FF:P02	Toney Michael	FH-2:IL16
Rogal Jutta	FL-1:IL18	Shoureshi Rahmat	FO-9.3:IL02	Toth Peter	FK-4:L18
Rogl Gerda	FD-2:L14	Silva Paula	FO:P11	Tran Phong	FO-1:L11
Rogl Peter Franz	FD-2:L24	Simeonova Katya	FK-3:L03	Tricoli Vincenzo	FA-2:L11
Rokhvarger Anatoly	FJ-10.1:IL05	Singh Raj	FA-1:L08	Trikalitis Pantelis	FB-2.4:IL02
Romeo Alessandro	FG-2:L04	Sirivisoot Sirinrath	FO-3:IL02	Tröber Oliver	FJ-6:L07
Romero-Ortega Mario	FO-6:IL05	Sitar Zlatko	FI-1:IL09	Trucchi Daniele M.	FD-3:L09
Roncali Jean	FG-3:IL05	Skorobogatiy Maksim	FO-9.4:IL01	Tsai Shu-Yi	FH-2:L19
Rosales Luis	FK:P10	Skorvanek Ivan	FF-2:IL07	Turner John	FE-3:IL04
Rothschild Avner	FE-2:IL08	Slusarek Barbara	FF-2:L09	Tytgat Tom	FE-3:L09
Rozhkova Natalia	FK-2:L13	Sokolovskiy Vladimir	FF:P14	Tzorbatzoglou F.	FA:P17
Rubel Marek	FJ-3:IL01	Soneda Naoki	FJ-6:IL01	Uhl Tadeusz	FK-4:L15
Rumyantseva Marina	FH-2:IL04	Song Jie	FO-8.1:IL02	Ullakko Kari	FF-4:IL06
Ryu Jeong Ho	FI:P03	Spalek Jozef	FN-4:L07	Uludag Hasan	FO-5:IL09
Ryu Mee-Yi	FI:P04	Specchia Stefania	FA-4:L07	Ulyanov Maxim	FF-3:L15
Sachdev Hermann	FK-1:L14	Spira Micha E.	FO-6:IL01	Ur Soon-Chul	FC:P03
Saci Abdelhak	FM-2:L08	Squadrito Gaetano	FA-1:L12	Valcke Elie	FJ-10.3:IL03
Saeed Muhammad	FI:P02	Stanzione Stefano	FO-9.4:IL03	Validzic Ivana	FG-3:L16
Sahlberg Martin	FB-2.1:IL03	Stefanovsky Sergey	FJ-10.4:IL04	Van Aken Katherine	FC-2:L05
Sahu Vikrant	FC:P16	Steinfeld Aldo	FB-1:IL01	Van de Krol Roel	FB-1:IL08
Saito Yuta	FM-2:L11	Stingelin Natalie	FG-3:IL03	Van de Walle Chris	FH-1:IL04
Sakamoto Jeffrey	FC-1:IL22	Stodolny Mikolaj	FE:P04	Vance Eric	FJ-10.4:IL01
Salanne Mathieu	FC-2:IL07	Straumal Boris	FL-2:IL03	Vandaele Koen	FD-2:L16
Salehi Zahra	FA:P02	Strukov Dmitri	FM-4:IL09	Vanfleteren Jan	FO-9.2:IL04
Salunkhe Ashwini	FO-1:L19	Studart André R.	FO-1:IL02	Vangelista Silvia	FF-3:L24
Salvador Paul	FL-2:IL02	Stylios George	FO-9.1:IL02	Vanmaekelbergh Daniel	FE-3:IL01
Sanchez Benigno	FE-3:IL03	Su Bo	FO-4:L08	Vazquez Iglesias Brais	FO-8:P12
Sandeman Karl	FF-3:IL06	Suenaga Kazu	FK-2:IL05	Veal Tim	FH-1:IL03
Sanders Charlotta	FJ-10.4:IL03	Sugii Toshihiro	FM-3:L07	Ventelon Lisa	FJ-7:IL01
Sannen Leo	FJ-5:IL04	Suh Myunghyun Paik	FB-2.4:IL08	Verbruggen Sammy	FE-1:L20
Santiso Jose	FL-2:L05	Suleimanov Nail	FC-1:L19	Vernieuwe Kenny	FH-2:L09
Santos Everton	FO:P05	Sun Jianmin	FE-1:L21	Vesborg Peter	FE-3:IL05
Saranti Konstantina	FM-1:L11	Sunko Denis	FN-4:IL06	Vianello Elisa	FM-1:IL08
Sato Nobuaki	FJ-10.1:IL04	Suwarno S.	FB-2.1:IL09	Victoria Mercedes	FB-2.5:L10
Savchenko Natalia	FH:P01	Suzuki Naoto	FO:P08	Vidal Felix	FN:P07
Sberveglieri Giorgio	FH-3:IL03	Szczyglowski Jan	FF-2:L08	Vienna John	FJ-10.2:IL01
Scanlon David	FH-2:IL15	Szlufarska Izabela	FJ-7:IL04	Villa-Boas Lucia Adriana	FA:P08
Schmidt Thomas J.	FA-2:IL03	Szyszka Bernd	FH-2:IL06	Visintin Arnaldo	FC-1:L20
Scholz Ferdinand	FI-1:IL05	Tafuri Francesco	FN-7:IL10	Vitorino Nuno	FA:P05
Schultze Martin	FH-1:L12	Takahashi Masahiro	FD-3:L08	Vorobieva Alexandra	FJ-4:IL02
Schüttauf Jan-Willem	FG-2:IL06	Takeuchi Daisuke	FK-4:IL05	Vorobyeva Nataliya	FH-2:L13
Schwertmann Larissa	FE:P09	Takimiya Kazuo	FG-3:IL06	Voronkova Valentina	FA:P07
Sebastian David	FA-4:L15	Tallon Jeffery	FN-7:IL09	Vul Alexander	FK-3:L04
Seifert Krystyna	FB:P05	Tamura Toshiyo	FO-9.2:IL01	Wakai Eiichi	FJ-2:IL02
Selli Elena	FE-3:IL14	Tang Junwang	FE-1:IL09	Walker Gavin	FB-2.1:IL06
Seo Yongsok	FK-4:L17	Tapaszto Levente	FK-1:IL07	Walton Allan	FF-4:IL01
Sepehri Amin Hossein	FF-1:IL02	Tarabella Giuseppe	FO-3:L04	Wang Canxing	FI-3:L04

Wang Lei	FO-9.5:IL03	Wu She-huang	FC-1:L17	Yugami Hiroo	FL-3:IL07
Wang Min	FO-4:IL04	Wuttig Matthias	FM-2:IL01	Yui Nobuhiko	FO-5:IL10
Wang Ping	FE:P07	Xie Dong	FO:P01	Yushin Gleb	FK-1:IL06
Wang Xiaodong	FA:P23	Xue Qi-Kun	FN-2:IL02	Zackiewicz Przemyslaw	FF:P10
Wang Ying-Jhe	FI:P07	Yakimova Rositza	FK-1:IL04	Zagrebin Mikhail	FF:P16
Wang Zhoucheng	FE:P06	Yamada Takahiro	FD-2:IL10	Zagrodnik Roman	FB:P03
Waser Rainer	FM-1:IL01	Yamaguchi Shu	FL-1:IL17	Zappia Stefania	FG-3:L17
Watanabe Masahiro	FA-2:IL05	Yamamoto Ayako	FN-1:IL03	Zbyrad Paulina	FK-4:L23
Watpathomsub Somchai	FC:P08	Yamawaki Michio	FJ-4:L04	Zebarjadi Mona	FD-1:IL02
Webster Thomas	FO-1:IL01	Yang Deren	FG-1:IL02	Zehetmayer Martin	FN-5:IL03
Wei Chen	FI-2:L08	Yang Guang-Zhong	FO-9.1:IL01	Zenkevich Andrei	FM-3:L08
Wei John	FN-3:IL06	Yarovsky Irene	FO-2:L03	Zetsu Nobuyuki	FC-1:L34
Wei Mao-Kuo	FI-2:IL04	Yeom Jiheyon	FL:P02	Zeugolis Dimitrios	FO-1:IL03
Wei Su-Hai	FH-2:L17	Yerushalmi Roie	FE-1:L04	Zhang Kuo	FJ-7:L03
Wei Yuezhou	FJ-10.2:IL03	Yildiz Bilge	FL-1:IL07	Zhang Penfei	FO-8.2:L05
Weidenkaff Anke	FD-2:IL06	Yilmaz Pelin	FE-1:L15	Zhang Xinhai	FI-2:IL05
Weil Marcel	FC-2:IL10	Yin Shu	FH:P05	Zhang Yuegang	FK-4:IL11
Wessler Berit	FI-1:IL01	Ying Jackie	FO-1:IL07	Zhu Qingwei	FE:P10
Westsson Emma	FA-2:L22	Yitzchaik Shlomo	FO-6:IL06	Zhu Tiejun	FD-2:IL05
Willander Magnus	FI-3:IL05	Yoshida Masatoshi	FK:P16	Zidan Ragaiy	FB-1:IL05
Williams Oliver	FK-4:IL03	Yoshida Ryo	FO-8.5:IL01	Zu Jianhua	FJ-10:P01
Wilson Thomas	FO-8.1:IL06	Yoshimura Humberto	FO-1:L16	Zukalova Marketa	FE:P12
Winkler Markus	FD-2:IL08	You Shuen-Jium	FI:P05	Zuliani Paola	FM-2:L04
Wiss Thierry	FJ-5:IL02	You Tianguい	FM-4:L04	Zurlo Francesca	FA:P03
Włodarczyk Patryk	FF-3:L13	Yu Seong-Cho	FF:P03	Züttel Andreas	FB-2.2:IL04
Wolverton Chris	FB-1:IL04	Yu Ting	FK-3:IL12	Zverev Grigorii	FK:P08
Wong Ken-Tsung	FI-1:IL04	Yu Xuebin	FB-2.3:IL02		
Wright C. David	FM-4:IL01	Yuan Sujun	FE:P11		

# SCIENTIFIC PROGRAMME

## 6<sup>th</sup> FORUM ON NEW MATERIALS

### OPENING SESSION

### WELCOME ADDRESSES

#### *Plenary Lectures*

##### F:PL1 Plasma-based Materials Engineering and Surface Modification

**PAUL K. CHU**, Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong, China

##### F:PL2 Nanoscale Engineering – Challenges and Opportunities

**P.M. AJAYAN**, Department of Materials Science and Engineering, Rice University, Houston, TX, USA

##### F:PL3 Nanomaterials for Biomedical Applications

**L. DE COLA**, Institute de Science et d'Ingénierie Supramoléculaires (I.S.I.S.), Université de Strasbourg, France, and KIT, Germany

### SYMPOSIUM FA FUEL CELLS: MATERIALS AND TECHNOLOGY CHALLENGES

#### *Oral Presentations*

##### Session FA-1

##### Solid Oxide (SOFCs) and Molten Carbonate (MCFCs) Fuel Cells

##### FA-1:IL01 New Generation Solid Oxide Fuel Cells

**N. CHRISTIANSEN**, Topsoe Fuel Cell A/S, Lyngby, Denmark

##### FA-1:IL02 High Temperature Fuel Cell Electrodes: New Compositions, Microstructures and Systems for Efficient Utilisation of Renewable Fuels

**J.T.S. IRVINE**, University of St. Andrews, St. Andrews, UK

##### FA-1:IL03 Improvement of Durability of SOFC: Origin of Polarization at Cathode/Electrolyte Interfaces

**T. HORITA**, N. MINA, H. KISHIMOTO, K. YAMAJI, H. YOKOKAWA, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

##### FA-1:IL04 Reconstruction and Analysis of Solid Oxide Fuel Cell Electrodes with Nano-sized Structures

**MENG NI**, Department of Building and Real Estate, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

##### FA-1:IL05 Density Functional Theory Combined with Experiments to Study the Triple Phase Boundaries of Solid Oxide Fuel Cells

**M. MALAGOLI<sup>1</sup>**, M.L. LIU<sup>2</sup>, HYEON CHEOL PARKA<sup>3</sup>, **A. BONGIORNO<sup>1</sup>**,

<sup>1</sup>School of Chemistry & Biochemistry, Georgia Institute of Technology, Atlanta, GA, USA; <sup>2</sup>School of Material Science & Engineering, Georgia Institute of Technology, Atlanta, GA, USA; <sup>3</sup>Advanced Materials Research Center Samsung Advanced Institute of Technology (SAIT), Yongin-si, Republic of Korea

##### FA-1:IL06 Effect of Annealing on Crystal Structure and Conductivity of Plasma-Sprayed Protective Oxide for SOFC Interconnects

**KUAN-ZONG FUNG<sup>1,2</sup>**, SHU-YI TSAIA<sup>2</sup>, HSIN-CHIA HOAB, <sup>1</sup>Research Center for Energy Technology and Strategy; <sup>2</sup>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan, ROC

##### FA-1:LO7 Effect of Synthesis Methods on Catalytic and Structural Properties of SrTiO<sub>3</sub> for applications in SOFC anodes

**F. MARAZZI**, A. PAPPACENA, **M. BOARO**, A. TROVARELLI, University of Udine, Udine, Italy

##### FA-1:IL08 Self Repairable Glass Seals for Solid Oxide Fuel Cells

**R.N. SINGH**, School of Materials Science and Engineering, College of Eng., Architecture and Technology, Oklahoma State University, Tulsa, OK, USA

##### FA-1:IL09 Implications of Water-based Shaping Processing on the Properties of Gadolinium-doped Ceria

**A. CALDARELLI**, E. MERCADELLI, A. SANSON, CERTIMAC and ISTEC-CNR, Faenza, Italy; S. PRESTO, M. VIVIANI, IENI-CNR, Genova, Italy

##### FA-1:IL10 High Temperature Fuel Cells: Materials Issues and New Concepts

**M. CASSIR**, Institut de Recherche de Chimie Paris, IRCP, UMR8247 Chimie ParisTech - CNRS, Paris, France

##### FA-1:IL11 LPG based Auxiliary Power Unit Development for Application in Recreational Vehicles

**G. KOLB**, M. WICHERT, H. PENNEMANN, Institut für Mikrotechnik Mainz GmbH, Mainz, Germany

##### FA-1:IL12 ETRERA\_2020 - A project for an Euro-Mediterranean RES, Hydrogen and Fuel Cells Deployment

**G. SQUADRITO<sup>1</sup>**, A. NICITA<sup>1</sup>, A. SORACI<sup>2</sup>, P. MAZZUCHELLI<sup>3</sup>, E. STAMATAKIS<sup>4</sup>, I. IBRIK<sup>5</sup>, R. SANDERS<sup>6</sup>, A. ZAKARYA<sup>7</sup>, M. MACHMOUM<sup>8</sup>, H. GORGUN<sup>9</sup>, B. DAG<sup>10</sup>, H. HAMDI<sup>11</sup>, D. MARTINEZ CALLEJA<sup>12</sup>, <sup>1</sup>CNR - ITAE, Messina, Italy; <sup>2</sup>INNOVA BIC, Messina, Italy (project coordinator); <sup>3</sup>European Renewable Energy Centre Agency, Brussels, Belgium; <sup>4</sup>Kemtro Ananeosimon Pagon Ke Exikonomisis Energeias - CRES, Pikermi/Athens, Greece; <sup>5</sup>An-Najah National University, Omar Ibn Khatab Street Nablus Palestinian-Administered Areas; <sup>6</sup>European Business and Innovation Network, Brussels, Belgium; <sup>7</sup>Centre de Recherche et de Technologie de l'Energie, Technopole Borj Cedria, Tunis Hammam Lif, Tunisia; <sup>8</sup>Université De Nantes, Saint Nazaire, France; <sup>9</sup>Yildiz Technical University, Faculties of Electrical A 101, Esenler/Istanbul, Turkey; <sup>10</sup>Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu TUBITAK, Odtu Kampus/ Sogutozu, Ankara, Turkey; <sup>11</sup>Université Cadi Ayyad, Bb Prince MY Abdellah, Marrakech, Morocco; <sup>12</sup>Asociacion Madrid Network, Madrid, Spain

##### Session FA-2

##### Proton-conducting (PEFCs) and Alkaline (AFCs) Polymer Electrolyte Fuel Cells

##### FA-2:IL01 Activity and Durability of PEFCs Alloy Core-shell Catalysts: Role of Surface Oxidation

**P.B. BALBUENA**, G. RAMOS-SANCHEZ, Texas A&M University, College Station, TX, USA; F. GODINEZ, O. SOLORZA-FERIA, Centro de Investigacion y Estudios Avanzados de Instituto Politecnico Nacional, Mexico, D.F., Mexico

##### FA-2:IL02 New Fuel Cell Electrocatalysts from South Africa - Variations of the Support and the Catalyst Composition

**O. CONRAD**, HySA/Catalysis, University of Cape Town, Cape Town, South Africa

##### FA-2:IL03 Catalysts and Durability Issues of Polymer Electrolyte Fuel Cells

**T.J. SCHMIDT**, Electrochemistry Laboratory, Paul Scherrer Institut, Villigen PSI, Switzerland

##### FA-2:IL04 Nitrogen-free Non-precious Metal Catalyst for Oxygen Reduction based on Iron Carbide Nanoparticles Confined in Curved Carbon Nanotubes

**QINGFENG LI**, YANG HU, J.O. JENSEN, WEI ZHANG, L.N. CLEEMANN, N.J. BJERRUM, Department of Energy Conversion and Storage, Technical University of Denmark, Kgs. Lyngby, Denmark

##### FA-2:IL05 Development of Pt and Pt-Alloy Electrocatalysts for the Next Generation Polymer Electrolyte Fuel Cells

**M. WATANABE**, H. UCHIDA, M. WAKISAKA, S. YANO, Fuel Cell Nanomaterials Center, University of Yamanashi, Kofu, Japan

##### FA-2:IL06 Electrocatalyst Stability under Dynamic and Stationary Operation of Polymer Electrolyte Fuel Cells

**K.A. FRIEDRICH**, S. HELMLY, German Aerospace Center, Institute of Technical Thermodynamics, Stuttgart, Germany; R. HIESGEN, T. MORAWIETZ, University of Applied Sciences Esslingen, Department of Basic Science, Esslingen, Germany

**FA-2:L07 Towards Fuel Cell Vehicle Commercialization****I. CERRI**, Toyota Motor Europe, Zaventem, Belgium**FA-2:L08 High Temperature Polymer Fuel Cell Membranes Based on PBI****E. QUARTARONE**, Dept. of Chemistry, University of Pavia, and INSTM, Pavia Italy**FA-2:L09 New Polymer Electrolyte Membranes for Fuel Cells****E.A. WEIBER, HAI-SON DANG, S. TAKAMUKU, P. JANNASCH**, Department of Chemistry, Lund University, Lund, Sweden**FA-2:L10 Functionalized Metal Oxide Particles: A Comparative Study on their Use as Additives in Polymer Electrolyte Membranes****M.A. NAVARRA, S. PANERO, I. PETTITI, M. SGAMBETTERA**, Sapienza University of Rome, Rome, Italy**FA-2:L11 Water-free Proton-conducting Membranes at Elevated Temperature****J. JALILI, V. TRICOLI**, Department of Civil and Industrial Engineering, University of Pisa, Pisa, Italy**FA-2:L12 Mesoporous Carbon Based Electrocatalyst for ORR****ZHENXING LIANG**, South China University of Technology, Guangzhou, PR. China**FA-2:L13 Membranes for Direct Methanol Fuel Cells****D. JONES**, ICGM – Aggregates, Interfaces and Materials for Energy, CNRS – Université Montpellier 2, France**FA-2:L14 Proton- and Hydroxide-conducting Polymer Electrolytes for Electrochemical Energy Technologies****M.L. DI VONA**, Univ. Roma Tor Vergata, Dip. Scienze e Tecnologie Chimiche, Roma, Italy**FA-2:L15 Influence of Acid Loss in PBI-based HT-PEM Fuel Cells during Long-term Operation****N. BRUNS, M. RASTEDT, F.J. PINAR PÉREZ, P. WAGNER**, NEXT ENERGY-EWE Research Centre for Energy Technology, Oldenburg, Germany**FA-2:L16 New Approach for the Evaluation of Membranes Transport Properties for PEMFC****A. BRUNETTI, E. FONTANANOVA, E. DRIOLI, G. BARBIERI**, National Research Council - Institute on Membrane Technology (ITM-CNR), c/o The University of Calabria, Rende CS, Italy**FA-2:L17 Hydration and Proton Conductivity of Proton-conducting Ionomers****P. KNAUTH**, Aix Marseille University, CNRS, UMR 7246, Marseille, France**FA-2:L18 Evaluation of Titanium Oxide in the Electrode Structure for Portable PEFCs Applications****I. GATTO, A. CARBONE, A. SACCÀ, R. PEDICINI, E. PASSALACQUA**, CNR-ITAE, Messina, Italy**FA-2:L19 Kinetics of the Hydrogen Oxidation in Alkaline and Acid Environment****H.A. GASTEIGER, H. BEYER, C. DENK, J. DURST, H. EL-SAYED, T. GEPPERT, T. GREESE, F. HASCHE, J. HERRANZ, P. MADKIKAR, M. PIANA, P. RHEINLÄNDER, A. SIEBEL, X. WANG**, Technical Electrochemistry, Chemistry Department, Technische Universität München, Garching, Germany**FA-2:L20 Nitrogen-doped Carbon Materials as Catalysts Supports for the Electro-oxidation of Methanol****M.J. LAZARO, M.J. NIETO, D. SEBASTIÁN, C. ALEGRE, M.E. GÁLVEZ, I. SUELVES, R. MOLINER**, Instituto de Carboquímica, CSIC, Zaragoza, Spain**FA-2:L21 Primary Oxide Self-Catalytic Spillover Effect Enabling to Substantiate Reversible Oxygen and Hydrogen Electrodes, and Advanced Reversible (PEMFC vs. WE) Cell****M.M. JAKSIC<sup>1,2</sup>, G.A. BOTTON<sup>3</sup>, J.M. JAKSIC<sup>1</sup>**, <sup>1</sup>Institute of Chemical Engineering Sciences, FORTH, Patras, Greece; <sup>2</sup>Faculty of Agriculture, University of Belgrade, Belgrade, Serbia; <sup>3</sup>Department of Materials Science & Engineering, McMaster University, Hamilton, Ontario, Canada**FA-2:L22 Non-noble Metal Catalysts for Fuel Cell Applications****E.E. WESTSSON, G.J.M KOPER**, Technical University of Delft, Delft, The Netherlands**FA-2:L23 Advanced DMFC Systems****M. ODGAARD**, IRD Fuel Cells, Svendborg, Denmark**FA-2:L24 Pt-Ru Electrocatalysts for CO and Methanol Oxidation Supported on Carbon Nanofibers: Influence of Synthesis Methods on Activity****J.C. CALDERÓN<sup>1</sup>, L. CALVILLO<sup>2</sup>, M.J. LÁZARO<sup>2</sup>, G. GARCÍA<sup>1</sup>, J.L. RODRÍGUEZ<sup>1</sup>, E. PASTOR<sup>1</sup>**, <sup>1</sup>Dpto. Química Física, Instituto Universitario de Materiales y Nanotecnología, Universidad de La Laguna, La Laguna, Tenerife, Spain; <sup>2</sup>Instituto de Carboquímica (CSIC), Zaragoza, Spain**FA-2:L25 Combination of Stochastic and Numeric Modeling of Fibrous Microstructures of HT-PEFC Gas Diffusion Layers****D. FRONING<sup>1</sup>, J.P. BRINKMANN<sup>1</sup>, G. GAISELMANN<sup>2</sup>, U. REIMER<sup>1</sup>, V. SCHMIDT<sup>2</sup>, W. LEHNERT<sup>1</sup>, <sup>1</sup>Forschungszentrum Jülich GmbH, Jülich, Germany; <sup>2</sup>Ulm University, Germany****Session FA-3****State-of-the-art Application Engineering and Demonstrations****FA-3:ILO1 Perspectives for Fuel Cells and Hydrogen in Europe****B. DE COLVENAER**, FUEL CELLS AND HYDROGEN JOINT UNDERTAKING, Brussels, Belgium**FA-3:ILO2 Materials and Concepts for Full Ceramic SOFCs with Focus on Carbon Containing Fuels****P. HOLTAPPELS**, B.R. SUDIREDDY, S. VELTZÉ, T. RAMOS, Departament of Energy Conversion and Storage, Technical University of Denmark, Roskilde, Denmark**FA-3:ILO3 Performances of IT-SOFC Stacks Tested in SOFC and SOEC Mode****M. BERTOLDI, S. MODENA, S. CESCHINI, D. MONTINARO**, SOFCpower S.p.A, Mezzolombardo, TN, Italy**Special Session FA-4****DURAMET Workshop on Direct Alcohol Fuel Cells (DAFCs)****FA-4:ILO1 The Long Way of Achieving a Durability of 20,000 h in a DMFC System****M. MÜLLER, N. KIMIAIE, A. GLÜSEN**, Institute of Energy and Climate Research, Juelich Research Center, Germany; D. STOLTEN, Director Institute for Electrochemical Process Engineering, Juelich Research Center & Chair for Fuel Cells, Aachen University, Germany**FA-4:ILO2 Improved Durability and Cost-effective Components for New Generation Direct Methanol Fuel Cells - DURAMET Project****A.S. ARICO'**, CNR-ITAE, Messina, Italy**FA-4:ILO3 DMFC Degradation and Lifetime Studies****J.L. BONDE**, IRD Fuel Cells, Svendborg, Denmark**FA-4:ILO4 Status and Challenges of Anion-Exchange-Membrane Direct Ethanol Fuel Cell Research****RONGRONG CHEN, J. GUO**, Indiana University, Indianapolis, IN, USA; A. HSU, San Jose State University, San Jose, CA, USA**FA-4:ILO5 Methanol-tolerant Cathode Catalysts for DMFC****J. MA, A. HABRIOUX, C. MORAIS, N. ALONSO-VANTE**, IC2MP UMR-CNRS 7285, University of Poitiers, Poitiers, France**FA-4:ILO6 DECORE: A New European Project Aiming at Innovative DEFCS Operating at Intermediate Temperatures****G. GRANOZZI**, Department of Chemical Sciences, University of Padova, Italy**FA-4:ILO7 3D Direct Methanol Fuel Cell (DMFC) Validation Model for Analyzing New Materials and Components****N.S. VASILE, A.H.A. MONTEVERDE VIDELA, S. SPECCHIA**, Politecnico di Torino, Department of Applied Science and Technology, Torino, Italy**FA-4:ILO8 Impact of N/Zr Atomic Ratio on the Oxygen Reduction Reaction Activity of Heat-treated Carbon-supported Zr-oxyphthalocyanine****T. MITTERMEIER, C. DENK, XIAODONG WANG, H. BEYER, P. MADKIKAR, M. PIANA, H.A. GASTEIGER**, Technische Universität München, Garching, Germany**FA-4:ILO9 Direct Methanol Fuel Cell Stack Design and Test in the framework of DURAMET Project****O. BARBERA, A. STASSI, V. BAGLIO, D. SEBASTIAN, A.S. ARICO'**, CNR-ITAE, Messina, Italy**FA-4:ILO10 Layered Double Hydroxide (LDH) Nanoplatelets as Fillers for the Preparation of Nafion Hybrid Membranes: NMR Investigation of the Transport Properties of Water and Methanol****I. NICOTERA, C. SIMARI, L. COPPOLA, G.A. RANIERI**, University of Calabria, Rende (CS), Italy; D. GOURNIS, University of Ioannina, Ioannina, Greece**FA-4:ILO11 Synthesis and Characterization of ZrO<sub>2</sub> Nanoparticles from an Organometallic Precursor as ORR-Selective Catalysts for DMFCs****P. MADKIKAR, T. MITTERMEIER, C. DENK, X. WANG, M. PIANA, H.A. GASTEIGER**, Technische Universität München, Institute of Technical Electrochemistry, Garching, Germany

**FA-4:L12 Degradation of Direct Methanol Fuel Cell: Analysis of Temporary and Permanent Phenomena and their Effects on Components**  
**A. CASALEGNO**, F. BRESCIANI, M. ZAGO, R. MARCHESI, Department of Energy, Politecnico di Milano, Italy

**FA-4:L13 The Use of Different Types of Reduced Graphene Oxide (rGO) on the Reduction Oxygen Reaction (ORR) under Alkaline Conditions**  
**A.H.A. MONTEVERDE VIDELA**, **L. OSMIERI**, S. SPECCHIA, Politecnico di Torino, Department of Applied Science and Technology, Torino, Italy

**FA-4:L14 Networked Graphic Structures Grown from Dense Micro-emulsions as High Performance Electrode Material**  
**E. NEGRO**, M. DIECI, D. SORDI, M.G. KOPER, Advanced Soft Matter, Faculty of Applied Science, TU Delft, Delft, The Netherlands

**FA-4:L15 Composite Anode Catalysts based on PtRu and Metal Oxides for DMFCs**  
**D. SEBASTIAN**, V. BAGLIO, C. D'URSO, A. STASSI, A.S. ARICO<sup>1</sup>, CNR-ITAE, Messina, Italy

**FA-4:L16 Pd-based Electrocatalysts as Cost-effective Cathodes for Direct Methanol Fuel Cells**  
**V. BAGLIO**, C. D'URSO, D. SEBASTIÁN, A. STASSI, A.S. ARICO<sup>1</sup>, CNR-ITAE, Messina, Italy

## Poster Presentations

**FA:P01 Current SOFC R&D Activities at CNR-ITAE**  
**M. LO FARO**, A.S. ARICÒ, CNR-ITAE, Messina, Italy

**FA:P02 Spin-coated La<sub>0.8</sub>Sr<sub>0.2</sub>Ga<sub>0.8</sub>Mg<sub>0.2</sub>O<sub>3</sub> Electrolyte on Infiltrated anodes for Biogas Utilization**  
**Z. SALEHI<sup>1</sup>**, I. LUSETTO<sup>2</sup>, F. BASOLI<sup>1</sup>, A. D'EPIFANIO<sup>1</sup>, S. LICOCCHIA<sup>1</sup>, S. TUTI<sup>2</sup>, E. DI BARTOLOMEO<sup>1</sup>, <sup>1</sup>Department of Chemical Science and Technology and NAST Center, University of Rome Tor Vergata, Rome, Italy; <sup>2</sup>Department of Science, University of Rome "Roma Tre", Rome, Italy

**FA:P03 Copper Doped Lanthanum Strontium Ferrite as Cathode for La<sub>0.8</sub>Sr<sub>0.2</sub>Ga<sub>0.8</sub>Mg<sub>0.2</sub>O<sub>3</sub>**  
**F. ZURLO<sup>1</sup>**, E. DI BARTOLOMEO<sup>1</sup>, A. D'EPIFANIO<sup>1</sup>, V. FELICE<sup>2</sup>, I. NATALI SORA<sup>2</sup>, S. LICOCCHIA<sup>1</sup>, <sup>1</sup>Department of Chemical Science and Technologies & NAST Center University of Rome "Tor Vergata", Italy; <sup>2</sup>INSTM R.U. and Department of Engineering, University of Bergamo, Dalmine, BG, Italy

**FA:P04 Biogas Reforming for Hydrogen Production for SOFCs Applications: Performance of Ni/La-C-O Catalysts**  
**L. PINO**, A. VITA, M. LAGANÀ, V. RECUPERO, CNR Institute of Advanced Technology for Energy "Nicola Giordano", Messina, Italy

**FA:P05 Porous/Dense YSZ Layers for Prospective SOFC Processing**  
**N. VITORINO<sup>1</sup>**, C. FREITAS<sup>2</sup>, J.C.C. ABRANTES<sup>1,2</sup>, J.R. FRADE<sup>1</sup>, <sup>1</sup>DeMAC, CICECO, University of Aveiro, Aveiro, Portugal; <sup>2</sup>UIDM, ESTG, Polytechnic Institute of Viana do Castelo, Viana do Castelo, Portugal

**FA:P06 Synthesis, Properties and Phase Transitions of Pyrochlore- and Fluorite-like Ln<sub>2</sub>RMo<sub>7</sub> (Ln=Sm, Ho; R=Lu, Sc; M= Nb, Ta)**  
**A.V. SHLYAKHTINA**, K.S. PIGALSKIY, I.V. KOLBANEV, Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, Russia; D.A. BELOV, Faculty of Chemistry, Moscow State University, Moscow, Russia; A.N. SHCHEGOLIKHIN, O.K. KARYAGINA, Emmanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia

**FA:P07 Polymorphism and Features of Conductive Properties of Compounds with the Structure of La<sub>2</sub>Mo<sub>2</sub>O<sub>9</sub> in La<sub>2</sub>Mo<sub>2</sub>O<sub>9</sub> - Sm<sub>2</sub>W<sub>2</sub>O<sub>9</sub> - Sm<sub>2</sub>Mo<sub>2</sub>O<sub>9</sub> System**  
**V.I. VORONKOVA**, E.P. KHARITONOV, M.V. Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia

**FA:P08 Ce<sub>0.8</sub>Gd<sub>0.2</sub>O<sub>1.9</sub> Obtained from Nanopowder through Two-step Sintering Assisted by ZnO and CoO Addition**  
**L.A. VILLA-BOAS**, D.P.F. DE SOUZA, F.M.L. FIGUEIREDO, F.M.B. MARQUES, Dept. of Materials Eng., PPGCEM/UFSCAR, Sao Carlos, Brazil; Dept. of Materials & Ceramic Eng., CICECO, University of Aveiro, Aveiro, Portugal

**FA:P09 Utilization of a Protective Layer for Solid Oxide Fuel Cell Directly Fed with Ethanol**  
**R.M. REIS<sup>1</sup>**, G.G.A. SAGLIETTI<sup>1</sup>, M. LO FARO<sup>2</sup>, A.S. ARICO<sup>2</sup>, E.A. TICIANELLI<sup>1</sup>, <sup>1</sup>USP-IQSC, Sao Carlos, SP, Brasil; <sup>2</sup>CNR-ITAE, Messina, Italy

**FA:P10 Synthesis, Crystalline Structure and Conductivity of Solid Solutions in Sr-Me-Ni-O (Me = Nd, Ti, Mo) System**  
**V.V. PANKOV**, L.V. MAKHNACH, L.A. LOMONOSOV, E.S. KRAVCHENKO, Belarusian State University, Minsk, Belarus

**FA:P11 Gd-doped Ceria / Li-Na Carbonate Composite: Correlation between Microstructure and Electrical Conductivity**

**E.C. GRZEBIELUCKA**, D.P.F DE SOUZA, Department of Materials Engineering, Federal University of S. Carlos, S. Carlos-SP, Brazil

**FA:P12 Polarization Studies of a Novel Fe / BaCe<sub>0.5</sub>Zr<sub>0.3</sub>Y<sub>0.08</sub>Yb<sub>0.08</sub> Cu<sub>0.04</sub>O<sub>3-δ</sub> /Fe Proton Conducting Solid Electrolyte at Intermediate Temperatures**

**S. MITRI<sup>1</sup>**, D. MEDVEDEV<sup>2</sup>, A. DEMIN<sup>2</sup>, P. TSIAKARAS<sup>1</sup>, <sup>1</sup>Department of Mechanical Engineering, School of Engineering, University of Thessaly, Pedion Areos, Volos, Greece; <sup>2</sup>Institute of High Temperature Electrochemistry, Yekaterinburg, Russia

**FA:P13 Compatibility Studies of Ln<sub>2</sub>NiO<sub>4+s</sub> Cathodes with BaCe<sub>0.65</sub>Zr<sub>0.20</sub>Y<sub>0.15</sub>O<sub>3-d</sub> for PCFC Applications**

**C. MORTALO<sup>1</sup>**, S. FASOLINI<sup>1</sup>, S. BOLDRINI<sup>1</sup>, S. BARISON<sup>1</sup>, P. BATOCCHI<sup>2</sup>, S. FOURCADE<sup>2</sup>, F. MAUVY<sup>2</sup>, <sup>1</sup>CNR-IENI, Padova, Italy; <sup>2</sup>ICMCB-CNRS, Pessac Cedex, France

**FA:P14 Electrical and Electrochemical Properties of La<sub>2-x</sub>CaxNiO<sub>4</sub> and La<sub>2-x</sub>CaxNiO<sub>4</sub>-Ce<sub>0.8</sub>Sm<sub>0.2</sub>O<sub>1.9</sub> as Cathode Materials for Intermediate Temperature SOFCs**

**E.Yu. PIKALOVA<sup>1</sup>**, A.A. KOLCHUGIN<sup>1,2</sup>, N.M. BOGDANOVICH<sup>1</sup>, D.I. BRONIN<sup>1</sup>, <sup>1</sup>Institute of High Temperature Electrochemistry, UB RAS, Yekaterinburg, Russia; <sup>2</sup>Vitus Bering Kamchatka State University, Petropavlovsk-Kamchatskiy, Russia

**FA:P15 Carbon Nanotubes Supported Iron Phthalocyanine- and Based Polyindole-based Electrocatalysts for Oxygen Reduction in DMFCs**

**M.T. NGUYEN**, A. D'EPIFANIO, **B. MECHERI**, A. IANNACI, S. LICOCCHIA, Dept. Chemical Science and Techology & NAST Center, University of Rome Tor Vergata, Italy

**FA:P16 SPEEK / Functionalized Titanium Oxide Nanocomposite Proton Exchange Membranes**

**C. DE BONIS<sup>1</sup>**, **A. D'EPIFANIO<sup>1</sup>**, B. MECHERI<sup>1</sup>, D. COZZI<sup>1</sup>, I. NICOTERA<sup>2</sup>, S. LICOCCHIA<sup>1</sup>, <sup>1</sup>University of Rome Tor Vergata, Rome, Italy; <sup>2</sup>Department of Chemistry and Chemical Technologies, University of Calabria, Rende (CS), Italy

**FA:P17 Hydrogen Electrooxidation on PdM (M= Rh, Sn, Ru) Electrocatalysts for PEM Fuel Cells**

**F. TZORBATZOGLOU**, A. BROUZGOU, P. TSIAKARAS, Department of Mechanical Engineering, School of Engineering, University of Thessaly, Volos, Greece

**FA:P18 Anionic Exchange Membranes for Fuel Cells Applications**

**L. PASQUINI<sup>1,2</sup>**, R. NARDUCCI<sup>1,2</sup>, P. KNAUTH<sup>1</sup>, M.L. DI VONA<sup>2</sup>, <sup>1</sup>Aix Marseille Univ., UMR 7246, Marseille, France; <sup>2</sup>Univ. Roma Tor Vergata, Roma, Italy

**FA:P19 Sulfonate Polysulfone and Polyvinylidene Fluoride/ZSM-5 Composites Membranes for Direct Methanol Fuel Cell**

**M. PIANMANAKIJ**, A. SIRIVAT, K. SIEMANOND, S. CHANGKHAMCHOM, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

**FA:P20 Glucose Electrooxidation in Alkaline Media for Fuel Cell Applications: A comparative Study of PdM/C (M=Au, Sn, Rh) Based Electrocatalysts**

**A. BROUZGOU**, F. TZORBATZOGLOU, P. TSIAKARAS, Department of Mechanical Engineering, School of Engineering, University of Thessaly, Volos, Greece

**FA:P21 Development of a Subscale Hydrogen Generator Unit for SOFC as APU for Naval Applications**

**V. RECUPERO**, L. PINO, A. VITA, C. ITALIANO, M. LAGANÀ, CNR Institute of advanced Technology for Energy "Nicola Giordano", Messina, Italy

**FA:P22 Ab-initio Simulation of Beta-Ta<sub>2</sub>O<sub>5</sub> as a Catalyst for Oxygen Reduction Reaction**

**M.F. SGROI**, V. DELLACÀ, Group Materials Labs, Centro Ricerche FIAT, Orbassano (TO), Italy

**FA:P23 Nobel-metal-free Anode Catalysts for Direct Methanol Fuel Cells**

**XIAODONG WANG**, P. MADKIKAR, T. MITTERMEIER, M. PIANA, H.A. GASTEIGER, Institute of Technical Electrochemistry, Technical University of Munich, Garching, Germany

# SYMPOSIUM FB

## HYDROGEN PRODUCTION AND STORAGE

### Oral Presentations

#### Session FB-1 Hydrogen Production

##### **FB-1:IL01 Solar Fuels from H<sub>2</sub>O and CO<sub>2</sub> via Thermochemical Redox Cycles with Ceria Foams**

P. FURLER, D. MARXER, J. SCHEFFE, M. GORBAR, U. VOGT, **A. STEINFELD**, Department of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland; Laboratory for Hydrogen & Energy, Empa, Dübendorf, Switzerland; Solar Technology Laboratory, Paul Scherrer Institute, Villigen PSI, Switzerland

##### **FB-1:IL02 Solar Thermochemical Water Splitting: Advances in Materials and Methods**

**A.H. McDANIEL**, M.D. ALLENDORF, Sandia National Labs, Livermore, CA, USA; I. ERMANOSKI, A. AMBROSINI, E.N. COKER, J.E. MILLER, Sandia National Labs, Albuquerque, NM, USA; W.C. CHUEH, Stanford University, Palo Alto, CA, USA; R. O'HAYRE, J. TONG, Colorado School of Mines, CO, USA

##### **FB-1:IL03 Hydrogen Production via Thermochemical Water-splitting by Alkali Metal Cycle**

**H. MIYAKA**<sup>1</sup>, T. ICHIKAWA<sup>2</sup>, Y. KOJIMA<sup>2</sup>, <sup>1</sup>Institute for Sustainable Sciences and Development, Hiroshima University, Higashi-Hiroshima, Japan; <sup>2</sup>Institute for Advanced Materials Research, Hiroshima University, Higashi-Hiroshima, Japan

##### **FB-1:IL04 Solar Fuels from Thermochemical Gas Splitting**

B. MEREDIG, A. EMERY, H. HANSEN, **C. WOLVERTON**, Northwestern University, Evanston, IL, USA

##### **FB-1:IL05 Hydrogen Interaction with Alkaline-doped Fullerenes**

**R. ZIDAN**, Savannah River National Lab., Aiken, SC, USA

##### **FB-1:IL06 Hydrogen Generation by Electrolysis of Liquid Ammonia**

**N. HANADA**, Graduate School of Systems and Information Engineering, University of Tsukuba, Tsukuba, Ibaraki, Japan

##### **FB-1:IL07 Ceria Based Materials with Enhanced OSC Properties for H<sub>2</sub> Production by Water Splitting Reaction**

**A. PAPPACENA**, M. BOARO, L. BARDINI, A. TROVARELLI, Università degli Studi di Udine, Udine, Italy

##### **FB-1:IL08 Efficient Solar Water Splitting with a BiVO<sub>4</sub>-Based Heterojunction Photoanode**

**R. VAN DE KROL**, F.F. ABDI, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Institute for Solar Fuels, Berlin, Germany

##### **FB-1:IL09 The Productivity of Photobiological Water Splitting: Trading Time for Efficiency**

**H.J.M. DE GROOT**, Leiden Institute of Chemistry, Leiden University, The Netherlands

##### **FB-1:L10 TiS<sub>x</sub> Nanoribbons: Hydrogen Storage and Photoelectrochemical Properties**

**M. BARAWI MORAN**<sup>1</sup>, M. PONTHIEU<sup>2</sup>, J.R. ARE<sup>1</sup>, F. CUEVAS<sup>2</sup>, I.J. FERRER<sup>1</sup>, J.F. FERNÁNDEZ<sup>1</sup>, C. SÁNCHEZ<sup>1</sup>, <sup>1</sup>Grupo MIRE, Dpto. Física de Materiales, Facultad de Ciencias, Universidad Autónoma de Madrid, Madrid, Spain; <sup>2</sup>Equipe de Chimie Métallurgique des Terres Rares (CMTR) Institut de Chimie et des Matériaux, Paris Est (ICMP) CNRS-UMR 7182, Thiais Cedex, France

##### **FB-1:L11 Electrodeposition of Metallic Foams and their Application as Catalyst for Hydrogen Production**

**S. EUGENIO**, ICEMS-Instituto Superior Tecnico, University of Lisbon, Lisbon, Portugal; U.B. DEMIRCI, Université Montpellier 2, Institut Européen des Membranes, Montpellier, France; M.J. CARMEZIM, ICEMS and Department of Mechanical Engineering, ESTSetubal, Instituto Politecnico de Setubal, Setubal, Portugal; T.M. SILVA, Department of Mechanical Engineering, Instituto Superior de Engenharia de Lisboa, Lisbon, Portugal; M.F. MONTEMOR, ICEMS and Department of Chemical Engineering, Instituto Superior Tecnico, University of Lisbon, Lisbon, Portugal

##### **FB-1:L12 A Novel High Temperature Electrolysis Process for Producing Hydrogen In Molten Alkali Carbonates: Preliminary Evaluation Studies**

**S. FRANGINI**, P. TARQUINI, C. FELICI, ENEA CR Casaccia, UTRINN, Rome, Italy

### Session FB-2

#### Hydrogen Storage

##### FB-2.1 Metal Hydrides

###### **FB-2.1:IL01 Transition from Metal Hydrides to Complex Hydrides**

**SHIN-ICHI ORIMO**, WPI Advanced Institute for Materials Research (WPI-AIMR) / Institute for Materials Research (IMR), Tohoku University, Sendai, Japan

###### **FB-2.1:IL02 Thermodynamics of the Hydrogen Interaction with Nano-sized Metals**

**R. GRIESSEN**, Amsterdam University College and VU University, Amsterdam, The Netherlands

###### **FB-2.1:IL03 Metal Hydrides for Hydrogen Storage and Production**

**M. SAHLBERG**, Department of Chemistry - Angstrom Laboratory, Uppsala University, Uppsala, Sweden

###### **FB-2.1:IL04 Hydrogen Storage of Nanocrystalline Mg-Ni alloy Processed by Equal-channel Angular Pressing and Cold Rolling**

**A. REVESZ**, Dept. Mater. Physics, Eötvös University, Budapest, Hungary

###### **FB-2.1:IL05 Size Reduction in Mg and Mg rich Intermetallics for Hydrogen Storage**

**A. AYDINLI**<sup>1</sup>, B. AKTEKIN<sup>1</sup>, S. TAN<sup>2</sup>, G. ÇAKMAK<sup>3</sup>, **T. ÖZTÜRK**<sup>1</sup>, <sup>1</sup>Middle East Technical University, Ankara; <sup>2</sup>Akdeniz University, Antalya; <sup>3</sup>Bulent Ecevit University, Zonguldak, Turkey

###### **FB-2.1:IL06 Investigating the Reaction Pathways when Cycling Multi-component Metal Hydride Systems**

**G.S. WALKER**, Energy and Sustainability Research Division, University of Nottingham, Nottingham, UK

###### **FB-2.1:IL07 Hydrogen Storage Properties of Mg-based Materials**

**E. AKIBA**, J. MATSUDA, International Institute for Carbon-Neutral Energy Research, Fukuoka, Japan

###### **FB-2.1:IL08 Electrochemical and Solid/Gas Investigation of Nb<sub>4</sub>MSi (M=Co, Ni) Hydrides**

**J. ANGSTROM**, M. SAHLBERG, Dept. of Chemistry, Angström Laboratory, Uppsala Universitet, Uppsala, Sweden

###### **FB-2.1:IL09 The Preparation of Carbon-confined Mg Nanoparticles from Vapor**

**S. SUWARNO**, PE. DE JONGH, Inorganic Chemistry and Catalysis, Debye Institute for Nanomaterials Science, Utrecht University, Utrecht, The Netherlands

###### **FB-2.1:L10 Cyclability of Compacted MgH<sub>2</sub> Composites under Hydrogen Pressure**

**D. MIRABILE GATTIA**, A. MONTONE, ENEA, Materials Technology Unit, Casaccia Research Centre, Rome, Italy; G. GIZER, Hacettepe University, Nanotechnology and Nanomedicine Department, Beytepe Ankara, Turkey

###### **FB-2.1:L11 Hydrogenation Properties of Zirconium-doped TiFe and TiFe<sub>0.9</sub>Mn<sub>0.1</sub> Alloys**

**J. HUOT**, C. GOSELIN, P. JAIN, Université du Québec à Trois-Rivières, Canada; J. ECKSTEIN, Helmut Schmidt University, Germany

##### FB-2.2 Complex Hydrides

###### **FB-2.2:IL01 Materials and Systems for Hydrogen Storage**

**M. DORNHEIM**, J. JEPSEN, F. KARIMI, N. BERGEMANN, C. PISTIDDA, S. BÖRRIES, J. BELLOSTA VON COLBE, A.-L. CHAUDHARY, K. TAUBE, G. SAHLMANN, N. BUSCH, O. METZ, C. HORSTMANN, T. KLASSEN, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany

###### **FB-2.2:L02 Role of Gas Back Pressure in Dehydrogenation Reaction of LiBH<sub>4</sub>-based Reactive Hydride Composites**

**KEE-BUM KIM**, J.-H. SHIM, I.-S. CHOI, Y.W. CHO, Korea Institute of Science and Technology, Seoul, Republic of Korea; K.-B. KIM, K.H. OH, Seoul National University, Seoul, Republic of Korea

###### **FB-2.2:L03 In-situ Temperature Dependent Infrared Spectroscopy of Ammonia Borane Dehydrogenation**

**N. BILISKOV**, Rudjer Boskovic Institute, Division of Materials Chemistry, Laboratory of Solid State and Complex Compounds Chemistry, Zagreb, Croatia; D. VOJTA, Rudjer Boskovic Institute, Division of Organic Chemistry and Biochemistry, Laboratory of Molecular Spectroscopy, Zagreb, Croatia

###### **FB-2.2:L04 Potential and Limitation of Complex hydrides for Hydrogen Storage**

**A. ZÜTTEL**, EMPA, Dübendorf, Switzerland; SHIN-ICHI ORIMO, Tohoku University, Sendai, Japan

###### **FB-2.2:L05 Improved Dehydrogenation Properties of the Mg(NH<sub>2</sub>)<sub>2</sub>-2LiH System**

**H.J. CAO**, J.H. WANG, Z.T. XIONG, G.T. WU, **PING CHEN**, Dalian Institute of Chemical Physics (CAS), Dalian, China

**FB-2.2:L06 Structural Characterisation of Complex Hydrides**  
**B.C. HAUBACK**, C. FROMMEN, M.H. SORBY, Institute for Energy Technology, Physics Department, Kjeller, Norway

**FB-2.2:L07 Interface Reactions Influences the Reaction Path of Hydride Composite**  
**A. BORG SCHULTE**, S. KATO, A. ZÜTTEL, Empa, Laboratory Hydrogen & Energy, Dübendorf, Switzerland

## FB-2.3 Chemical Hydrides

**FB-2.3:L01 Hydrogen Production from Sodium Borohydride Hydrolysis: A Density Functional Theory Study**  
PING LI, G. HENKELMAN, J.K. JOHNSON, University of Pittsburgh, Pittsburgh, PA, USA; University of Texas at Austin, USA

**FB-2.3:L02 The Role of Nanotechnology in Hydrogen Storage**  
ZIWEI TANG, GUANGLIN XIA, XUEBIN YU, Department of Materials Science, Fudan University, Shanghai, China

**FB-2.3:L03 Mixed Metal Ammine Complexes for Hydrogen Storage**  
**D. BLANCHARD**, P.B. JENSEN, T. VEGGE, Department of Energy Conversion and Storage, DTU, Roskilde, Denmark; A. KLUKOWSKA, U. QUAADE, Amminex Emissions Technology A/S, Søborg, Denmark

## FB-2.4 Carbon Based Materials and Other High Surface Area Adsorbents

**FB-2.4:L01 Nanoconfined Complex Metal Hydrides**  
**P.E. DE JONGH**, Inorganic Chemistry and Catalysis, Debye Institute for Nanomaterials Science, Utrecht University, Utrecht, The Netherlands

**FB-2.4:L02 New Approaches to Enhance Hydrogen Storage in MOFs**  
**PN. TRIKALITIS**, Department of Chemistry, University of Crete, Heraklion, Greece

**FB-2.4:L03 Cycling, Kinetic and Structural Hydrogenation Properties of MgH<sub>2</sub>-TiH<sub>2</sub> Nanocomposites**  
**F. CUEVAS**, M. PONTHIEU, M. LATROCHE, ICMPE, CNRS, Thiais, France; J.M. BELLOSTA VON COLBE, M. DORNHEIM, HZG, Centre for Materials and Coastal Research, Geesthacht, Germany; J.F. FERNÁNDEZ, Dpto. Física de Materiales, Universidad Autónoma de Madrid, Madrid, Spain

**FB-2.4:L04 Hydrogen Storage Properties of Decorated Fullerenes**  
**C. MILANESE**, A. GIRELLA, A. MARINI, Pavia H2 Lab, Chemistry Department, University of Pavia, Italy; M. ARAMINI, M. GABOARDI, D. PONTIROLI, M. RICCO<sup>1</sup>, Carbon Nanostructures Lab, Department of Physics and Earth Science, University of Parma, Italy

**FB-2.4:L05 Activated Carbon Fibre Monoliths for Hydrogen Storage**  
M. KUNOWSKY, J.P. MARCO-LOZAR, **A. LINARES-SOLANO**, University of Alicante, Alicante, Spain

**FB-2.4:L06 Hydrogen Adsorption at High Pressure in Carbon Nano-structures: Equilibrium and Kinetic Properties**  
**R.G. AGOSTINO**, E. MACCALLINI, A. POLICICCHIO, F. MINUTO, CNISM-Dipartimento di Fisica, Università della Calabria, Ponte Bucci, Arcavacata di Rende (CS), Italy; E.K. DIAMANTI, A. ENOTIADIS, D. GOURNIS, Department of Materials Science and Engineering, University of Ioannina, Ioannina, Greece; R.Y.N. GENGLER, P. RUDOLF, Zernike Institute for Advanced Materials, University of Groningen, Groningen, The Netherlands; T.A. STERIOTIS, Institute of Physical Chemistry, NCSR Demokritos, A. Paraskevi-Attikis, Athens, Greece; G.K. DIMITRAKAKIS, E. TYLIANAKIS, P.N. TRIKALITIS, G. FROUDAKIS, Department of Chemistry, University of Crete, Heraklion, Greece; L. ULIVI, M. CELLI, ISC-CNR, Sesto Fiorentino (FI), Italy

**FB-2.4:L07 A New Approach to Store Hydrogen in Glass Structures: Theory and Application**  
**D. ELIEZER**, C. En Ltd, Zurich, Switzerland; K. HOLTAPPELS, BAM, Berlin, Germany

**FB-2.4:L08 Hydrogen Storage in Metal-organic Frameworks**  
**MYUNGHYUN PAIK SUH**, Department of Chemistry, Seoul National University, Seoul, Republic of Korea

## FB-2.5 Theoretical Modelling, New Characterization Methods and Storage Testing

**FB-2.5:L01 Analyzing Pure and Doped Aluminum Clusters as Potential Hydrogen Storage Materials**  
**A. GOLDBERG**, M.D. HALLS, Schrodinger Inc., San Diego, CA, USA

**FB-2.5:L02 Thermodynamic Modelling of Borohydrides for Hydrogen STORAGE**  
E.R. PINATEL, E. ALBANESE, B. CIVALLERI, **M. BARICCO**, Dipartimento di Chimica and NIS, Università di Torino, Torino, Italy

**FB-2.5:L03 Study of Hydrogen Effects on the Electron Density Distribution using MEM**

**SEUNGHUN LEE**, The Institute of Basic Science, Korea University, Seoul, Republic of Korea; J.H. PARK, B.-S. KIM, Y.C. CHO, S.-Y. JEONG, Dept. of Cogno-Mechatronics Engineering, Pusan National University, Miryang, Republic of Korea; C. MORIYOSHI, Y. KUROIWA, Dept. of Physical Science, Hiroshima University, Higashi-Hiroshima, Japan; C.H. PARK, Dept. of Physical Education, Pusan National University, Busan, Republic of Korea

**FB-2.5:L04 Theoretical Study of the SmCo<sub>5</sub>H<sub>x</sub> Compounds: Cohesive and Magnetic Properties**

**G.I. MILETIC**, Laboratory for Solid State and Complex Compounds Chemistry, Division of Materials Chemistry, Institute Rudjer Boskoviæ, Zagreb, Croatia

**FB-2.5:L05 Nanoconfined Complex Hydrides via Inverse Atomistic Calculations**

**Z. LODZIANA**, P. BŁOŃSKI, Polish Academy of Sciences, Institute of Nuclear Physics, Kraków, Poland

**FB-2.5:L06 Nanomaterials for Hydrogen Storage**

**P. JENA**, Virginia Commonwealth University, Richmond, VA, USA

**FB-2.5:L07 GCMC Simulation of Hydrogen Adsorption in Densely Packed Arrays of Li-doped and Hydrogenated Carbon Nanotubes**

S. MIRABELLA, **M. CELINO**, G. ZOLLO, ENEA, Rome, Italy

**FB-2.5:L08 Computational Search for Improved Ammonia Storage Materials**

**P.B. JENSEN**, S. LYSGAARD, T. VEGGE, DTU Energy Conversion, Technical University of Denmark, Kgs. Lyngby, Denmark; U. QUAADE, Amminex Emissions Technology, Soeborg, Denmark

**FB-2.5:L09 Novel FIB-SEM Methodologies for 3D Nanostructuring and Nanoanalysis of Hydrogen Storage Materials**

**M. SEZEN<sup>1</sup>**, F. BAKAN<sup>1</sup>, M.A. GULGUN<sup>2</sup>, E. RABKIN<sup>3</sup>, <sup>1</sup>Sabancı University Nanotechnology Research and Application Center, Orhanlı-Tuzla, İstanbul, Turkey; <sup>2</sup>Sabancı University; Faculty of Engineering and Natural Sciences; Orhanlı-Tuzla, İstanbul, Turkey; <sup>3</sup>Department of Materials Science and Engineering, Technion, Haifa, Israel

**FB-2.5:L10 Thin Film Based Fiber Optic Hydrogen Sensor for Continuously Monitoring the Health Status of Power Transformers**

**M. VICTORIA**, R.J. WESTERWAAL, T. MAK, H. SCHREUDERS, C. BOELSMA, B. DAM, Materials for Energy Conversion and Storage (MECS), Faculty of Applied Sciences, Dept. Chemical Engineering, Delft University of Technology, Delft, The Netherlands

## Poster Presentations

**FB:P01 The Effect of Doping of Fe into TiO<sub>2</sub> Layer in Fe<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub>/FTO System for High Performance of Water Splitting**

**A. AZAD<sup>1</sup>**, EUL NOH<sup>1</sup>, HYO JIN OH<sup>1</sup>, BO RA KIM<sup>1</sup>, KANG SEOP YUN<sup>1</sup>, HEE JUNE JEONG<sup>1</sup>, WOO SEUNG KANG<sup>2</sup>, SANG CHUL JUNG<sup>3</sup>, SUN JAE KIM<sup>1</sup>, <sup>1</sup>Institute/Faculty of Nanotechnology and Advanced Materials Engineering, Sejong University, Seoul, Korea; <sup>2</sup>Dept. of Metallurgical & Materials Engineering, Inha Technical College, Incheon, Korea; <sup>3</sup>Dept. of Environmental Engineering, Sunchon National University, Suncheon, Jeonnam, Korea

**FB:P02 Synthesis of Macroporous Materials as the Immobilizing Agent for Photosynthetic Bacteria in Photobiological Hydrogen Generation**

**K. DYBA**, R. ZAGRODNIK, Faculty of Chemistry, A. Mickiewicz University, Poznan, Poland

**FB:P03 Optimization of Hydrogen Production by Co-culture of Clostridium beijerinckii and Rhodobacter Sphaeroides Bacteria**

**R. ZAGRODNIK**, K. SEIFERT, K. DYBA, Faculty of Chemistry, Adam Mickiewicz University, Poznan, Poland

**FB:P04 The Effect of Gas Compositions on the Performance and Durability of SOECs**

**SUN-DONG KIM**, DOO-WON SEO, JI-HAENG YU, SANG-KUK WOO, Korea Institute of Energy Research, Daejeon, Korea

**FB:P05 Distillery Waste Waters in Photofermentative Hydrogen Generation**

**K. SEIFERT**, R. ZAGRODNIK, M. STODOLNY, K. DYBA, M. LANIECKI, Faculty of Chemistry, A. Mickiewicz University, Poznan, Poland

**FB:P06 Performance Assessment of Solid Oxide Cells under High Steam Content Electrolysis**

**N.P. KOTSIONOPOULOS**, G. DE MARCO, T. MALKOW, G. TSOTRIDIS, European Commission, Directorate-General Joint Research Centre, Institute for Energy and Transport, Petten, The Netherlands

**FB:P07 Application of Liquid Wastes from Sugar Industry in Photo-fermentative Method of Hydrogen Generation**

**K. SEIFERT**, R. ZAGRODNIK, M. STODOLNY, **M. LANIECKI**, Faculty of Chemistry, A. Mickiewicz University, Poznan, Poland

**FB:P08 Plasma Chemical Reactor for Hydrogen Production**  
 G. PETRACONI, Technological Institute of Aeronautics, Sao José dos Campos, SP, Brazil; **A.M. ESSIPTCHOUK**, Luikov Heat- and Mass Transfer Institute, Minsk, Belarus

**FB:P09 Hydrogen Production from Wind Power in Algeria**  
**L. AICHE-HAMANE**, Department of mechanics, Faculty of technology, University Saad Dahlab Blida, Algeria; M. HAMANE, Centre for Development of Renewable Energies (CDER), Algiers, Algeria; B. BENYOUCEF, Research Unit for Materials and Renewable Energies (URMER), University Aboubakr Belkaid Tlemcen, Algeria

**FB:P10 On the Rate Limiting Step of MgH<sub>2</sub> Desorption**  
**Lj. MATOVIC**, S.KURKO, Z. RASKOVIC-LOVRE, S. MILOSEVIC, I. MILANOVIC, A. DJUKIC, R. VUJASIN, J. GRBOVIC NOVAKOVIC, Vinca Institute of Nuclear Sciences, Belgrade, Serbia

**FB:P11 Hydrogen Sorption Cycling Behaviour of MgH<sub>2</sub> Powders and Pellets**  
 G. DI GIROLAMO, D. MIRABILE GATTIA, **A. MONTONE**, ENEA, Materials Technology Unit, Casaccia Research Centre, Rome, Italy

**FB:P12 Hexagonal Prism MIL-101 Monoliths for Improved Hydrogen Storage in the Range of 77-157 K**  
**G. BLANITA**, I. COLDEA, I. MISAN, D. LUPU, National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania

**FB:P13 Electronic Principles of H Diffusion Behavior in Doped MgH<sub>2</sub>**  
 B. PASKAS MAMULA, S. KURKO, **N. IVANOVIC**, J. GRBOVIC NOVAKOVIC, N. NOVAKOVIC, VINCA Institute for Nuclear Sciences, University of Belgrade, Belgrade, Serbia

**FB:P14 Hydrogen Technologies and Applications: Safety**  
**M. LLORCA**, P. RUIZ, L.F. VEGA, MATGAS Research Center, Campus de la UAB, Bellaterra, Barcelona, Spain

**FC-1:IL06 Battery Architectures Based on Three-dimensional Electrode Designs**

**B. DUNN**, Department of Materials Science and Engineering, UCLA, Los Angeles, CA, USA

**FC-1:IL07 New Gel Polymer Electrolyte with Improved Intrinsic Safety for Use in Lithium-ion Batteries**

R. VUKICEVIC, S. OBEIDI, **A. LEX-BALDUCCI**, MEET Battery Research Center / Institute of Physical Chemistry, University of Münster, Germany

**FC-1:IL08 Local Structure of Lithium Orthosilicates Li<sub>2</sub>MSiO<sub>4</sub> (M = Mn, Fe) Cathodic Materials: a Neutron Pair Distribution Function Study**

**A. MANCINI**, L. MALAVASI, Dip. di Chimica, Sezione Chimica Fisica, Università degli Studi di Pavia, INSTM UdR di Pavia, Pavia, Italy

**FC-1:IL09 Effect of Plasma Assisted Nanoparticle Dispersion on Thermal and Mechanical Properties of Electrospun Separators for Lithium-ion Batteries**

V. COLOMBO, M. GHERARDI, **R. LAURITA**, Alma Mater Studiorum - Università di Bologna, Department of Industrial Engineering (DIN), Bologna, Italy; D. FABIANI, M. ZACCARIA, Alma Mater Studiorum - Università di Bologna, Electric, Electronic and Information Engineering Department (DEI), Bologna, Italy; M.L. FOCARETE, C. GUALANDI, Alma Mater Studiorum - Università di Bologna, "G. Ciamician" Chemistry Department, Bologna, Italy

**FC-1:IL10 Materials and Processes in Rechargeable Sodium/Air Batteries**

**E. PELED**, H. MAZOR, M. GOOR, D. GOLODNITSKY, R. HADAR, School of Chemistry, Tel-Aviv University, Tel-Aviv, Israel; Wolfson Applied Materials Research Center, Tel-Aviv University, Tel-Aviv, Israel

**FC-1:IL11 Precisely Engineered Colloidal Nanomaterials for Li- and Na-ion Batteries**

**M.V. KOVALENKO**, Institute of Inorganic Chemistry, ETH Zurich, Switzerland and Empa-Swiss Federal Laboratories for Materials Science and Technology, Switzerland

**FC-1:IL12 Concurrent Formation of LiCoO<sub>2</sub> Crystal / Li-B-O Glass Composite Layer onto a Pt Substrate by Glass-Flux-Coating**

**Y. MIZUNO**<sup>1</sup>, N. ZETTSU<sup>1,2</sup>, T. SAKAGUCHI<sup>3</sup>, T. SAITO<sup>3</sup>, H. WAGATA<sup>1,2</sup>, S. OISHI<sup>1</sup>, K. TESHIMA<sup>1,2</sup>; <sup>1</sup>Shinshu University, Nagano, Japan; <sup>2</sup>CREST, Japan Science and Technology Agency; <sup>3</sup>Toyota Motor Corporation, Japan

**FC-1:IL13 Polymer-in-ceramic Solid Electrolyte for Li-ion Batteries**

**G. GOLODNITSKY**<sup>1,2</sup>, R. BLANGA<sup>1</sup>, K. FREEDMAN<sup>1</sup>, E. PELED<sup>1</sup>, <sup>1</sup>School of Chemistry; <sup>2</sup>Wolfson Applied Materials Research Center, Tel Aviv University, Tel Aviv, Israel

**FC-1:IL14 Conducting Polymers as Effective Additives for Positive Electrodes in Li-ion Batteries Working at High Rates**

**P. JIMENEZ**<sup>1</sup>, B. LESTRIEZ<sup>1</sup>, J.-P. BONNET<sup>2</sup>, P. BLANCHARD<sup>3</sup>, J.-C. BADOT<sup>4</sup>, O. DUBRUNFAUT<sup>5</sup>, D. GUYOMARD<sup>1</sup>, J. GAUBICHER<sup>1</sup>, Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, France; <sup>1</sup>Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, CNRS, Nantes, France; <sup>2</sup>Lab. réactivité et chimie des solides (LRCS), CNRS UMR7314, Université de Picardie J. Verne, Amiens, France; <sup>3</sup>Lab. MOLTECH-Anjou, CNRS UMR6200, Université de Angers, Angers, France; <sup>4</sup>Institut de Recherche de Chimie Paris, CNRS UMR 8247, Chimie ParisTech, Paris, France; <sup>5</sup>Lab. de Génie Electrique de Paris, CNRS UMR 8507, SUPELEC, Sorbonne; Universités, UPMC Univ Paris 06, Univ Paris-Sud, Gif-sur-Yvette, France

**FC-1:IL15 Novel Electrode Materials for Rechargeable Batteries**

**D. GUYOMARD**<sup>1</sup>, L. ROUÉ<sup>2</sup>, M. CERBELAUD<sup>1</sup>, J. GAUBICHER<sup>1</sup>, N. DUPRÉ<sup>1</sup>, P. MOREAU<sup>1</sup>, B. LESTRIEZ<sup>1</sup>, <sup>1</sup>Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, CNRS, Nantes, France; Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, France; <sup>2</sup>INRS-Énergie, Matériaux et Télécommunications, Varennes Québec, Canada

**FC-1:IL16 High Cost Performance Cathodes for Large Scale Rechargeable Batteries**

**S. OKADA**, T. KIDERA, N. DIMOV, H. HORI, A. KITAJOU, Institute for Materials Chemistry and Engineering, Kyushu University, Kasuga, Japan

**FC-1:IL17 Effects of Heat-treating Temperature on the Properties of LiMn<sub>1.5</sub>Ni<sub>0.5</sub>O<sub>4</sub> Cathode Materials**

**SHE-HUANG WU**, JE-JANG SHIU, Tatung University, Taipei, Taiwan; WEI KONG PANG, N. SHARMA, V.K. PETERSON, Australian Nuclear Science and Technology Organisation, Australia

**FC-1:IL18 Hydrothermal Synthesis of Porous Spindle LiFePO<sub>4</sub> as High Performance Cathode Material for Lithium Ion Batteries**

**MEI LIN**, BOLEI CHEN, H.L.W. CHAN, JIKANG YUAN, Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong, China

**FC-1:IL19 ESR Study of Electronic Properties, Valence State and Local Crystal Structure of Li-ion Battery Cathode Materials**

**N.M. SULEIMANOV**, Zavoisky Physical Technical Institute of Russian Academy of Sciences, Kazan, Russia; S.R.S. PRABAHRAN, VIT University, Chennai campus, India; D.R. ABDULLIN, Zavoisky Physical Technical Institute of Russian Academy of Sciences, Kazan, Russia; M.S. MICHAEL, Anna University, India

## SYMPOSIUM FC ELECTROCHEMICAL ENERGY STORAGE SYSTEMS: THE NEXT EVOLUTION

### Oral Presentations

#### Session FC-1 Batteries

##### **FC-1:IL01 Multinuclear Solid State NMR Studies of Lithium Battery Materials**

**S.G. GREENBAUM**, Hunter College of the City University of New York, New York, NY, USA

##### **FC-1:IL02 Study of New Active Materials for Rechargeable Sodium-ion Battery**

**H. IBA**, S. NAKANISHI, Battery Research Division, Toyota Motor Corporation, Surusono, Shizuoka, Japan

##### **FC-1:IL03 Understanding and Predicting Organic Electrode Materials of Rechargeable Lithium Batteries via Computational Approaches: The New Deal**

**C. FRAYRET**<sup>1</sup>, D. TOMERINI<sup>1</sup>, C. GATTI<sup>2</sup>, Y. DANTEN<sup>3</sup>, M. BECUWE<sup>1</sup>, F. DOLHEM<sup>4</sup>, P. POIZOT<sup>5</sup>, <sup>1</sup>LRCS-CNRS UMR 7314, Université de Picardie, Amiens, France; <sup>2</sup>CNR-ISTM, Istituto di Scienze e Tecnologie Molecolari, Milano, Italy; <sup>3</sup>ISM-CNRS UMR 5255 , Talence, France; <sup>4</sup>LG-CNRS-FRE 3517, Université de Picardie, Amiens, France; <sup>5</sup>IMN-CNRS UMR\_C 6502, Université de Nantes, Nantes, France

##### **FC-1:IL04 Fundamental Study of Storage Material for High-temperature Rechargeable Oxide Batteries (ROB)**

**O. TOKARIEV**, C.M. BERGER, P. ORZESSEK, L. NIEWOLAK, M. BRAM, W.J. QUADAKERS, N.H. MENZLER, H.P. BUCHKREMER, Institute of Energy and Climate Research (IEK-1), Forschungszentrum Juelich GmbH, Germany

##### **FC-1:IL05 Monitoring Volume Change and Crack Formation Using 2D and 3D In Situ X-ray Microscopy of Germanium Anodes**

**J. NELSON WEKER**<sup>1</sup>, N. LIU<sup>2</sup>, J.C. ANDREWS<sup>1</sup>, Y. CUI<sup>2</sup>, M.F. TONEY<sup>1</sup>, <sup>1</sup>Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Menlo Park, CA, USA; <sup>2</sup>Stanford University, Stanford, CA, USA

**FC-1:L20 Synthesis and Characterization of LiFePO<sub>4</sub>/C as Cathodes in Lithium-ion Batteries**

J.E. THOMAS, A. VISINTIN, Instituto de Investigaciones Fisicoquímicas Teóricas y Aplicadas (INIFTA), Facultad de Ciencias Exactas, UNLP, CCT La Plata-CONICET, La Plata, Argentina

**FC-1:L21 Mesoporous TiO<sub>2</sub> as an Alternative Anode for Fast Chargeable Lithium-ion Battery**

P. BALAYA, National University of Singapore, Singapore

**FC-1:L22 Superionic Conducting Ceramic Electrolyte Enabling Lithium Metal Anodes and Solid State Batteries**

J. SAKAMOTO<sup>1</sup>, T. THOMPSON<sup>1</sup>, M. JOHANNES<sup>2</sup>, A. HUQ<sup>3</sup>, J. ALLEN<sup>4</sup>, J. WOLFENSTINE<sup>4</sup>, I.N. DAVID<sup>1</sup>, <sup>1</sup>Michigan State University, Chemical Engineering and Materials Science Department, East Lansing, MI, USA; <sup>2</sup>Naval Research Laboratory/Center for Computational Materials Science, Anacostia, VA, USA; <sup>3</sup> Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, TN, USA; <sup>4</sup>Army Research Laboratory, RDRL-SED-C, Adelphi, MD, USA

**FC-1:L23 Capacity Enhancement of Graphite Anodes by Surface Modification and Thermal Pre-treatment**

S. BHATTACHARYA, A.R. RIAHI, A.T. ALPAS, Engineering Materials Program, University of Windsor, Ontario, Canada

**FC-1:L24 Reaction Mechanism of High-energy Li-excess NMC Cathode Materials**

C. DELMAS<sup>1</sup>, H. KOGA<sup>1,2</sup>, L. CROGUENNEC<sup>1</sup>, M. MÉNÉTRIER<sup>1</sup>, S. BELIN<sup>3</sup>, C. GENEVOIS<sup>4</sup>, L. BOURGEOIS<sup>5</sup>, F. WEILL<sup>1</sup>, <sup>1</sup>ICMAB-CNRS, Université de Bordeaux, IPB-ENSCBP, Pessac cedex, France; <sup>2</sup>TOYOTA MOTOR EUROPE NV/SA, Zaventem, Belgium; <sup>3</sup>Synchrotron Soleil - L'Orme des Merisiers Saint Aubin, Gif-sur-Yvette, France; <sup>4</sup>GPM, Université de Rouen, Saint Etienne du Rouvray; <sup>5</sup>Université de Bordeaux, ISM, Talence, France

**FC-1:L25 Lithium-ion Batteries: Cell Design, Production and Performance**

S. PASSERINI, Helmholtz Institute Ulm, Karlsruhe Institute of Technology, Ulm, Germany

**FC-1:L26 Influence of Electrode Structure on The Performances of Li Ion Battery: From One Dimensional Nanostructured Electrode to Three Dimensional Nanoporous Electrodes**

XIN HUANG, HONG YU, QINGYU YAN, HUEY HOON HNG, School of Materials Science and Engineering, Nanyang Technological University, Singapore

**FC-1:L27 The Electrochemical Performances of Li-Oxygen Batteries Based on LiTFSI-Tetraglyme Electrolyte and Unmodified or Au-containing Carbon Cathodes**

M. MARINARO, U. RIEK, S. THEIL, L. JÖRISSEN, M. WOHLFAHRT-MEHERNS, Zentrum für Sonnenenergie- und Wasserstoff-Forschung, Baden-Württemberg, Ulm, Germany

**FC-1:L28 Mussel-inspired Catechol Batteries**

EUN-OK HONG, HAESHIN LEE, Department of Chemistry, KAIST, Daejeon, Republic of Korea

**FC-1:L29 Sintering of Monolithic "All-Solid-State" Batteries**

L. CASTRO, CEMES, Toulouse, France; A. KUBANSKA, L. TORTET, MADIREL, Marseille, France; R. BOUCHET, LEPMI, Grenoble, France; V. SEZNEC, V. VIALLET, LRCS, Amiens, France; C. JORDY, G. CAILLON, SAFT, Bordeaux, France; M. DOLLÉ, University of Montreal, QC, Canada

**FC-1:L30 Novel Monolithic Lithium Cassette as Replaceable Anode/Separator for Li-Air Semi-fuel Cell - A Concept of Plug and Use Galvanic Cell**

S.R.S. PRABAHARAN, School of Electronics Engineering, VIT University, Chennai Campus, India; J. KAWAMURA, N. KUWATA, Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Sendai, Japan; M.S. MICHAEL, Chemical Sciences Research Centre, SSN College of Engineering, SSN Nagar, Chennai, India

**FC-1:L31 High-energy, High-power Lithium-sulfur Batteries**

A. MANTHIRAM, YONGZHU FU, YU-SHENG SU, CHENXI ZU, SHENG-HENG CHUNG, Materials Science and Engineering Program, The University of Texas at Austin, Austin, TX, USA

**FC-1:L32 Sodium Ion Batteries: From Materials to Proof of Concept**

M.R. PALACIN, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra, Catalonia, Spain

**FC-1:L33 Supercapattery: Electrochemical Energy Storage beyond Battery and Supercapacitor**

G.Z. CHEN, Department of Chemical and Environmental Engineering, and Energy and Sustainability Research Division, Faculty of Engineering, University of Nottingham, Nottingham, UK

**FC-1:L34 A New Fabrication Route for High-quality Crystal Layers of Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> directly on a Current Collector as well as their All-solid-state Lithium Ion Battery Properties**

N. ZETTSU<sup>1,2</sup>, H. KOJIMA<sup>1</sup>, S. NOZAKI<sup>1</sup>, K. TESHIMA<sup>1,2</sup>, <sup>1</sup>Shinshu University, Nagano, Japan; <sup>2</sup>CREST, Japan Society and Technological Agency

**Session FC-2****Supercapacitors****FC-2:L01 Layered Oxides for Pseudocapacitive Energy Storage**

X. PETRISSANS, D. GIAUME, P. BARBOUX, Institut de Recherche de Chimie Paris-CNRS UMR7574, Paris, France

**FC-2:L02 New Generation Hybrid Supercapacitors and Future Perspectives**

K. NAOI<sup>1</sup>, W. NAOI<sup>2</sup>, <sup>1</sup>Dept. of Appl. Chem., Tokyo Univ. of Agriculture & Technology, Tokyo, Japan; <sup>2</sup>Div. of Art & Innovative Tech., K & W Inc, Tokyo, Japan

**FC-2:L03 Electrolytes for Higher Performance Carbon-Based Supercapacitors**

HSI-SHENG TENG, H.C. HUANG, M.F. HSUEH, Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

**FC-2:L04 Lithium Vanadium Phosphate in High Power Devices**

A. BALDUCCI, N. BÖCKENFELD, X. ZHANG, University of Münster, Institut of Physical Chemistry-MEET / Münster, Germany

**FC-2:L05 Effect of Cation on Diffusion Coefficient of Ionic Liquids at Onion-like Carbon Electrodes**

K. VAN AKEN<sup>1</sup>, J.K. MCDONOUGH<sup>1</sup>, SONG LI<sup>2</sup>, GUANG FENG<sup>2</sup>, S.M. CHATHOTH<sup>3, 5</sup>, E. MAMONTOV<sup>3</sup>, P.F. FULVIO<sup>4</sup>, PT. CUMMINGS<sup>3</sup>, SHENG DAI<sup>4</sup>, Y. GOGOTSI<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering & A.J. Drexel Nanotechnology Institute, Drexel University, Philadelphia, PA, USA; <sup>2</sup>Department of Chemical and Biomolecular Engineering, Vanderbilt University, Nashville, TN, USA; <sup>3</sup>Chemical and Engineering Materials Division, Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN, USA; <sup>4</sup>Chemical Science Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA; <sup>5</sup>Department of Physics and Materials Science, City University of Hong Kong, Hong Kong, China

**FC-2:L06 Sol-gel Thermolysis Synthesis of LiMnPO<sub>4</sub> for Pseudocapacitor Electrodes**

N. PRIYADHARSINI<sup>1,2</sup>, R. KALAI SELVAN<sup>1</sup>, <sup>1</sup>Solid State Ionics and Energy Devices Laboratory, Department of Physics, Bharathiar University, Coimbatore, Tamil Nadu, India; <sup>2</sup>Department of Physics, PSGR Krishnammal College for Women, Peelamedu, Coimbatore, Tamil Nadu, India

**FC-2:L07 Modeling Ion Adsorption and Dynamics in Nanoporous Carbon Electrodes**

C. PÉANI<sup>1,2,3</sup>, C. MERLET<sup>1,2</sup>, B. ROTENBERG<sup>1,2</sup>, P. SIMON<sup>2,3</sup>, M. SALANNE<sup>1,2</sup>, <sup>1</sup>PHENIX laboratory, Université Pierre et Marie Curie, Paris, France; <sup>2</sup>French Research Network on Electrochemical Energy Storage (RS2E), FR CNRS 3459, France; <sup>3</sup>CIRIMAT Laboratory, Université Paul Sabatier, Toulouse, France

**FC-2:L08 Synthesis and Electrochemical Properties of Graphene-based Composites for Supercapacitors**

SANG-HOON PARK, CHANG WOOK LEE, HEE CHANG YOUN, HYUN-KYUNG KIM, SEOK WOO LEE, KWANG-BUM KIM, Laboratory of Energy Conversion and Storage Materials, Department of Material Science and Engineering, Yonsei University, Seoul, Korea

**FC-2:L09 Improving the Energy Density of Electrochemical Capacitors: From Pseudocapacitive Electrodes to Hybrid Devices**

T. BROUSSE, Institut des Matériaux Jean Rouxel, IMN, UMR-CNRS 6502, Université de Nantes, Réseau RS2E France, Polytech Nantes, Nantes Cedex, France

**FC-2:L10 Economic and Ecological Life Cycle Assessment of New Materials for Supercapacitors and Batteries**

M. WEIL<sup>1,2</sup>, H. DURA<sup>1</sup>, M. BAUMANN<sup>1</sup>, B. ZIMMERMANN<sup>1</sup>, B. SIMON<sup>2</sup>, S. ZIEMANN<sup>1</sup>, G.R. GARCIA<sup>2</sup>, <sup>1</sup>Institute for Technology Assessment and System Analysis (ITAS), Karlsruhe Institute of Technology (KIT), Germany; <sup>2</sup>Helmholtz Institute Ulm for Electrochemical Energy Storage (HIU), Karlsruhe Institute of Technology (KIT), Germany

**FC-2:L11 Li-Ion Hybrid Capacitors Based on Monolayer Carbon Caged Nanoporous LiMnPO<sub>4</sub>**

M.S. MICHAEL, Chemical Science Research Lab, SSN College of Engineering, Anna University affiliate, Chennai, India

**FC-2:L12 Hybrids of 2D-nanomaterials for Supercapacitors/Battery Applications**

B. MENDOZA SANCHEZ, J. COELHO, S. O'BRIEN, H. PETTERSSON, V. NICOLOSI, CRANN, Trinity College Dublin, Dublin, Republic of Ireland

**Poster Presentations****FC-P01 Production of Electrolyte Membranes for Sodium-beta Alumina Batteries**

E. MERCADELLI, P. PINASCO, A. SANSON, CNR-ISTEC, Faenza, Italy

**FC:P02 Electrochemical Deposition of Ir Catalyst on Carbon Fiber for the Vanadium Air Redox Flow Battery**

T. DI NARDO, C. NUNES KIRCHNER, J. GROSSE AUSTING, O. OSTERS, L. KOMSIYKA, NEXT ENERGY . EWE Research Centre for Energy Technology at the University of Oldenburg, Oldenburg, Germany

**FC:P03 Synthesis and Properties of LiFePO<sub>4</sub>/C Cathode Materials prepared from Iron Phosphate Modified by V<sub>2</sub>O<sub>5</sub>**

MOBINUL ISLAM<sup>a</sup>, MAN-SOON YOON<sup>a</sup>, SOON-CHUL UR<sup>b</sup>, <sup>a</sup>Department of Materials Science and Engineering/Research Center for Sustainable Eco-Devices and Materials (ReSEM), Korea National University of Transportation, Chungju, Chungbuk, Republic of Korea; <sup>b</sup>Green City Technology Institute, Korea Institute of Science and Technology (KIST), Seoul, Republic of Korea

**FC:P04 Detecting Aging Phenomena in Electrochemical Storage Devices using High Resolution Computed Tomography**

L. KOMSIYKA, M. LEWERENZ, S. GARNICA, D. LEDWOCH, H. SEEBA, O. OSTERS, NEXT ENERGY . EWE Research Centre for Energy Technology at the University of Oldenburg, Oldenburg, Germany

**FC:P05 Effect of Process Parameters on the Silicon Nanoparticles Synthesized by Inductive Coupled Plasma**

JOON-SOO KIM, BO-YUN JANG, JIN-SEOK LEE, Korea Institute of Energy Research, Daejeon, Korea

**FC:P06 Synthesis and Behaviour of Conductive Polymer-V<sub>2</sub>O<sub>5</sub> based Core Shell Particles for Application as Cathode Material in Lithium Ion Batteries**

L. KOMSIYKA, D. LEDWOCH, E. HAMMER, K. REINKEN, O. OSTERS, NEXT ENERGY . EWE Research Centre for Energy Technology at the University of Oldenburg, Oldenburg, Germany

**FC:P07 A Study on the Electrochemical Properties for Idiomorphic Crystals of Spinel-type Li<sup>+</sup>-conductive Oxides**

S. KOMINE<sup>1</sup>, Y. SATO<sup>1</sup>, S. SUZUKI<sup>1</sup>, K. KAMI<sup>1</sup>, N. ZETTSU<sup>2,3</sup>, K. TESHIMA<sup>2,3</sup>, <sup>1</sup>DENSO CORPORATION, Agui-cho, Chita-gun, Aichi, Japan; <sup>2</sup>Shinshu University, Nagano, Japan; <sup>3</sup>CREST, Japan Society and Technological Agency

**FC:P08 Sulfonated Poly(ether ether ketone) and Poly(phenylene ether ether sulfone) Zeolite Composite Membranes as Proton Exchange Membrane for Vanadium Redox Flow Battery**

S. WATPATHOMSUB, A. SIRIVAT, S. JITKARNKA, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

**FC:P09 Development of Fine Microstructured Sodium-Beta"-Alumina Electrolytes**

D.C. RODRIGUES, P.I. PAULIN FILHO, D.P.F. DE SOUZA, Federal University of S. Carlos, S. Carlos, S. Paulo, Brazil

**FC:P10 Homogeneous Microstructure of Na-beta/beta" Obtained from Nanopowders**

J.F. NONEMACHER, D.P.F. DE SOUZA, Federal University of Sao Carlos, Sao Carlos, Sao Paulo, Brazil

**FC:P11 Lithium Migration at TiO<sub>2</sub> Interfaces: A 3D Approach**

T.C. PEIXOTO<sup>1</sup>, M.E.G. VALERIO<sup>1</sup>, S.C. PARKER<sup>2</sup>, C. ARROUVEL<sup>3</sup>, <sup>1</sup>DFI, Universidade Federal de Sergipe, SE, Brazil; <sup>2</sup>Department of Chemistry, University of Bath, UK; <sup>3</sup>DFQM Universidade Federal de São Carlos, SP, Brazil

**FC:P12 Electrodeposition and Thermal Conditioning of CoNi Films for Supercapacitors**

R.P. SILVA, S. EUGENIO, ICEMS-Instituto Superior Tecnico, University of Lisbon, Lisbon, Portugal; T.M. SILVA, Dept. Mechanical Engineering, Instituto Superior de Engenharia de Lisboa, Lisbon, Portugal; M.J. CARMEZIM, ICEMS and Dept. Mechanical Engineering, ESTSetubal, Instituto Politecnico de Setubal, Setubal, Portugal; M.F. MONTEMOR, ICEMS and Dept. Chemical Engineering, Instituto Superior Tecnico, University of Lisbon, Lisbon, Portugal

**FC:P13 Electrochemical Performance of Magnetic Nanoparticles Encapsulated in Hollow Carbon Nanofibers**

M.C. GIMENEZ-LOPEZ, C. HERREROS LUCAS, A.N. KHLOBYSTOV, School of Chemistry, Nottingham University, University Park Nottingham, UK

**FC:P14 Direct Growth of Polyaniline Chains from Nitrogen Site of N-doped Carbon Nanotubes for High Performance Supercapacitor**

JOONWON LIM, HAQ UL ATTA, SANG OUK KIM, Korea Advanced Institute of Science and Technology, Daejeon, South Korea

**FC:P15 Polybithiophene/MnO<sub>2</sub> as New Electrode Material for Supercapacitor**

A. BAHLOUL<sup>1,2</sup>, B. NESSARK<sup>1</sup>, E. BRIOT<sup>2</sup>, H. GROULT<sup>2</sup>, A. MAUGER<sup>3</sup>, K. ZAGHIB<sup>4</sup>, C.M. JULIEN<sup>2</sup>, <sup>1</sup>Université Ferhat Abbas, Laboratoire d'Electrochimie et Matériaux, Sétif, Algeria; <sup>2</sup>Université Pierre et Marie Curie, PECSA, UMR 7195, Bat. F, Paris, France; <sup>3</sup>Université Pierre et Marie Curie, IMPMC, Paris, France; <sup>4</sup>Energy Storage and Conversion, Research Institute of Hydro-Québec, Varennes, Québec, Canada

**FC:P16 V<sub>2</sub>O<sub>5</sub> Nanostrips Grown over Graphene Oxide for High Performance Electrochemical Capacitor**

V. SAHU, S. GROVER, G. SINGH, R. KISHORE, Sharma University of Delhi, Department of Chemistry, Delhi, India

## SYMPOSIUM FD

### ADVANCES IN MATERIALS AND TECHNOLOGIES FOR EFFICIENT DIRECT THERMAL-TO-ELECTRICAL ENERGY CONVERSION

#### Oral Presentations

##### Session FD-1

###### Theoretical Concepts and Basic Approaches for High Efficiency Thermal-to-electrical Energy Conversion

**FD-1:IL01 A Search for Nonequilibrium Thermoelectrics**

I. TERASAKI, Department of Physics, Nagoya University, Nagoya, Japan

**FD-1:IL02 Improved Thermoelectric Efficiency by Introducing New Doping Schemes**

M. ZEBARJADI, K. ESFARJANI, Rutgers University, Piscataway, NJ, USA; BOLIN LIAO, GANG CHEN, Massachusetts Institute of Technology, USA

**FD-1:IL03 Computational Materials Design of Earth-abundant Thermoelectrics**

V. OZOLINS, FEI ZHOU, YI XIA, W. NIELSON, Department of Materials Science and Engineering, University of California, Los Angeles, CA, USA; M.D. NIELSEN, J.P. HEREMANS, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH, USA; XU LU, D.T. MORELLI, Department of Physics and Astronomy Michigan State University, East Lansing, MI, USA

**FD-1:IL04 Utilizing NMR and Advanced Carrier Analysis for Development of Thermoelectric Materials**

E.M. LEVIN, U.S. DOE Ames Laboratory & Department of Physics and Astronomy, Iowa State University, Ames, IA, USA

**FD-1:IL05 Ab-initio Calculations of the Lattice Thermal Conductivity**

L. CHAPUT, Institut Jean Lamour, UMR CNRS 7198, Université de Lorraine, Vandoeuvre Les Nancy Cedex, France

**FD-1:LO06 Effects of Vanadium Substitution on the Crystal Structure and Thermoelectric Properties of Higher Manganese Silicide**

Y. KIKUCHI, T. NAKAJI, K. HAYASHI, Y. MIYAZAKI, Department of Applied Physics, Tohoku University, Sendai, Japan; K. YUBUTA, Institute of Material Research, Tohoku University, Sendai, Japan

**FD-1:LO07 Nanostructured Cadmium Sulfide Thin Film Structural, Optical and Electrical Characterization**

A.S.Z. LAHEWIL<sup>1,4</sup>, U. HASHIM<sup>1</sup>, M. KASHIF<sup>1</sup>, S.M. ELSARITI<sup>2</sup>, N.M. AHMED<sup>3</sup>, A.S.Z. LAHEEW<sup>5</sup>, <sup>1</sup>Institute of Nano Electronic Engineering, University Malaysia Perlis, Kangar, Perlis, Malaysia; <sup>2</sup>Mechatronic Engineering, University Malaysia Perlis, Ulu Pahu, Perlis, Malaysia; <sup>3</sup>School of Physics, Universiti Sains Malaysia, USM, Penang, Malaysia; <sup>4</sup>The Higher Vocational Center for Trainers/Tripoli, Libya; <sup>5</sup>School of Materials Engineering University Malaises Perlis, Jejawi, Perlis, Malaysia

##### Session FD-2

###### Novel Materials for High Efficiency Thermal-to-electrical Energy Conversion

**FD-2:IL01 Thermoelectrics Research: New Materials-related Approaches, Theoretical Guidance and Device Development**

G.S. NOLAS, Department of Physics, University of South Florida, Tampa, FL, USA

**FD-2:IL02 Enhanced zT in Fe and Te Substituted Co<sub>4</sub>Sb<sub>12</sub> Skutterudite**

R.C. MALLIK<sup>1</sup>, R. ANBALAGAN<sup>1</sup>, G. ROGL<sup>2</sup>, E. ROYANIAN<sup>3</sup>, P. HEINRICH<sup>3</sup>, E. BAUER<sup>3</sup>, P. ROGL<sup>2</sup>, S. SUWAS<sup>4</sup>, <sup>1</sup>Thermoelectric materials and Devices Laboratory, Department of Physics, Indian Institute of Science, Bangalore, India; <sup>2</sup>Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria; <sup>3</sup>Institute of Physical Chemistry, University of Vienna, Austria; <sup>4</sup>Department of Materials Engineering, Indian Institute of Science, Bangalore

**FD-2:IL03 Borides as Thermoelectrics**

TAKAO MORI, National Institute for Materials Science (NIMS) & University of Tsukuba, Japan

**FD-2:IL04 Highly Efficient IV-VI Thermoelectric Materials**

Y. GELBSTEIN, Department of Materials Engineering, Ben-Gurion University, Beer-Sheva, Israel

## FD-2:L05 High Performance Mg<sub>2</sub>(Si,Sn) Based Thermoelectric Materials: Synthesis, Structure and Transport

**TIEJUN ZHU**, X.B. ZHAO, Department of Materials Science and Engineering, Zhejiang University, Hangzhou, P.R. China

## FD-2:L06 Development, Synthesis and Characterisation of Advanced Thermoelectric Materials for High Temperature Energy Conversion

**A. WEIDENKAFF**, WENJIE XIE, XINGXING XAO, FAN FU, Materials Chemistry, Institute for Materials Science, University of Stuttgart, Stuttgart; Germany

## FD-2:L07 Abnormal Thermoelectric Properties in Copper Chalcogenides

**XUN SHI**, WENQING ZHANG, LIDONG CHEN, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

## FD-2:L08 Stability, Structure and Properties of Sb<sub>2</sub>Te<sub>3</sub>-Bi<sub>2</sub>Te<sub>3</sub> Inter-growths and Superlattices

**M. WINKLER**<sup>1</sup>, J. KÖNIG<sup>1</sup>, A.L. HANSEN<sup>2</sup>, T. DANKWORT<sup>3</sup>, J.D. KÖNIG<sup>1</sup>, H. BÖTTNER<sup>1</sup>, K. BARTHOLOMÉ<sup>1</sup>, W. BENSCHE<sup>2</sup>, L. KIENLE<sup>3</sup>, <sup>1</sup>Fraunhofer Institute for Physical Measurement Techniques IPM, Thermoelectric Systems, Freiburg, Germany; <sup>2</sup>Institute of Inorganic Chemistry, Christian-Albrechts University Kiel, Kiel, Germany; <sup>3</sup>Institute for Materials Science, Synthesis and Real Structure, Christian-Albrechts University Kiel, Kiel, Germany

## FD-2:L09 High Performance Thermoelectric Materials and their Applications in Energy Conversion

**ZHFENG REN**, University of Houston, Houston, TX, USA

## FD-2:L10 Synthesis of Silicides Using a Na flux and their Thermoelectric Properties

**T. YAMADA**, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

## FD-2:L11 Novel Approaches on the Design of Thermoelectric Materials for Power Generation

**D.K. MISRA**, CSIR Network of Institutes for Solar Energy, Division of Materials Physics & Engineering, CSIR National Physical Laboratory, New Delhi, India

## FD-2:L12 Thermoelectric Properties of Lead Tin Telluride (Pb<sub>1-x</sub>Mn<sub>x</sub>SnyTe)Alloys Doped with Manganese

**A. BALI**, R.C. MALLIK, Department of Physics, Indian Institute of Science, Bangalore, India; J. DADDA, J. DE BOOR, E. MUELLER, Institute of Materials Research, German Aerospace Center(DLR), Cologne, Germany

## FD-2:L13 Unconventional Superlattice-structured Bulk Thermoelectric Materials

**K. KOUMOTO**, C.L. WAN, F. DANG, K. TSURUTA, Nagoya University, Japan; Y.F. WANG, Nanjing University of Technology, China; R.Z. ZHANG, Northwest University, China; W.S. SEO, KICET, Korea

## FD-2:L14 Development of High ZT Skutterudites for Thermoelectric Applications

**G. ROGL**<sup>1,2</sup>, A. GRYTSIV<sup>1</sup>, E. BAUER<sup>1</sup>, M. ZEHETBAUER<sup>2</sup>, P. ROGL<sup>1</sup>, <sup>1</sup>Christian Doppler Laboratory for Thermoelectrics, University and University of Technology, Vienna, Austria; <sup>2</sup>Research Group Physics of Nanostructured Materials, University of Vienna, Austria

## FD-2:L15 Lithium as a Dopant for p-type Mg<sub>2</sub>Si

**P. NIERODA**<sup>1</sup>, A. KOLEZYNSKI<sup>2</sup>, M. SITARZ<sup>2</sup>, K.T. WOJCIECHOWSKI<sup>1</sup>, <sup>1,2</sup>AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland, <sup>2</sup>Department of Inorganic Chemistry, Thermoelectric Research Laboratory, <sup>2</sup>Department of Silicate Chemistry and Macromolecular Compounds

## FD-2:L16 Nb-doped SrTiO<sub>3</sub> Thermoelectric Nanocomposite

**K. VANDAELE**, P. VAN DER VOORT, K. DE BUYSSER, Department of Inorganic and Physical Chemistry, Ghent University, Gent, Belgium

## FD-2:L17 Tuning Thermoelectric Properties of TiS<sub>2</sub> Compounds through Intercalation, Mass Fluctuation, and Non-stoichiometry

**E. GUILMEAU**<sup>1</sup>, M. BEAUMALE<sup>1</sup>, T. BARBIER<sup>1</sup>, O. LEBEDEV<sup>1</sup>, Y. BREARD<sup>1</sup>, S. HÉBERT<sup>1</sup>, Y. KINEMUCHI<sup>2</sup>, A. MAIGNAN<sup>1</sup>, <sup>1</sup>CRISMAT Lab., UMR 6508 CNRS-ENSICAEN, Caen, France; <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), AIST Chubu, Nagoya, Japan

## FD-2:L18 Phase Separation as the Key to Thermoelectric Highly Efficient Heusler Compounds

**B. BALKE**, Johannes Gutenberg University, Mainz, Germany

## FD-2:L19 Fine Bi Wires Prepared by the Glass Coated Melt Spinning Method

**H. KOHRI**, T. YAGASAKI, Kogakuin University, Hachioji, Tokyo, Japan

## FD-2:L20 Temperature Influence on the Purity, Crystallographic Structure and Thermoelectric Properties of Cu<sub>12</sub>Sb<sub>4</sub>S<sub>13</sub> Substituted Tetrahedrite Compounds

**P. LEMOINE**, T. BARBIER, S. GASCOIN, O. LEBEDEV, E. GUILMEAU, CRISMAT Laboratory, ENSICAEN-CNRS UMR 6508, Caen Cedex, France; A. KALTZOGLOU, A. POWELL, University of Reading, Reading, UK

## FD-2:L21 Targeted Use of SPS Method for Improvement of Thermoelectrics

**L.P. BULAT**, I.A. NEFEDOVA, National Research University ITMO, St. Petersburg, Russia

## FD-2:L22 New Routes to High Performance, Low Cost Thermoelectrics Based on Natural Minerals

**D.T. MORELLI**, Michigan State University, East Lansing, MI, USA

## FD-2:L23 Enhanced Phonon Scattering in "Rattling" Oxides for Thermoelectric Energy Conversion

**M. OHTAKI**, K. MIZUTA, Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Fukuoka, Japan

## FD-2:L24 Thermoelectric Clathrates - The State of the Art

**P. ROGL**, Christian Doppler Laboratory for Thermoelectrics; Institute of Physical Chemistry, University of Vienna, Wien, Austria

## FD-2:L25 Application of Strong Gravitational Field for the Preparation of Gradient Thermoelectric Materials

**K. JANUSZKO**, A. STABRAWA, K.T. WOJCIECHOWSKI, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Thermoelectric Research Laboratory, Cracow, Poland; Y. OGATA, T. MASHIMO, Kumamoto University, Shock Wave and Condensed Matter Research Center, Kumamoto, Japan

## Session FD-3

### Devices Technologies and Applications for Thermoelectrics, Thermionics, and Thermophotovoltaics

## FD-3:L01 High Efficiency Thermoelectric Topping Cycle Systems

**A. SHAKOURI**, K. YAZAWA, Purdue University, West Lafayette, IN, USA; A. SILAEN, BIN WU, DONG FU, CHENN ZHOU, Purdue University Calumet, USA

## FD-3:L02 Improving Efficiency of Thermoelectrics by Nanoengineering

**M. MARTIN GONZALEZ**, O. CABALLERO CALERO, J. MAIZ, M. RULL, B. ABAD MAYOR, C.V. MANZANO, J.A. TABORDA, M. MUÑOZ-ROJO, J.J. ROMERO-FANEGO, Funcional Nanoscale Devices for Energy Recovery Group -FINDER-, Instituto de Microelectrónica de Madrid IMM-CSIC, Tres Cantos (Madrid) Spain

## FD-3:L03 High Temperature Thermoelectric Generators for Automotive Applications

**J.D. KÖNIG**, Fraunhofer Institute for Physical Measurement Techniques IPM, Thermoelectric Energy Converters, Freiburg, Germany

## FD-3:L04 Nanotechnology to Unlock the Multi-billion Dollar Potential of Thermoelectricity

**R.J. MEHTA**<sup>1</sup>, G. RAMANATH<sup>1,2</sup>, T. BORCA-TASIUCIUC<sup>1,2</sup>, R. FREDERICK<sup>1</sup>, <sup>1</sup>ThermoAura Inc., Rensselaer, NY, USA; <sup>2</sup>Rensselaer Polytechnic Institute, Troy, NY, USA

## FD-3:L05 Development of Thermoelectric Generation for Waste Recovery

**R. FUNAHASHI**, National Institute of Advanced Industrial Science and Technology, Ikeda, Osaka, Japan

## FD-3:L06 Development of High-efficiency Segmented Thermoelectric Couples for Radioisotope Thermoelectric Generators

**T. CAILLAT**, S. FIRDOSY, B.C-Y. LI, C.-K. HUANG, V. RAVI, N. KEYAWA, P. GOGNA, J. PAIK, J. CHASE, D. UHL, J. NI, K. SMITH, J.-P. FLEURIAL, Jet Propulsion Laboratory/Caltech, MS 277-207, Pasadena CA, USA

## FD-3:L07 Spacer-inserted Thermoelectric Device with Enhanced Power Generation and Material Efficiency

HOON KIM, **WOOCHUL KIM**, School of Mechanical Engineering, Yonsei University, Seoul, Republic of Korea

## FD-3:L08 Preparation of Mg<sub>2</sub>Si Film by Friction Film Forming Method

**M. TAKAHASHI**, Graduate School, Kogakuin University, Hachioji, Tokyo, Japan; H. KOHRI, T. YAGASAKI, Faculty of Engineering, Kogakuin University, Japan

## FD-3:L09 Advanced Thermionic and Thermoelectric Conversion Module for Concentrating Solar Systems

**D.M. TRUCCHI**, A. BELLUCCI, P. CALVANI, E. CAPPELLI, V. VALENTINI, IMIP-CNR, Monterotondo Scalo (RM), Italy; S. ORLANDO, IMIP-CNR, Potenza Section (PZ), Italy; L. SILVESTRONI, D. SCITI, ISTEC-CNR, Faenza (RA), Italy; R. YOGEV, A. KRIBUS, Tel Aviv University, Dept. of Mechanical Eng, Israel

## Poster Presentations

### FD:P01 Theoretical Study of Layered Oxychalcogenides as Thermoelectric Materials

**H. FUNASHIMA**, H. KATAYAMA-YOSHIDA, Department of Materials Engineering Science Graduate School of Engineering Science, Osaka University, Osaka, Japan

### FD:P02 Solid-State Synthesis and Thermoelectric Properties of $Mg_{2+x}SiO_7Sn_{0.3}Sb_m$

SIN-WOOK YOO, IL-HO KIM, Department of Materials Science and Engineering, Korea National University of Transportation, Chungju, Chungbuk, Korea

### FD:P03 First Principles Studies for Thermoelectric Properties of TAGS

**H. SHINYA**, H. FUNASHIMA, A. MASAGO, T. FUKUSHIMA, H. KATAYAMA-YOSHIDA, Graduate School of Engineering Science, Osaka University, Osaka, Japan

### FD:P04 Effect of K Substitution on Type-I Clathrate $K_xBa_{8-x}Ga_{16-x}Ge_{30+x}$ ( $x=0-8$ )

**J. LESZCZYNSKI**, A. KOLEZYNSKI, K.T. WOJCIECHOWSKI, AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland; A. OLECH, W. NITEK, Jagiellonian University, Faculty of Chemistry, Krakow, Poland

### FD:P05 Electronic Structure and Thermoelectric Performance of Ternary Yb-Mg-Si Phases

**M. KUBOUCHI**, K. HAYASHI, Y. MIYAZAKI, Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan

## SYMPOSIUM FE ADVANCES IN PHOTOCATALYTIC MATERIALS FOR ENERGY AND ENVIRONMENTAL SUSTAINABILITY

## Oral Presentations

### Session FE-1

#### Tailored Synthesis of Nanostructured Materials for Photofunctional Properties

##### FE-1:L01 Development of Nanostructured Materials for Environmental and Energy Applications

**A. ORLOV**, SHEN ZHAO, Stony Brook University, NY, USA

##### FE-1:L02 Polymeric Materials as Substrates for Photocatalytic Degradation: Plasma and Selective Stabilization

**M.C. CANELA**, M.S. CURCIO, W.R. WALDMAN, E.C. RANGEL, B.C. SANCHEZ, Universidade Estadual do Norte Fluminense Darcy Ribeiro, Campos dos Goytacazes, Brazil

##### FE-1:L03 Environmentally Sustainable Synthesis of Nanoscale Photocatalysts

**R.C. PULLAR<sup>1</sup>**, D.M. TOBALDI<sup>1</sup>, C. PICCIRILLO<sup>2</sup>, P. M.L. CASTRO<sup>2</sup>, M.P. SEABRA<sup>1</sup>, J.A. LABRINCHA<sup>1</sup>, <sup>1</sup>Department of Materials and Ceramic Engineering / CICECO, University of Aveiro, Campus Universitário de Santiago, Aveiro, Portugal; <sup>2</sup>CBQF / Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal

##### FE-1:L04 Photocatalytic Films by Molecular Layer Deposition

**R. YERUSHALMI**, Institute of Chemistry and the Center for Nanoscience and Nanotechnology, The Hebrew University of Jerusalem, Jerusalem, Israel

##### FE-1:L05 Engineering Design and Analysis to Determine the Kinetics of Contaminant Removal from Photocatalytic Self-Cleaning Surfaces

**D.F. OLLIS**, North Carolina State University, Raleigh, NC, USA

##### FE-1:L06 Surface Modification of TiO<sub>2</sub> via Doping

**Z. CINAR<sup>1</sup>**, Y.Y. GURKAN<sup>2</sup>, E. KASAPBASI<sup>3</sup>, <sup>1</sup>Yildiz Technical University, Department of Chemistry, Istanbul, Turkey; <sup>2</sup>Namik Kemal University, Department of Chemistry, Tekirdağ, Turkey; <sup>3</sup>Istanbul Aydin University, Department of Biomedical Eq.Tech., Istanbul, Turkey

##### FE-1:L07 Photoelectrochemical Properties of Doped Lanthanum Orthoferrites

I. NATALI SORA, F. FONTANA, INSTM R.U. Bergamo and Dipartimento di Ingegneria, University of Bergamo, Dalmine, Italy; R. PASSALACQUA, C. AMPELLI, S. PERATHONER, G. CENTI, INSTM/CASPE R.U. and Dipartimento di Ingegneria Elettronica, Chimica ed Ingegneria Industriale (DIECI), University of Messina, Messina, Italy; **F. PARRINO**, L. PALMISANO, "Schiavello-Grillone" Photocatalysis Group, Dipartimento di Energia, Ingegneria dell'Informazione e Modelli Matematici (DEIM), University of Palermo, Palermo, Italy

##### FE-1:L08 Characteristics of Nanocrystalline TiO<sub>2</sub> Films Fabricated by in Situ Sonochemical Sol Gel

**E.A. ALARFAJ**, Umm AlQura University, Physics Department, Makkah Almukarramah, Saudi Arabia

##### FE-1:L09 Nanostructured Photocatalysts for Solar Fuel Synthesis: Materials and Dynamics Studies

**JUNWANG TANG**, Department of Chemical Engineering, University College London, London, UK

##### FE-1:L10 Sunlight-storing Heterojunction Electrodes for Nighttime Applications

**HYUNWOONG PARK**, School of Energy Engineering, Kyungpook National University, Daegu, Korea

##### FE-1:L11 Overall Water-splitting Photocatalyst under Visible Light; Conduction-Band-Controlled Silver Tantalate

**H. IRIE**, Clean Energy Research Center, University of Yamanashi, Kofu, Yamanashi, Japan

##### FE-1:L12 Photoelectrochemical Study of Anodized TiO<sub>2</sub> Nanotubes and Electrospun TiO<sub>2</sub> Fibres

**D. REGONINI<sup>1</sup>**, A.C. TELOKEN<sup>2</sup>, A.P. GARCIA<sup>2</sup>, A.K. ALVES<sup>2</sup>, A. BRAUN<sup>1</sup>, F. CLEMENS<sup>1</sup>, <sup>1</sup>Laboratory for High Performance Ceramics, EMPA-Swiss Federal Laboratories for Materials Science & Technology, Dübendorf, Switzerland; <sup>2</sup>Laboratory of Ceramic Materials, Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil

##### FE-1:L13 Graphene Quantum Dot/Metal Oxide Nanocomposites with Enhanced Visible Light Photocatalytic Performance

**RONG LI**, School of Materials and Engineering, Jiangsu University, Zhenjiang, P.R. China; XIAOFEI YANG, School of Materials and Engineering, Jiangsu University, Zhenjiang, P.R. China

##### FE-1:L14 Solar Light Water Splitting at Nanostructured Metal Oxide Photoelectrodes

**J. AUGUSTYNSKI**, R. SOLARSKA, University of Warsaw, Center of New Technologies, Warsaw, Poland

##### FE-1:L15 Development of High Surface Area Titania on Glass Fibre Supports for Photocatalysis

**P. YILMAZ**, A.M. LACERDA, I. LARROSA, S. DUNN, School of Engineering and Materials Science, Queen Mary University of London, London, UK

##### FE-1:L16 Low Temperature Deposition of Photocatalytic TiO<sub>2</sub> Coatings by Ink-jet Printing

**P. LOMMENS**, J. WATTÉ, I. VAN DRIESCHE, SCRiPTs, Department of Inorganic and Physical Chemistry, Ghent University, Ghent, Belgium

##### FE-1:L17 Highly Efficient Metal Supported Photocatalyst due to the Excitation of Localised Surface Plasmon Resonance

**A.M. LACERDA**, I. LARROSA, S. DUNN, Queen Mary, University of London, London, UK

##### FE-1:L18 Photocatalytic Reduction of CO<sub>2</sub> into Solar Fuel Using Oxide-based Catalysts

**TAO HE**, National Center for Nanoscience and Technology, Beijing, China

##### FE-1:L19 Low Energy IR Photon Induced Photodegradation of Methyl Orange Using Ag<sub>2</sub>O/TiO<sub>2</sub> Nanocomposite Catalyst

**A. GANNORUWA<sup>1,2</sup>**, A. MIHIRANI<sup>1</sup>, J. BANDARA<sup>1</sup>, <sup>1</sup>Institute of Fundamental Studies, Kandy, Sri Lanka; <sup>2</sup>Uva Wellassa University, Badulla, Sri Lanka

##### FE-1:L20 Tuning the Visible Light Activity of Plasmonic Photocatalysts to the Solar Spectrum

**S.W. VERBRUGGEN**, M. KEULEMANS, S. LENARTS, University of Antwerp, Antwerp, Belgium; J.A. MARTENS, KU Leuven, Heverlee, Belgium

##### FE-1:L21 Enhanced Photocatalytic Activity over Ag<sub>2</sub>O/g-C<sub>3</sub>N<sub>4</sub> Composites under Visible Light

**LEI SHI<sup>1</sup>**, LIN LIANG<sup>1,3</sup>, JUN MA<sup>1</sup>, **JIANMIN SUN<sup>1,2</sup>**, <sup>1</sup>State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology, Harbin, China; <sup>2</sup>The Academy of Fundamental and Interdisciplinary Science, Harbin Institute of Technology, Harbin, China; <sup>3</sup>School of Life Science and Technology, Harbin Institute of Technology, Harbin, China

**FE-1:L22 Preparation, Characterization and Photocatalytic Properties of Periodically Organized Mesoporous Titania Thin Film: Influence of Doping for Visible Light Activity**

S. SEMLALI<sup>1,2</sup>, T. PIGOT<sup>1</sup>, S. LACOMBE<sup>1</sup>, D. FLAHAUT<sup>1</sup>, L. NICOLE<sup>2</sup>, <sup>1</sup>IPREM-UMR CNRS 5254, Pau, France; <sup>2</sup>LCMCP, UMR CNRS 7574, College de France, France

**FE-1:L23 New UV and Visible Photocatalysts Prepared by a Microwave Assisted Approaches: from Better Knowledge to Better Efficiency**

O. DURUPHY<sup>1</sup>, F. DUFOUR<sup>1</sup>, M.-A. LAVERGNE<sup>1</sup>, S. PIGEOT-REMY<sup>1</sup>, S. CASSAIGNON<sup>1</sup>, C. CHANÉAC<sup>1</sup>, LCMCP-UPMC, Paris, France; C. COLBEAU-JUSTIN<sup>1</sup>, LCP-UPSud, France

**FE-1:L24 Flower-like TiO<sub>2</sub>/MoS<sub>2</sub> Nanocomposites for the Elimination of Organic Pollutants**

ZHEN JIANG<sup>1</sup>, KANGMIN CHEN<sup>1</sup>, XIAOFEI YANG<sup>1</sup>, Jiangsu University, Zhenjiang, P.R. China

**FE-1:L25 Fe,Nb-doped BiOCl and its Photocatalytic Properties**

M. NUSSBAUM<sup>1</sup>, N. SHAHAM-WALDMANN<sup>1</sup>, Y. PAZ<sup>1</sup>, Department of Chemical Engineering and the Russell-Berrie Nanotechnology Institute, Technion, Haifa, Israel

## Session FE-2

### Advances in Fundamental Mechanism Understanding

**FE-2:IL01 Fundamental Studies on Photocatalysis**

B. OHTANI, Hokkaido University, Sapporo, Japan

**FE-2:IL02 Nanocrystalline Transparent Photocatalytic Coatings: Mechanistic Aspects**

R. FATEH, D. BAHNEMANN, Leibniz University Hannover, Institute for Technical Chemistry, Hannover, Germany

**FE-2:IL03 Isotope Labeled Titania: Raman spectra, Photocatalysis and Electrochemistry**

L. KAVAN, J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic

**FE-2:IL04 Effect of Ferroelectricity on Solar-Light-Driven Photocatalytic Activity of BaTiO<sub>3</sub> -Influence on the Carrier Separation and Stern Layer Formation**

YONGFEI CUI<sup>1</sup>, J. BRISCOE<sup>2</sup>, S. DUNN<sup>2</sup>, Materials Research Institute, School of Engineering and Materials Science, Queen Mary University of London, London, UK

**FE-2:IL05 Hydrogen-doping of Mesoporous TiO<sub>2</sub>: Characterization of Electronic States and Impact on Photocatalytic Performance**

T. BERGER<sup>1,2</sup>, J. IDÍGORAS<sup>3</sup>, J.A. ANTA<sup>2</sup>, <sup>1</sup>Department of Materials Science and Physics, University of Salzburg, Salzburg, Austria; <sup>2</sup>Área de Química Física, Universidad Pablo de Olavide, Sevilla, Spain

**FE-2:IL06 On the Mechanism of the Photoactivity under Visible Light of N-doped Titanium Dioxide and Analogous Systems (third generation photoactive systems)**

E. GIAMELLO, Dipartimento di Chimica, Università di Torino, Torino, Italy

**FE-2:IL07 Bimetallic Pd<sub>x</sub>Pt<sub>1-x</sub>/TiO<sub>2</sub> Photocatalysts for Enhanced Simultaneous Removal of CO and VOC in the Presence of Humidity: Structural and Electronic Effects**

O. ROSSELER<sup>1</sup>, A. LOUDET<sup>2</sup>, V. KELLER<sup>1</sup>, N. KELLER<sup>1</sup>, <sup>1</sup>Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé (ICPEES), CNRS, University of Strasbourg, France; <sup>2</sup>Direction Générale de l'Armement (DGA), DGA CBRN Expertise, Vert-le-Petit, France

**FE-2:IL08 Resonant Light Trapping in Iron Oxide (Fe<sub>2</sub>O<sub>3</sub>) Ultrathin Film Photoanodes for Solar Powered Water Photoelectrolysis**

H. DOTAN, A. ROTHSCHILD, Department of Materials Science and Engineering Technion - Israel Institute of Technology, Haifa, Israel

**FE-2:IL09 Large Hydrogen Yields from Pristine Oxide Nanosheet Suspensions**

JIAN LIU, S.T. MISTURE, Alfred University, Alfred, NY USA

**FE-2:L10 Photocatalytic Degradation Diesel of Soot: Unravelling the Reaction Mechanism**

M. SMITS, S. LENARTS, Laboratory for Sustainable Energy and Air Purification, Department of Bioscience-engineering, University of Antwerp, Antwerp, Belgium; YUN LING, S. VAN DOORSLAER, Department of Physics, University of Antwerp, Antwerp, Belgium

## Session FE-3

### Design Approaches for Advanced Applications

**FE-3:IL01 Nanocrystal Self-assembly as a Route to Atomically Coherent 2-D Semiconductor Superlattices with Dirac-type Charge Carriers**

W.H. EVERIS<sup>4</sup>, D. MITORAJ<sup>1</sup>, M. DIJKSTRA<sup>1</sup>, C. MORAIS-SMITH<sup>2</sup>, C. DELERUE<sup>3</sup>, E. KALESAKI<sup>3</sup>, D. VANMAEKELBERGH<sup>1</sup>, <sup>1</sup>Debye Institute for Nanomaterials Science, University of Utrecht, The Netherlands; <sup>2</sup>Institute for Theoretical Physics, Utrecht, The Netherlands; <sup>3</sup>IEMN-ISEN and University of Lille, France; <sup>4</sup>Kavli-Institute for Nanoscience, Delft University of Technology, The Netherlands

**FE-3:IL02 Development of Plasmonic Photocatalysts for Environmental Application**

E. KOWALSKA<sup>1</sup>, B. OHTANI, Catalysis Research Center, Hokkaido University, Sapporo, Japan; A. MARKOWSKA-SZCZUPAK, West Pomeranian University of Technology, Szczecin, Poland; L. ROSA, S. JUODKAZIS, Centre for Micro-Photonics, Swinburne University of Technology, Hawthorn, Australia

**FE-3:IL03 Photocatalytic Air Treatment of VOCs and Bioaerosols in Real Indoor Air Conditions**

B. SANCHEZ<sup>1</sup>, M.C. CANELA<sup>2</sup>, S. SUÁREZ<sup>1</sup>, C.R. NUNES<sup>2</sup>, M. SÁNCHEZ, I. JANSSON<sup>1</sup>, <sup>1</sup>CIEMAT-Photocatalytic Treatment of Pollutants in Air, Madrid, Spain; <sup>2</sup>Environmental Chemistry Research Group - Universidade Estadual do Norte Fluminense. Campos dos Goytacazes, Brazil

**FE-3:IL04 Progress in Solar Water-splitting through Photoelectrochemistry**

J.A. TURNER, National Renewable Energy Laboratory, Golden, CO, USA

**FE-3:IL05 New Tandem Devices for Water Splitting**

P.C.K. VESBORG<sup>1</sup>, B. SEGER<sup>1</sup>, T. PEDERSEN<sup>1</sup>, A.B. LAURSEN<sup>2</sup>, O. HANSSEN<sup>1</sup>, I. CHORKENDORFF<sup>1</sup>, <sup>1</sup>Technical University of Denmark, Kgs. Lyngby, Denmark; <sup>2</sup>Rutgers, USA

**FE-3:IL06 Hybrid Materials with Organized Nanoscale Architecture for Solar Energy Applications**

C. JANAKY, G.F. SAMU, K. RAJESHWAR, Dept. of Physical Chemistry and Materials Science, University of Szeged, Szeged, Hungary; Dept. Chemistry and Biochemistry, University of Texas at Arlington, Arlington, TX, USA

**FE-3:L07 Thiol Functionalization: A Novel Class of Organic Additives for BHJ Solar Cells**

A. OPERAMOLLA<sup>1</sup>, A. PUNZI<sup>1</sup>, O. HASSAN OMAR<sup>2</sup>, D. GENTILE<sup>1</sup>, D. BLASI<sup>1</sup>, F. BABUDRI<sup>1</sup>, G.M. FARINOLA<sup>1,2</sup>, <sup>1</sup>Dipartimento di Chimica, Università degli Studi di Bari Aldo Moro, Bari, Italy; <sup>2</sup>CNR-ICCOM, Bari, Italy

**FE-3:L08 Langmuir-Schaefer Films of Aligned Carbon Nanotubes Blended with Conjugate Polymers and their Photoelectrochemical Response**

O. HASSAN OMAR<sup>1</sup>, V. SGOBBA<sup>2</sup>, G. GIANCANE<sup>3</sup>, D. CANNOLETTA<sup>4</sup>, A. OPERAMOLLA<sup>5</sup>, G.M. FARINOLA<sup>1,5</sup>, D.M. GULDI<sup>2</sup>, L. VALLI<sup>6</sup>, <sup>1</sup>CNR-ICCOM, Bari, Italy; <sup>2</sup>Interdisciplinary Center for Molecular Materials, Universitaet Erlangen-Nürnberg, Erlangen, Germany; <sup>3</sup>Dipartimento Beni Culturali, Università del Salento, Lecce, Italy; <sup>4</sup>Dipartimento di Ingegneria dell'Innovazione, Università del Salento, Lecce, Italy; <sup>5</sup>Dipartimento di Chimica, Università degli Studi di Bari Aldo Moro, Bari, Italy; <sup>6</sup>Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali, Università del Salento, Lecce, Italy

**FE-3:L09 Development of Self-supporting TiO<sub>2</sub> Foams**

T. TYTGAT, S. LENARTS, Dept. of Bio-science Engineering, University Antwerp, Antwerp, Belgium

**FE-3:L10 Photodegradation of In-door Nitrous Oxide and Formaldehyde by Using Naturally-doped Nd And Zr Anatase and Rutile Nanotitania**

M.S. MEOR YUSOFF, A. SAPIEE, Malaysian Nuclear Agency, Kajang, Selangor, Malaysia

**FE-3:L11 Degradation of Pesticides, Dye Molecules and Relevant Surface Interactions with Mesoporous Titania**

M. MEIRE, P. LOMMENS, I. VAN DRIESCHKE, SCRIPTS, Department of Inorganic and Physical Chemistry, Ghent University, Ghent, Belgium; I. AS-COOP, P. VAN DER VOORT, COMOC, Department of Inorganic and Physical Chemistry, Ghent University, Ghent, Belgium

**FE-3:IL12 The Photocatalytic Properties of Gypsum Plaster Containing Co-modified TiO<sub>2</sub>-N,C and its Application in Synthetic Dye Removal**

M. JANUS<sup>1</sup>, E. KUSIAK-NEJMAN<sup>2</sup>, K. BUBACZ<sup>2</sup>, A. CZYZEWSKI<sup>2</sup>, J. ZATORSKA<sup>2</sup>, A.W. MORAWSKI<sup>2</sup>, <sup>1</sup>West Pomerania University of Technology, Department of Sanitary Engineering, Szczecin, Poland; <sup>2</sup>West Pomerania University of Technology, Szczecin, Institute of Chemical and Environmental Engineering, Szczecin, Poland

**FE-3:IL13 Development of a Self-contained, PV-powered Domestic Toilet and Electrochemical Wastewater Treatment System**

M.R. HOFFMANN, Engineering & Applied Science, California Institute of Technology, Pasadena, CA, USA

**FE-3:IL14 Photocatalytic Materials Based on F-doped or codoped TiO<sub>2</sub>**  
 M.V. DOZZI, E. SELLÌ, Department of Chemistry, University of Milan, Milano, Italy; B. OHTANI, Catalysis Research Center, Hokkaido University, Sapporo, Japan

## Poster Presentations

### FE:P01 Effect of Atmosphere and Doping on the Crystallization And Phase Stability of Electrospun TiO<sub>2</sub> Nanofibers

H. ALBETRAN, R. DONG, B. O'CONNOR, J. LOW, Curtin University, Perth, WA, Australia

### FE:P02 Hydrothermal Synthesis and Photocatalytic Properties of Pyrochlore Sm<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> Nanoparticles

HAIBO JIN, JINGBO LI, PENGWAN CHEN; WENBIN CAO, School of Materials Science and Engineering, Beijing Institute of Technology; School of Materials Science and Engineering, University of Science & Technology Beijing, China

### FE:P03 Synthesis and Characterisation of Nano-structured Fe and Ce Modified Titania Thin Films Prepared by Sol-gel Dip Coating

M.C. FERRARA<sup>1</sup>, S. MAZZARELLI<sup>1</sup>, V. MARTINA<sup>1</sup>, M. SCHIOPPA<sup>1</sup>, T. DIKONIMOS<sup>2</sup>, L. TAPFER<sup>1</sup>, <sup>1</sup>ENEA, Technical Unit for Materials Technologies, Brindisi Research Centre, Brindisi, Italy; <sup>2</sup>ENEA, Technical Unit for Materials Technologies, Casaccia Research Centre, S Maria di Galeria, Rome, Italy

### FE:P04 AAO as the Support for Titania Photocatalysts

M. STODOLNY, K. DYBA, M. LANIECKI, Faculty of Chemistry, A. Mickiewicz University, Poznan, Poland

### FE:P05 Rapid Synthesis of Highly Crystalline Anatase TiO<sub>2</sub> Micro-spheres by Spray Drying: Controlled Synthesis and Enhanced Photocatalytic Activity

S. PAL, A. LICCIULLI, Department of Engineering for Innovation, University of Salento, Lecce, Italy

### FE:P06 $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>/Pt Hybrid Nanorings and their Enhanced Photocatalytic Activity

HANFENG LIANG, ZHOUCHEUNG WANG, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China

### FE:P07 Control of Phase Coexistence in Calcium Tantalate Junction Composite Photocatalysts for Highly Efficient Hydrogen Production

PING WANG, M. WARK; R. MARSHALL, Laboratory of Industrial Chemistry, Ruhr-University Bochum, Bochum, Germany; Justus-Liebig-University Giessen, Giessen, Germany

### FE:P08 Influence of SiO<sub>2</sub> Thin Films on Optical Properties and Conversion Efficiency of ITO Based Thin Films for Photovoltaic Applications

JONG SU WOO, GUN EIK JANG, Department of Materials Engineering, Chungbuk National University, Cheongju, Korea

### FE:P09 16c Substituted CsTaWO<sub>6</sub>: The Influence of Different d0 Metal-Ions on the Photocatalytic Activity of Mixed Oxides with the Defect-Pyrochlore Structure

L. SCHWERTMANN<sup>1</sup>, R. MARSHALL<sup>2</sup>, M. WARK<sup>3</sup>, <sup>1</sup>Laboratory of Industrial Chemistry, Ruhr-University Bochum, Bochum, Germany; <sup>2</sup>Justus-Liebig-University Giessen, Giessen, Germany; <sup>3</sup>Institute for Chemistry, Carl von Ossietzky University Oldenburg, Oldenburg, Germany

### FE:P10 Visible-light-driven Photocatalytic Inactivation of Escherichia Coli by CuAl<sub>2</sub>O<sub>4</sub> Immobilized on Mineral Wool Fibers

QINGWEI ZHU<sup>1,2</sup>, YIHE ZHANG<sup>2</sup>, FADE WU<sup>2</sup>, DANJUN TANG<sup>2</sup>, PENGQI WANG<sup>2</sup>, <sup>1</sup>School of Materials Science and Technology, China University of Geosciences, Beijing, China; <sup>2</sup>Beijing New Building Materials Public Limited Company, China

### FE:P11 Synthesis of Titanium Dioxide Nanocrystals with High-energy Facets in Trifluoroactic Acid and their Enhanced Photoelectrochemical Performances in Dye-sensitized Solar Cells

SUJUN YUAN, FANG LEI, JIANJUN XIE, YING SHI, School of Materials Science and Engineering, Shanghai University, Shanghai, P.R. China

### FE:P12 Mechanism of Li-storage in TiO<sub>2</sub> (B) and TiO<sub>2</sub> (anatase)

M. ZUKALOVA, B. LASKOVA, A. ZUKAL, M. BOUSA, L. KAVAN, J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i., Prague, Czech Republic

### FE:P13 TiOx Films Prepared by Sol-gel Method for Organic Solar Cells

HYUN-SUB KIM, HYUN-SOO CHO, DO-HEYOUNG KIM, School of Chemical Engineering, Chonnam National University, GwangJu, Korea

### FE:P14 Photocatalysis Discolouration of Water on Tin Dioxide and Zinc Oxide Doped with Sodium

H. BENHEBAL, M. CHAIB, M. BADAOUUI, B. ZIANE, Department of Chemistry, Ibn-Khaldoun University, Tiaret, Algeria

## SYMPORIUM FF

### MAGNETIC MATERIALS FOR ENERGY

## Oral Presentations

### Session FF-1

#### Hard Magnetic Materials

##### FF-1:IL01 Material Criticalities in Magnetism

O. GUTFLEISCH, TU Darmstadt, Material Science, Germany; Fraunhofer Project Group Materials Recycling and Resource Strategy IWKS, Hanau, Germany

##### FF-1:IL02 A Multi-scale Approach to Develop High Coercivity Dy-free Permanent Magnets

H. SEPEHRI-AMIN, J. LIU, T. AKIYA, T. OHKUBO, K. HONO, Elements Strategy Initiative Center for Magnetic Materials, National Institute for Materials Science, Tsukuba, Japan; K. HIOKI, A. HATTORI, Daido Corporate Research & Development Center, Daido Steel Co. Ltd., Nagoya, Japan

##### FF-1:IL03 Approaches for the Discovery and Design of New Permanent Magnets

M.J. KRAMER, R.T. OTT, D.D. JOHNSON, Ames Laboratory, Iowa State University, Ames, IA, USA

##### FF-1:IL04 Permanent Magnetic Materials for Energy Conversion and Power Generation: New Materials, New Designs

L.H. LEWIS, Northeastern University, Boston, MA, USA

##### FF-1:IL05 Modelling of Anisotropy and Coercivity in Novel Hard Magnets

J. FIDLER, A. ASALI, P. TOSON, W. WALLSCH, Vienna University of Technology, Institute of Solid State Physics, Vienna, Austria

##### FF-1:IL06 MnBi Hard Magnets

G.C. HADJIPANAYIS, N.V. RAMA RAO, University of Delaware, Newark, DE, USA

##### FF-1:IL07 Effects of Hydrogen on the Magnetic Properties of Rare-earth Iron Intermetallics for Energy

O. ISNARD, Université Grenoble Alpes, Inst NEEL, Grenoble, France; CNRS, Institut NEEL, Grenoble, France

##### FF-1:IL08 High Performance Hard Magnetic Thick Films

N.M. DEMPSEY, D. LE ROY, N. GUNDUZ-AKDOGAN, O. AKDOGAN, D. GIVORD, Univ. Grenoble Alpes, Inst NEEL, Grenoble, France; CNRS, Inst NEEL, Grenoble, France

##### FF-1:IL09 Development of L10 Tetragonal Phase in Continuous and Nanopatterned Fe-Pd Films by Post-deposition Annealing

P. TIBERTO<sup>1</sup>, G. BARRERA<sup>1</sup>, F. CELEGATO<sup>1</sup>, M. COISSON<sup>1</sup>, F. VINAI<sup>1</sup>, P. RIZZI<sup>2</sup>, <sup>1</sup>INRIM, Electromagnetism Division, Torino, Italy; <sup>2</sup>Chemistry Dept, Università di Torino, Torino, Italy

##### FF-1:IL10 Fabrication of Nanostructured Permanent Magnets - Approaches from the Bottom

J. PING LIU, Department of Physics, University of Texas at Arlington, TX, USA

##### FF-1:IL11 Influence of Mechanical Milling on Properties of SrFe<sub>12</sub>O<sub>19</sub> and SrFe<sub>12</sub>O<sub>19</sub>/Fe<sub>0.65</sub>Coo<sub>0.35</sub>; SrFe<sub>12</sub>O<sub>19</sub>/FeCoSiB Hard/Soft Magnetic Nanocomposite

M.N. GUZIK, S. DELEDDA, B.C. HAUBACK, Institute for Energy Technology, Kjeller, Norway; A. BOLLERO, E. BERGANZA, IMDEA Nanociencia, Campus Universitario de Cantoblanco, Madrid, Spain; A. QUESADA, J.F. FERNÁNDEZ, Instituto de Cerámica y Vidrio, CSIC Kelsen, Madrid, Spain; A.M. ARAGON, P. MARIN, Instituto de Magnetismo Aplicado, Las Rozas, Madrid, Spain

##### FF-1:IL12 Structural and Magnetic Properties of Nd<sub>2</sub>Fe<sub>14</sub>B/Alpha-Fe Nanocomposites Obtained by Mechanical Milling

S. MICAN, Babes-Bolyai University, Faculty of Physics, Cluj-Napoca, Romania; O. ISNARD, Institut Néel, CNRS, Joseph Fourier University, Grenoble, France; I. CHICINAS, Materials Sciences and Engineering Dept., Technical University of Cluj-Napoca, Cluj-Napoca, Romania; V. POP, Babes-Bolyai University, Faculty of Physics, Cluj-Napoca, Romania

##### FF-1:IL13 Single Domain SmCo<sub>5</sub>@Co Exchange-coupled Magnets Prepared from Core/shell Complex/GO Particles

CE YANG<sup>1</sup>, LIHUI JIA<sup>2</sup>, SHOUGUO WANG<sup>3</sup>, CHEN GAO<sup>2</sup>, DAEWEI SHI<sup>2</sup>, YANGLONG HOU<sup>1</sup>, SONG GAO<sup>2</sup>, <sup>1</sup>Department of Materials Science and Engineering, College of Engineering, Beijing, China; <sup>2</sup>College of Chemistry and Molecular Engineering, Peking University, Beijing, China; <sup>3</sup>Institute of Physics, Chinese Academy of Sciences, Beijing, China

**FF-1:L14 Magnetic Properties of Cobalt Ferrite Nanoparticles for Permanent Magnets**

E. LOTTINI, A. LOPEZ-ORTEGA, G. CAMPO, E. FANTECHI, C. INNOCENTI, INSTM-Univ. of Florence, Sesto Fiorentino, Italy; **C. DE JULIÁN FERNÁNDEZ**, IMEM-CNR, Parma, Italy & INSTM; C. SANGREGORIO, ISTM-CNR, Milano, Italy & INSTM

## Session FF-2

### Soft Magnetic Materials

**FF-2:L01 High Bs-FeSiBPCu Nanocrystalline Soft Magnetic Alloys Contributable to Energy-saving**

**A. MAKINO**, Institute for Materials Research, Tohoku University, Sendai, Japan

**FF-2:L02 The Influence of Small Mn Additions on Microstructure and Magnetic Properties of Fe-Si-B-P-Cu Glass-coated Submicron Wires**

**N. LUPU**, S. CORODEANU, H. CHIRIAC, National Institute of Research and Development for Technical Physics, Iasi, Romania; P. SHARMA, A. MAKINO, Research and Development Center for Ultra High Efficiency Nano-crystalline Soft Magnetic Material, Tohoku University, Japan

**FF-2:L03 Influence of Magnetic Field of Super High Frequency on Hysteretic Properties of Soft Magnetic Microwires**

**A. CHIZHIK**, J. GONZALEZ, Universidad del País Vasco, UPV/EHU, San Sebastian, Spain; A. STUPAKIEWICZ, A. MAZIEWSKI, University of Białystok, Białystok, Poland; A. ZHUKOV, Universidad del País Vasco, UPV/EHU, San Sebastian and IKERBASQUE, Bilbao, Spain

**FF-2:L04 New Soft Magnetic Materials for High Efficiency Applications**

**R. HASEGAWA**, Metglas, Inc., Conway, SC, USA

**FF-2:L05 Synthesis of Ferrite Magnets with Magnetization over 1 Tesla**

**JUN DING**, Department of Materials Science & Engineering, National University of Singapore, Singapore

**FF-2:L06 Comprehensive Approach to Broadband Energy Losses in MN-ZN FERRITES**

F. FIORILLO, **C. BEATRICE**, O. BOTTAUSCIO, Istituto Nazionale di Ricerca Metrologica, Torino, Italy

**FF-2:L07 Field-annealed Soft Magnetic Amorphous and Nanocrystalline Ribbons with Improved Energy Performance**

**I. SKORVANEK**, Institute of Experimental Physics, Slovak Academy of Sciences, Kosice, Slovakia

**FF-2:L08 Prediction of Energy Loss in 6.5% Steel Sheets**

**J. SZCZYGŁOWSKI**, Czestochowa University of Technology, Czestochowa, Poland

**FF-2:L09 The Effect of Compacting Pressure on Power Loss in a SMC**

**B. SLUSAREK<sup>1</sup>**, J.SZCZYGŁOWSKI<sup>2</sup>, K. CHWASTEK<sup>2</sup>, B. JANKOWSKI<sup>1</sup>, <sup>1</sup>Tele and Radio Research Institute, Warsaw, Poland; <sup>2</sup>Czestochowa University of Technology, Czestochowa, Poland

## Session FF-3

### Magnetocaloric and Multifunctional Magnetic Materials

**FF-3:L01 Caloric Effects in Ferroic Materials**

**L. MANOSA**, Facultat de Fisica, Universitat de Barcelona, Barcelona, Spain

**FF-3:L02 Enhancing the Inverse Magnetocaloric Effect by Proper Doping Ni-Co-Mn-Ga(In) Heusler Alloys**

**S. FABBRICI**, MIST-ER Laboratory, Bologna, Italy; F. ALBERTINI, F. BOLZONI, R. CABASSI, IMEM-CNR, Parma, Italy; G. PORCARI, F. CUGINI, M. SOLZI, University of Parma, Parma, Italy; J. KAMARAD, Z. ARNOLD, Institute of Physics - AVCR, Prague, Czech Republic; B. EMRE, S. YUCE, L. MANOSA, A. PLANES, Universitat de Barcelona, Barcelona, Catalonia, Spain

**FF-3:L03 Shape Memory and Magnetocaloric Materials: "Giant" Effects Induced by Hydrostatic Pressure and Magnetic Field**

**Z. ARNOLD**, J. KAMARAD, J. KASTIL, Institute of Physics, AS CR, Prague, Czech Republic; F. ALBERTINI, IMEM-CNR, Parma, Italy; S. FABBRICI, IMEM-CNR, Parma and MIST E-R Lab. Bologna, Italy; Y. SKOURSKI, Hochfeld-Magnetlabor Dresden, Dresden, Germany

**FF-3:L04 Revealing and Modelling Interactions or Disorder Effects in Magnetocaloric Materials**

J.S. AMARAL\*, J.N. GONÇALVES, **V.S. AMARAL**, Departamento de Física e CICECO, Universidade de Aveiro, Aveiro, Portugal; \*also at IFIMUP-IN e Departamento de Física e Astronomia da Faculdade de Ciencias da Universidade do Porto, Porto, Portugal

**FF-3:L05 Transition Metal Based Magneto Caloric Materials**

**E. BRÜCK**, H.D. NGUYEN, Z. OU, Y. YIBOLE, L. CARON, L. ZHANG, F. GUILLOU, N. VAN DIJK, Delft Univ. of Technology, Faculty of Applied Sciences, Fundamental Aspects of Materials and Energy, Delft, The Netherlands

**FF-3:L06 The Search for New Magnetocaloric Materials**

**K.G. SANDEMAN**, Department of Physics, Blackett Laboratory, Imperial College London, London, UK

**FF-3:L07 The Magneto-structural Coupling in MnCoGe-based Compounds**

**L. CARON**, N.T. TRUNG, E. BRÜCK, Fundamental Aspects of Materials and Energy, TU Delft, Delft, The Netherlands

**FF-3:L08 Detailed Study of New Magnetic Ordering in FeMnP0.75Si0.25**

**V. HÖGLIN**, Y. ANDERSSON, M. SAHLBERG, Department of Chemistry - Angström, Uppsala University, Uppsala, Sweden; P. NORDBLAD, Department of Engineering Sciences, Uppsala University, Uppsala, Sweden; M. HUDL, ICT Materials Physics, KTH Royal Institute of Technology, Kista, Sweden; L. CARON, Fundamental Aspects of Materials and Energy, Faculty of Applied Sciences, TU Delft, Delft, The Netherlands; P. BERAN, Nuclear Physics Institute, Academy of Sciences of the Czech Republic, Rez, Czech Republic; M.H. SORBY, Physics Department, Institute for Energy Technology, Kjeller, Norway

**FF-3:L09 Tuning the Phase Transition by Si Substitution in Mn1.25Fe0.70P1-xSix Compounds**

**XUEFEI MIAO<sup>1</sup>**, L. CARON<sup>1</sup>, P. ROY<sup>2</sup>, N.H. DUNG<sup>1</sup>, L. ZHANG<sup>1,3</sup>, W.A. KOCK-ELMANN<sup>4</sup>, R. SMITH<sup>4</sup>, R.A. DE GROOT<sup>2</sup>, N.H. VAN DIJK<sup>1</sup>, E. BRÜCK<sup>1</sup>, <sup>1</sup>Department of Radiation Science & Technology, Delft University of Technology, The Netherlands; <sup>2</sup>Department of Electronic Structure of Materials, Radboud University, The Netherlands; <sup>3</sup>BASF Nederland B.V., The Netherlands; <sup>4</sup>ISIS, Rutherford Appleton Laboratory, UK

**FF-3:L10 Reduction of the Energy Barrier in First Order Magnetocaloric Materials**

**K. MORRISON**, Physics Department, Loughborough University, Loughborough, Leicestershire, UK

**FF-3:L11 Structural and Magnetic Properties of the Ternary Compounds Mn3-xFexSn and Mn2-xFexSn for x range 0 between 1.25**

**M.R. FELEZ**, UNIFESP, Sao José dos Campos, SP, Brazil; F. YOKAICHYIA, LNLS, Campinas, SP, Brazil; A.A. COELHO, UNICAMP, Campinas, SP, Brazil; S. GAMA, UNIFESP, Sao José dos Campos, SP, Brazil

**FF-3:L12 Study of Structural and Magnetic Properties of Si-doped MnAs**

**S. GAMA<sup>1</sup>**, M. RODRIGUES FELEZ<sup>1</sup>, A. DE AGUIAR COELHO<sup>2</sup>, <sup>1</sup>Universidade Federal de São Paulo - UNIFESP - Campus Diadema, Brazil; <sup>2</sup>Universidade Estadual de Campinas - UNICAMP, Brazil

**FF-3:L13 Characterization of Magnetocaloric Effect in the MnFeP1-xAsx Intermetallic Compounds (x=0.40-0.65)**

**P. WŁODARCZYK**, L. HAWELEK, A. KOLANO-BURIAN, P. ZACKIEWICZ, M. KAMINSKA, Institute of Non-Ferrous Metals, Gliwice, Poland; A. CHROBAK, University of Silesia, Institute of Physics, Katowice, Poland

**FF-3:L14 Hall Probe Imaging of Magnetocaloric LaFe13-xSix**

E. LOVELL<sup>1</sup>, A.M. PEREIRA<sup>1</sup>, K. MORRISON<sup>2</sup>, O. GUTFLEISCH<sup>3</sup>, **L.F. COHEN<sup>1</sup>**, <sup>1</sup>The Blackett Laboratory, Imperial College, London, UK; <sup>2</sup>Department of Physics, Loughborough University, Leicestershire, UK; <sup>3</sup>Tech Univ Darmstadt, Dept Mat Science, Darmstadt, Germany

**FF-3:L15 Magnetic Properties of Severe Plastic Deformed Gd, Nd and Sm Rare-earth Metals**

S.V. TASKAEV, V.D. BUCHELNICKOV, D.S. BATAEV, **M.N. ULYANOV**, Chelyabinsk State University, Chelyabinsk, Russia; V.V. KHOVAYLO, National University of Science and Technology "MISIS", Moscow, Russia; K.P. SKOKOV, TU Darmstadt, Darmstadt, Germany; A.P. PELLENEN, National Research South Ural State University, Chelyabinsk, Russia

**FF-3:L16 On the Magnetic Fluctuations in the Magnetocaloric-effect in Rare-earth Intermetallic Compounds**

**J.A. BLANCO**, Solid State Division, Department of Physics, University of Oviedo, Oviedo, Spain

**FF-3:L17 Enhanced Refrigeration Capacity in RNi2 Polycrystalline Ribbons Fabricated by Melt Spinning**

**P. GORRIA<sup>1</sup>**, J.L. SÁNCHEZ LLAMAZARES<sup>2</sup>, P.J. IBARRA-GAYTAN<sup>2</sup>, C.F. SÁNCHEZ-VALDÉS<sup>2</sup>, P. ALVAREZ-ALONSO<sup>3</sup>, J.A. BLANCO<sup>4</sup>, <sup>1</sup>Departamento de Física, EPI, Universidad de Oviedo, Gijón, Spain; <sup>2</sup>División de Materiales Avanzados, IPICYT, San Luis Potosí, Mexico; <sup>3</sup>Departamento de Electricidad y Electrónica, Universidad del País Vasco, Bilbao, Spain; <sup>4</sup>Departamento de Física, Facultad de Ciencias, Universidad de Oviedo, Oviedo, Spain

**FF-3:L18 Magnetocaloric Properties of Gd or Nd Substituted La-Ba Manganites**

G. TONOZLIS, **G. LITSARDAKIS**, Aristotle University, Thessaloniki, Greece

**FF-3:L19 Direct Adiabatic Temperature Change Measurements in a Series of Modified Gd<sub>5</sub>Si<sub>2</sub>Ge<sub>2</sub> Alloys**

P. PODMILJSAK<sup>1,2</sup>, P.J. MCGUINNESS<sup>1,2</sup>, K. SKOKOV<sup>3</sup>, O. GUTFLEISCH<sup>3</sup>, S. KOBE<sup>1</sup>, <sup>1</sup>Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia; <sup>2</sup>Center of Excellence NAMASTE, Ljubljana, Ljubljana, Slovenia; <sup>3</sup>TU Darmstadt, Darmstadt, Germany

**FF-3:L20 Tetragonal Heusler Compounds for Spintronics**

C. FELSER, A.K. NAYAK, O. MESHCHERIACOVA, V. ALIJANI, J. WINTERLIK, G. FECHER, S. OUARDI, S. CHADOV, Max Planck Institute of Chemical Physics for Solids, Dresden, and Johannes Gutenberg University, Mainz, Germany

**FF-3:L21 Strain-mediated Magnetocaloric and Magnetoelectric Effects in Oxide Heterostructures**

X. MOYA, C. DUCATI, L.C. PHILLIPS, W. YAN, M. GHIDINI, M.E. VICKERS, N. D. MATHUR, Department of Materials Science, University of Cambridge, Cambridge, UK; L.E. HUESO, O. HOVORKA, A. BERGER, CIC nanoGUNE Consolider, Donostia, San Sebastian, Spain; F. MACCHEROZZI, S.S. DHESI, Diamond Light Source, Chilton, Didcot, Oxfordshire, UK; A.I. TOVSTOLYTKIN, D.I. PODYALOVSKII, Institute of Magnetism, Kyiv, Ukraine; E. DEFAY, CEA-LETI, Minatec Campus, Grenoble, France

**FF-3:L22 Epitaxial Thin Films and Submicron-sized Patterning of Ni-Mn-Ga**

P. RANZIERI, S. FABBRICI, L. NASI, F. CASOLI, V. CHIESI, M. CAMPANINI, F. ALBERTINI, IMEM-CNR, Parma, Italy; L. RIGHI, Chemistry Department, Parma University, Parma, Italy; E. VILLA, CNR-IEI, Lecco, Italy; F. CELEGATO, G. BARRERA, P. TIBERTO, INRIM, Torino, Italy

**FF-3:L23 Rapidly Quenched Ferromagnetic Shape Memory Ni-Mn-Ga Wires**

C. GOMEZ-POLO, J.I. PÉREZ-LANDAZÁBAL, V. RECARTE, V. SÁNCHEZ-ALARCOS, Dpto. Física, Universidad Pública de Navarra, Campus de Arrosadia, Pamplona, Spain; G. BADINI, M. VÁZQUEZ, Instituto de Ciencia de Materiales, CSIC, Madrid, Spain

**FF-3:L24 Atomic Layer- and Chemical Vapor- deposition of Multiferroic Er-Fe-O Thin Films**

S. VANGELISTA, R. MANTOVAN, C. WIEMER, A. LAMPERTI, G. TALLARIDA, Laboratorio MDM IMM-CNR, Agrate Brianza (MB), Italy; E. CHIKOIDZE, Y. DUMONT, GEMaC, CNRS-Université de Versailles St. Quentin en Yvelines, Versailles Cedex, France; M. FANCIULLI, Laboratorio MDM IMM-CNR, Agrate Brianza (MB), Italy and Dipartimento di Scienza dei Materiali, Università di Milano Bicocca, Milano, Italy

## Session FF-4

### Magnetic Devices and Components for Energy Applications

**FF-4:IL01 The Use of Hydrogen to Separate and Recycle Neodymium-Iron-Boron Magnets**

A. WALTON, Metallurgy and Materials, University of Birmingham, Edgbaston, Birmingham, UK

**FF-4:IL02 Advances in Magnetic Refrigeration Technology**

A. KEDOUS-LEBOUC, M. ALMANZA, A.T. RAMINOSOA, J.-P. YONNET, Grenoble Electrical Engineering Laboratory G2Elab, Grenoble Alpes University, CNRS UMR 5269, Saint Martin d'Hères Cedex, France

**FF-4:IL03 Fundamental Physical Restrictions on Power of Magnetocaloric Refrigerator**

A.P. KAMANTSEV, E.T. KALIMULLINA, V.V. KOLEDOV, A.V. MASHIROV, V.G. SHAVROV, Kotelnikov Institute of Radio-engineering and Electronics RAS, Moscow, Russia

**FF-4:IL04 Nanostructured Permanent Magnets - Approaches from the Bottom**

M. MORELLI, STMicroelectronics SRL, Cornaredo (MI), Italy

**FF-4:IL05 Energy Harvesting by Ferromagnetic Shape Memory Alloy Films**

M. KOHL, M. GUELITIG, R. YIN, Karlsruhe Institute of Technology, IMT, Karlsruhe, Germany; M. OHTSUKA, H. MIKI, Tohoku University, IMRAM, Sendai, Japan

**FF-4:IL06 Magnetic Shape Memory (MSM) Devices for Energy Harvesting**

K. ULLAKKO, Lappeenranta University of Technology, Savonlinna, Finland

**FF-4:IL07 Energy Harvesting Device Based on Nanocrystalline Ribbons**

H. CHIRIAC, M. TIBU, N. LUPU, T.A. OVARI, National Institute of Research and Development for Technical Physics, Iasi, Romania; I. SKORVANEK, Institute of Experimental Physics, Slovak Academy of Sciences, Kosice, Slovakia

**FF-4:IL08 Is the Spin Seebeck Effect a New Route to Explore for Thermoelectrics?**

K. MORRISON, A. CARUANA, Physics Department, Loughborough University, Loughborough, Leicestershire, UK

## Poster Presentations

**FF:P01 Magnetic Domain Structure of FeCo-based Nanocrystalline Alloys with Induced Transverse Magnetic Anisotropy**

A. KOLANO-BURIAN, R. KOLANO, L. HAWELEK, M. POLAK, Institute of Non-Ferrous Metals, Gliwice, Poland

**FF:P02 The Heating Effect of Iron Cobalt Magnetic Nanofluids in an Alternating Magnetic Field: Application in Hyperthermia Treatment**

A. SHOKUHFAR, S.S.S AFGHAHI, Advanced Materials and Nanotechnology Research Laboratory, Department of Materials Science and Engineering, K.N. Toosi University of Technology, Tehran, Iran

**FF:P03 Influence of Grain Size on the Magnetocaloric Effect and Magnetic Properties of La<sub>0.7</sub>Ca<sub>0.3</sub>MnO<sub>3</sub> Compounds**

TRAN DANG THANH, THE LONG PHAN, SUHK KUN OH, SEONG CHO YU, Department of Physics, Chungbuk National University, Cheongju, Korea

**FF:P04 Cluster-Spin-Glass Behavior in La<sub>0.7</sub>Ca<sub>0.3</sub>MnO<sub>3</sub> Nanoparticles**

TRAN DANG THANH, THE LONG PHAN, SEONG CHO YU, SUHK KUN OH, Department of Physics, Chungbuk National University, Cheongju, Korea

**FF:P05 Magnetocaloric Properties of Gd-Ge-Si Alloys Modified with Iron**

J. FERENC, M. KOWALCZYK, G. CIESLAK, T. EREN-SEDZIAK, T. KULIK, Faculty of Materials Science and Engineering, Warsaw University of Technology, Warsaw, Poland

**FF:P06 Internal Friction in Superelastic FeMnAlNi Alloys**

V.V. KHOVAYLO, I.S. GOLOVIN, National University of Science and Technology "MIS&S", Moscow, Russia; T. OMORI, R. KAINUMA, Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Japan

**FF:P07 Thermal Properties and Non-contact Temperature Measurements of Magnetocaloric Materials**

L. FERREIRA, S.C. SANTOS, J.S. AMARAL\*, V.S. AMARAL, Departamento de Física e CICECO, Universidade de Aveiro, Aveiro, Portugal; \*also at IFIMUP-IN e Departamento de Física e Astronomia da Faculdade de Ciencias da Universidade do Porto, Porto, Portugal

**FF:P08 An Effect of Mn Addition on Magnetocaloric Properties of the LaFe<sub>11.8</sub>Si<sub>1.2</sub> Alloy**

M. POLAK, P. WŁODARCZYK, L. HAWELEK, A. KOLANO-BURIAN, Institute of Non-Ferrous Metals, Gliwice, Poland

**FF:P09 Structural, Magnetic and Magnetocaloric Properties of the MnFeP<sub>0.5</sub>As<sub>0.5-x</sub>Gex Intermetallic Compounds (x=0-0.04)**

L. HAWELEK, P. WŁODARCZYK, A. KOLANO-BURIAN, P. ZACKIEWICZ, M. KAMINSKA, Institute of Non-Ferrous Metals, Gliwice, Poland; A. CHROBAK, University of Silesia, Institute of Physics, Katowice, Poland

**FF:P10 The Magnetocaloric Effect of GdFe<sub>1-x</sub>CoxSi Compounds**

P. ZACKIEWICZ, L. HAWELEK, P. WŁODARCZYK, M. KAMINSKA, A. KOLANO-BURIAN, Institute of Non-Ferrous Metals, Materials Science Department, Laboratory of Advanced Magnetic Materials, Gliwice, Poland; A. CHROBAK, University of Silesia, Institute of Physics, Katowice, Poland

**FF:P11 Entropy Change Calculations for Pure Gd and a Ni-Mn-Cu-Ga Heusler Alloy: Constant Field vs. Constant Temperature Experiment**

J. FERENC, M. KOWALCZYK, R. WRÓBLEWSKI, G. CIESLAK, K. SIELICKI, M. LEONOWICZ, T. KULIK, Faculty of Materials Science and Engineering, Warsaw University of Technology, Warsaw, Poland

**FF:P12 First Principles Investigations of Magnetic and Structural Properties of Heusler Fe-Mn-Al and Fe-Ni-Mn-Al Alloys**

V.D. BUCHELNIKOV, M.A. TUFTULLINA, Chelyabinsk State University, Chelyabinsk, Russia; V.V. SOKOLOVSKIY, Chelyabinsk State University, Chelyabinsk, Russia, National University of Science and Technology "MISIS", Moscow, Russia; M.A. ZAGREBIN, Chelyabinsk State University, Chelyabinsk, Russia, South Ural State University (National University), Chelyabinsk, Russia

**FF:P13 Absorption of Electromagnetic Waves by Graphene - Magnetic Semiconductor Superlattice**

I.V. BYCHKOV, D.A. KUZMIN, Chelyabinsk State University, Chelyabinsk, Russia; V.G. SHAVROV, Kotelnikov Institute of Radioengineering and Electronics of the Russian Academy of Sciences, Moscow, Russia

**FF:P14 Ab initio and Monte Carlo Studies of Magnetic and Magnetocaloric Properties in Polycrystalline Heusler Alloys**

V.V. SOKOLOVSKIY, Chelyabinsk State University, Chelyabinsk, Russia, National University of Science and Technology "MISIS", Moscow, Russia; V.D. BUCHELNIKOV, O.O. PAVLUKHINA, J.A. KUZMINA, Chelyabinsk State University, Chelyabinsk, Russia, V.V. SOKOLOVSKIY, M.A. ZAGREBIN, Chelyabinsk State University, Chelyabinsk, Russia, South Ural State University (National University), Chelyabinsk, Russia

**FF:P15 Emission of Electromagnetic Waves by NiMnGaFe Alloy at Structural Phase Transition**

**I.V. BYCKHOV**, D.A. KUZMIN, Chelyabinsk State University, Chelyabinsk, Russia; D.V. KALENOV, A.P. KAMANTSEV, V.V. KOLEDOV, D.S. KUCHIN, V.G. SHAVROV, Kotelnikov Institute of Radioelectronics and Electronics of the Russian Academy of Sciences, Moscow, Russia

**FF:P16 Phase Diagram of Ni<sub>50</sub>Mn<sub>35</sub>In<sub>15</sub> Heusler Alloy with Exchange Inversion**

**M.A. ZAGREBIN**, National Research South Ural State University, Chelyabinsk, Russia, Chelyabinsk State University, Chelyabinsk, Russia; V.D. BUCHELNICKOV, K.I. KOSTROMITIN, Chelyabinsk State University, Chelyabinsk, Russia

**FF:P17 Synthesis and Magnetism in Fe<sub>5</sub>(Si,P)B<sub>2</sub>**

**J. CEDERVALL**, M. SAHLBERG, Department of Chemistry - The Angstrom Laboratory, Uppsala University, Uppsala, Sweden

**FF:P18 Microencapsulation Process of Intermetallic Compounds with Sn for Applications in Magnetic Refrigerators and Thermomagnetic Motors**

**C.S. FRANCISCO**, S. GAMA, M.R. FELEZ, R.A.G. SILVA, Departamento de Ciencias Exatas e da Terra, UNIFESP - Diadema, SP, Brazil

**SYMPORIUM FG****PHOTOVOLTAIC SOLAR ENERGY CONVERSION: SILICON AND BEYOND****Oral Presentations****Session FG-1****Wafer-based Silicon and High-efficiency Solar Cells****FG-1:IL01 Direct Growth of III-V Compound Semiconductors on Silicon for High-efficiency Solar Cells**

**T. HANNAPPEL**, O. SUPPLIE, S. BRÜCKNER, P. KLEINSCHMIDT, Helmholtz-Zentrum Berlin, Germany, and Ilmenau University of Technology, Germany; O. ROMANYUK, Academy of Sciences of the Czech Republic, Prague, Czech Republic; F. GROSSE, Paul-Drude Institut für Festkörperelektronik, Berlin, Germany

**FG-1:IL02 Crystalline Silicon for Wafer-based Solar Cells**

**DEREN YANG**, State Key Laboratory of Silicon Materials and Department of Materials Science and Engineering, Zhejiang University, Hangzhou, China

**FG-1:IL03 Degradation Modeling of InGaP/GaAs/Ge Triple-junction Solar Cells Irradiated by Protons**

**S.I. MAXIMENKO**<sup>1</sup>, M.P. LUMB<sup>2</sup>, S.R. MESSENGER<sup>1</sup>, R. HOHEISEL<sup>2</sup>, C. AF-FOUDA<sup>1</sup>, D. SCHEIMAN<sup>1</sup>, M. GONZALEZ<sup>3</sup>, J. LORENTZEN<sup>1</sup>, P. P. JENKINS<sup>1</sup>, R.J. WALTERS<sup>1</sup>, <sup>1</sup>Naval Research Laboratory, Washington, DC, USA; <sup>2</sup>The George Washington University, Washington, DC, USA; <sup>3</sup>Sotera Defense Solutions, Annapolis Junction, MD, USA

**Session FG-2****Thin-film Photovoltaics****FG-2:IL01 Current Status and Future Prospects of the CIGS PV Technology**

**S. NIKI**<sup>1</sup>, S. ISHIZUKA<sup>1</sup>, Y. KWAMIKAWA<sup>1</sup>, H. KOMAKI<sup>1</sup>, K. MATSUBARA<sup>1</sup>, H. SHIBATA<sup>1</sup>, A. YAMADA<sup>1</sup>, N. TERADA<sup>2</sup>, T. SAKURAI<sup>3</sup>, K. AKIMOTO<sup>3</sup>, <sup>1</sup>Research Center for Photovoltaic Technologies, AIST, Central 2, Tsukuba, Ibaraki, Japan; <sup>2</sup>Kagoshima University, Kagoshima, Kagoshima, Japan; <sup>3</sup>Tsukuba University, Tsukuba, Ibaraki, Japan

**FG-2:IL02 Development of Flexible CIGS and CdTe Solar Cells**

**A.N. TIWARI**, Laboratory for Thin Films and Photovoltaics, Empa - Swiss Federal Laboratories for Material Science and Technology, Dübendorf, Switzerland

**FG-2:IL03 Transparent Conductors for Thin Film Solar Cells**

**R.E. TREHARNE**, J.D. MAJOR, A. RAHSED, L.J. PHILLIPS, **K. DUROSE**, Stephenson Institute for Renewable Energy, University of Liverpool, Chadwick Building, Peach St, Liverpool, UK

**FG-2:L04 Dynamics of the CdTe Activation Treatment: Effect on the Electrical and Structural Properties of the Absorber**

**A. ROMEO**<sup>1</sup>, A. SALAVE<sup>1</sup>, I. RIMMAUDO<sup>1</sup>, F. PICCINELLI<sup>2</sup>, D. MENOSSI<sup>3</sup>, A. BOSIO<sup>3</sup>, N. ROMEO<sup>3</sup>, <sup>1</sup>LAPS-Laboratory for Applied Physics, Department of Computer Science, University of Verona, Verona, Italy; <sup>2</sup>Department of Biotechnology, University of Verona, Verona, Italy; <sup>3</sup>Physics and Earth Science Department, University of Parma, Italy

**FG-2:L05 Junction Formation for Chalcopyrite Solar Cells**

**R. KLENK**, Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany

**FG-2:L06 Current Status of Multijunction Thin-film Silicon Based Solar Cells: From State-of-the art Devices to Eesthetic Building Elements**

**J.-W. SCHÜTTAUF**, C. BALLIF, Ecole Polytechnique Fédérale de Lausanne (EPFL), Photovoltaics and Thin Film Electronics Laboratory, Neuchâtel, Switzerland

**FG-2:L07 The ILGAR Deposition Method - A Flexible Process for Buffer Layers in Highly Efficient CIS Solar Cells**

**Ch.-H. FISCHER**, R. SÁEZ ARAOZ, J. KRAMMER, T. KÖHLER, M. KRÜGER, Y. FU, M. POMASKA, A. STEIGERT, I. LAUERMANN, S. HARNDT, M.C. LUX-STEINER, Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; F. HERGERT, Bosch Solar CISTech, Brandenburg, Germany

**FG-2:L08 Chalcopyrite Based Solar Materials Grown by Vacuum and Non-vacuum Methods**

**A. LE DONNE**, P. GARATTINI, S. TOMBOLATO, B. VODOPIVEC, M. AC-CIARRI, S. BINETTI, Dept. of Materials Science and Solar Energy Research Center (MIB-SOLAR), University of Milano-Bicocca, Milan, Italy; S. MAR-CHIONNA, RSE S.p.A., Milan, Italy

**Session FG-3****Emerging Technologies and New Concepts****FG-3:IL01 Novel Approaches to DSSC Materials and Devices**

**C.A. BIGNOZZI**, Department of Chemical and Pharmaceutical Science, University of Ferrara, Ferrara, Italy

**FG-3:IL02 New Carbon-based Materials for the Preparation of Dye Sensitized Solar Cells**

**N. MARTÍN**<sup>1,2</sup>, **J.L. DELGADO**<sup>2</sup>, <sup>1</sup>Departamento de Química Orgánica, Facultad de Ciencias Químicas, Universidad Complutense de Madrid, Madrid, Spain; <sup>2</sup>IMDEA-Nanociencia, Facultad de Ciencias, Módulo CIX, 3<sup>a</sup> planta, Ciudad Universitaria de Cantoblanco, 28049 Madrid, Spain

**FG-3:IL03 Unravelling Electronic Processes and Phenomena in Organic Materials through Polymer Scientists' Tools**

**N. STINGELIN**, Imperial College London, London, UK

**FG-3:IL04 Modified Fullerenes for Organic Photovoltaics**

**N. MARTIN**, Organic Chemistry Department, Chemistry Faculty, Universidad Complutense de Madrid, Madrid, Spain; and IMDEA-Nanociencia, Ciudad Universitaria de Cantoblanco, Madrid, Spain

**FG-3:IL05 Design of Molecular Donors for Organic Photovoltaics: Smaller Structures for Great Ambitions**

**J. RONCALI**, Group Linear Conjugated Systems, CNRS Moltech-Anjou, University of Angers, Angers, France

**FG-3:IL06 New Pi-extended Building Blocks for Polymer Photovoltaics**

**K. TAKIMIYA**, I. OSAKA, Emergent Molecular Function Research Group, RIKEN Center for Emergent Matter Science (CEMS), Wako, Saitama, Japan

**FG-3:IL07 Novel Photovoltaic Porous Silicon/Organic Semiconductor Heterostructures**

**V. DEREK**<sup>1</sup>, M. SCHARBER<sup>2</sup>, N. SERDAR SARICIFTCI<sup>2</sup>, M. IVANDA<sup>1</sup>, <sup>1</sup>Rudjer Boskovic Institute, Zagreb, Croatia; <sup>2</sup>Linz Institute for Organic Solar Cells, Linz, Austria

**FG-3:IL08 The New Concept of Hybrid Perovskites for Photovoltaics: Understanding and Design by First-principles Calculations**

**A. FILIPPETTI**, A. MATTONI, CNR-IOM UOS Cagliari, c/o Dipartimento di Fisica, University of Cagliari, Monserrato (CA), Italy

**FG-3:IL09 Modelling of Inorganic (MoS<sub>2</sub>) and Carbon Nanotubes Surrounded by Fullerene's Shell**

**L.A. CHERNOZATONSKII**, **V.A. DEMIN**, IBCP RAS, Moscow, Russia

**FG-3:IL10 New Concepts in Organic Photovoltaics**

**G. LANZANI**, CNST@POLIMI, Istituto Italiano di Tecnologia e Department of Physics, Politecnico di Milano, Milan, Italy

**FG-3:IL11 High Efficient Polymeric Solar Cells-Towards Next Generation Renewable Energy**

**CHAIN-SHU HSU**, JHONG-SIAN WU, Dept. of Applied Chemistry, National Chiao Tung University, Hsinchu, Taiwan

**FG-3:L12 Coherent Electronic Energy Transfer and Organic Photovoltaics**

**E. COLLINI**, Dipartimento di Scienze Chimiche, Università di Padova, Padova, Italy

**FG-3:L13 Simulation of Optical Field Distribution in Organic Solar Cells Based on Tri-layer Anode TCO/Metal/TCO**

**HATEM DJEDJIGA**, BELKAID MOHAMMED SAID, UMMTO, FGEI, LATAGE, Tizi-Ouzou, Algeria

**FG-3:L14 Organic and Organometallic Molecules for DSSC**

**C. BAROLO**, N. BARBERO, G. VISCARDI, Dipartimento di Chimica, NIS Centre of Excellence, Università di Torino, Torino, Italy; JH YUM, MD.K. NAZERUDDIN, M. GRAETZEL, Laboratoire de Photonique et Interfaces, Institut des Sciences et Ingénierie Chimiques, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; F. SAUVAGE, Laboratoire de Réactivité et Chimie des Solides, Université de Picardie Jules Verne, CNRS UMR 7314, Amiens, France; V. GIANOTTI, M. MILANESIO, Dipartimento di Scienze e Innovazione Tecnologica, Università del Piemonte Orientale "A. Avogadro", Alessandria, Italy; S. FANTACCI, F. DE ANGELIS, Istituto CNR di Scienze e Tecnologie Molecolari (ISTM), c/o Dipartimento di Chimica, Università di Perugia, Perugia, Italy

**FG-3:L15 Engineering Hybrid Polymer/Metal-oxide Interfaces by Self-assembled Molecular Interlayers**

**A. MATTONI**, CNR-IOM Cagliari, Monserrato (CA), Italy

**FG-3:L16 Structural Analysis, Electronic and Optical Properties of the Synthesized Sb<sub>2</sub>S<sub>3</sub> Nanowires of High Aspect Ratio with Small Band Gap as Material for New Dye-sensitized Solar Cells**

**I.J. VALIDZIC<sup>1</sup>**, M. MITRIC<sup>1</sup>, N.D. ABAZOVIC<sup>1</sup>, B.M. JOKIC<sup>2</sup>, A.S. MILOSEVIC<sup>1</sup>, Z.S. POPOVIC<sup>1</sup>, F.R. VUKALOVIC<sup>3</sup>, <sup>1</sup>Vinca Institute of Nuclear Sciences, Belgrade, University of Belgrade, Serbia; <sup>2</sup>Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia; <sup>3</sup>Vinca Institute of Nuclear Sciences, Belgrade, Serbia

**FG-3:L17 Synthesis of Rod-coil Diblock Copolymer with Different Approaches and its Use for the Passivation of CdSe Nanocrystals**

**S. ZAPPIA**, S. DESTRI, ISMAC-CNR, Milano, Italy; M. STRICCOLI, CNR-IPCF, c/o Università di Bari - Dip. di Chimica, Bari, Italy; A. RIZZO, CNR-Nano-NNL, Lecce, Italy

**FG-3:L18 Synthesis of CuInSe<sub>2</sub>/ZnSe Core-shell Nanostructures: Structural and Luminescent Properties**

A.M. PENA, M.S. TOMAR, Physics Department, University of Puerto Rico, Mayaguez, Puerto Rico

### Special Session FG-4 Building Integrated Photovoltaics

**FG-4:IL01 Novel Applications of High-concentration Photovoltaics**

**K. BARNHAM**, Physics Department, Imperial College London, London, UK

**FG-4:IL02 Luminescent Solar Concentrators and Building Integrated Photovoltaics**

**R. FUSCO**, Eni S.p.A. Research Center for Non Conventional Energies, Istituto Eni Donegani, Novara, Italy

**FG-4:IL03 Engineering Large Area Polymer and Hybrid Solar Cells**

**T.M. BROWN**, F. DI GIACOMO, G. MINCUZZI, F. DE ROSSI, V. ZARDETTO, L. VESCE, A. GUIDOBALDI, F. GIORDANO, F. MATTEOCCHI, S. RAZZA, S. CASALUCI, L. LA NOTTE, D. MINEO, G. SUSANNA, L. SALAMANDRA, G. POLINO, G. SOSCIA, G. DE ANGELIS, E. PETROLATI, R. RICCITELLI, C. CORNARO, A. REALE, F. BRUNETTI, A. DI CARLO, Centre for Hybrid and Organic Solar Energy (CHOSE), University of Rome-Tor Vergata, Italy, and Dyepower Consortium, Roma, Italy

**FG-4:IL04 Industrialization of Third Generation Photovoltaics**

**F. MATTEUCCI**, R. GIANNANTONIO, DHITECH, Lecce, Italy; M. MANCA, IIT, Istituto Italiano di Tecnologia, Arnesano, (Le), Italy; G. GIGLI, NNL - National Nanotechnology Laboratory, CNR Istituto Nanoscienze, Distretto Tecnologico, Lecce, Italy

### Poster Presentations

**FG:P01 Low Temperature Annealing Effect on Electrical Properties of Multicrystalline Silicon Wafers for Photovoltaic Application**

**A. BOUCHEHAM**, D. BOUHAFS, N. KHELIFATI, B. PALAHOUANE, Centre de Recherche en Technologie des Semi-conducteurs pour l'Energétique, Algiers, Algeria

**FG:P02 Understanding the Formation of Native Defects in CdTe Films Studied with Low Temperature PL**

S. BAHKSHI, S. COLLINS, V. EVANI, M. KHAN, V. PALEKIS, **C. FEREKIDES**, Department of Electrical Engineering, University of South Florida, Tampa, FL, USA; C. ROTARU, Faculty of Physics and Engineering, Moldova State University, Chisinau, Moldova; S. VATAVU, Faculty of Physics and Engineering, Moldova State University, Chisinau, Moldova and Department of Electrical Engineering, University of South Florida, Tampa, FL, USA

**FG:P03 Effect of the Thermal Annealing on the Nitrogen Concentration of N-doped TiO<sub>2</sub> Thin Films Deposited by HiPIMS**

C. STEGEMANN<sup>1</sup>, D.A. DUARTE<sup>3,4</sup>, A.S. DA SILVA SOBRINHO<sup>1</sup>, **M. MASSI**<sup>1,2</sup>, <sup>1</sup>Technological Institute of Aeronautics, Plasmas and Processes Laboratory, São José dos Campos, SP, Brazil; <sup>2</sup>Federal University of São Paulo, Institute of Science and Technology, São José dos Campos, SP, Brazil; <sup>3</sup>Catholic University of Santa Catarina, Joinville, SC, Brazil; <sup>4</sup>Federal University of Santa Catarina, Center of Mobility Engineering, Joinville, SC, Brazil

**FG:P04 Environmental Friendly Solvents towards Roll-to-Roll Solar Cells Fabrication**

A. CALABRESE, **C. CARBONERA**, A. PELLEGRINO, A. SAVOINI, R. PO', Solar Energy Department Research Centre for Non-Conventional Energies, Istituto ENI Donegani, Eni S.p.A., Novara, Italy; D. KOTOWSKI, S. LUZZATI, Consiglio Nazionale delle Ricerche, CNR, Istituto per lo Studio delle Macromolecole, ISMAC, Milan, Italy

**FG:P05 Structural and Optical Properties of Sol-gel Thin Films for Photovoltaic Applications**

S. KERMADI<sup>1</sup>, **N. AGOUDJIL**<sup>2</sup>, S. SALI<sup>1</sup>, M. BOUMAOUR<sup>1</sup>, <sup>1</sup>Unité de Développement de la Technologie du Silicium, UDTs, Alger, Algeria; <sup>2</sup>Laboratoire de Physicochimie des Matériaux, USTHB, Alger, Algeria

**FG:P06 Atomic Layer Deposition of TiO<sub>2</sub> Thin Films on FTO Substrates for Application in Dye-sensitized Solar Cells**

**R.S. PESSOA**, L.V. SANTOS, H.S. MACIEL, Nanotechplasma Laboratory, University of Paraíba Valley, São José dos Campos, SP, Brazil

## SYMPOSIUM FH

### RECENT DEVELOPMENTS IN THE RESEARCH AND APPLICATION OF TRANSPARENT CONDUCTING AND SEMICONDUCTING OXIDES

#### Oral Presentations

#### Session FH-1 Fundamentals

**FH-1:IL01 New Insights into Electronic and Structural Properties of Zinc Oxide**

**K. ELLMER**, Helmholtz-Zentrum für Materialien und Energie, Dept. Solar Fuels, Berlin, Germany

**FH-1:IL02 Structure and Performance of Oxide TFTs; High Mobility and High Stability**

**SANG YEOL LEE**, Department of Semiconductor Engineering, Cheongju University, Cheongju, Chungbuk, Korea

**FH-1:IL03 Optoelectronic Properties of CdO**

**T.D. VEAL**, Stephenson Institute for Renewable Energy and Department of Physics, University of Liverpool, Liverpool, UK

**FH-1:IL04 Fundamental Limits on Optical Transparency of Transparent Conducting Oxides**

**C.G. VAN DE WALLE**, D. STEIAUF, H. PEELAERS, Materials Department, University of California, Santa Barbara, CA, USA; E. KIOUPAKIS, Department of Materials Science and Engineering, University of Michigan, USA

**FH-1:IL05 Structure and Electronic Properties of In<sub>2</sub>O<sub>3</sub>(111) Surfaces**

K.H.L. ZHANG, A. BOURLANGE, D.J. PAYNE, **R.G. EGDELL**, Department of Chemistry, University of Oxford, Inorganic Chemistry Laboratory, Oxford, UK

**FH-1:IL06 Fundamentals of Reliability and Instability Issues in Amorphous Oxide Semiconductor TFTs**

**J.F. CONLEY Jr.**, School of EEECS, Intercollege Materials Program, Oregon State University, Corvallis, OR, USA

## FH-1:L07 First Principles Theory of Transparent Crystalline and Amorphous Oxide Conductors and Semiconductors

**J. MEDVEDEVA**, Department of Physics, Missouri University of Science and Technology, Rolla, MO, USA

## FH-1:L08 Finding Low Hole Effective Masses p-type Transparent Conducting Oxides through High-throughput Computing

**G. HAUTIER**, A. MIGLIO, G. CEDER<sup>1</sup>, G.-M. RIGNANESE, X. GONZE, Université Catholique de Louvain, Louvain-la-Neuve, Belgium; <sup>1</sup>Massachusetts Institute of Technology, USA

## FH-1:L09 Atomic and Electronic Structures of Various Phases of Zinc Tin Oxides by Ab-initio Calculations

JOOHWI LEE, **JUNG-HAE CHOI**, Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, South Korea; DEOK-YONG CHO, CFI-CES, Institute for Basic Science, and Department of Physics and Astronomy, Seoul National University, Seoul, South Korea; JISIM JUNG, UN KI KIM, SANG-HO RHA, CHEOL SEONG HWANG, WCU Hybrid Materials Program, Department of Materials Science and Engineering and Inter-University Semiconductor Research Center, Seoul National University, Seoul, South Korea

## FH-1:L10 Can the Kröger-Vink Approach Be Extended to Amorphous Oxides?

**T.O. MASON**, Northwestern University, Dept. of Materials Science & Engineering, Evanston, IL, USA

## FH-1:L11 Advancing TCO Technologies via the Application of Atomic Layer Deposition

**M.E. PEMBLE**<sup>1,2</sup>, M. BARDOSOVA<sup>2</sup>, S. KASSIM<sup>2</sup>, H. MANLEY<sup>2</sup>, J. MCGRATH<sup>2</sup>, S. O'BRIEN<sup>2</sup>, I.M. POVEY<sup>2</sup>, C. RYAN<sup>2</sup>, <sup>1</sup>Department of Chemistry, University College Cork, Cork, Ireland; <sup>2</sup>Tyndall National Institute, University College Cork, Cork, Ireland

## FH-1:L12 Real Time Tracking of Electron Dynamics

**M. SCHULTZE**<sup>1,2</sup>, F. KRAUSZ<sup>2</sup>, S.R. LEONE<sup>1</sup>, <sup>1</sup>Dept. of Chemistry, University of California at Berkeley, Berkeley, CA, USA; <sup>2</sup>Fakultät für Physik, Ludwig-Maximilians-Universität, Munich, Germany

## FH-1:L13 Electronic Structure of ZnO Quantum Dots as Studied by High-Frequency EPR, ESE and ENDOR Spectroscopy

**P.G. BARANOV**, Ioffe Physical-Technical Institute, St. Petersburg, Russia; S.B. ORLINSKII, Federal Center of Shared Facilities, Kazan State University, Kazan, Russia; C. DE MELLO DONEGÁ, Debye Institute for Nanomaterials Science, Utrecht University, Netherlands; J. SCHMIDT, Huygens Laboratory, Leiden University, Netherlands

## Session FH-2

### Material Design and Characterization

## FH-2:L01 Low-temperature Solution-processible Metal Oxide Nanoparticles for Interfacial Contact Layers in Organic Photovoltaics

YUN-JU LEE, JIAN WANG, D. BARREIRA, **JULIA W.P. HSU**, Department of Materials Science and Engineering, University of Texas at Dallas, Richardson, TX, USA

## FH-2:L02 In2O3 and ZnO Based Transparent Conductive Oxide Films with High Electron Mobility

**T. KOIDA**, H. SAI, H. SHIBATA, M. KONDO, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

## FH-2:L03 The Influence of Doping on Properties of Transparent Semiconducting Oxides

**HAO GONG**, Department of Materials Science and Engineering, National University of Singapore, Singapore

## FH-2:L04 Semiconductor Nanoheterostructures Based on Wide Gap Metal Oxides and A2B6 Quantum Dots

**M.N. RUMYANTSEVA**, A.S. CHIZHOV, R.B. VASILIEV, L.I. RYABOVA, D.R. KHOKHOLOV, A.M. GASKOV, Moscow State University, Moscow, Russia; A.M. ABAKUMOV, University of Antwerp, Antwerp, Belgium

## FH-2:L05 Molecular Monolayer Tuning of Organic/Metal Oxide Interfaces

T.M. BRENNER, G. CHEN, J. BRAID, T.E. FURTAK, **R.T. COLLINS**, Colorado School of Mines, Golden, CO, USA; D.C. OLSON, D.S. GINLEY, National Renewable Energy Laboratory, Golden, CO, USA

## FH-2:L06 Transparent Conductive and Semiconductive Oxides by Hollow Cathode Gas Flow Sputtering

**B. SZYSZKA**, R. MUJDINOV, TU Berlin, Berlin, Germany; T. JUNG, K. ORTNER, F. SCHMIDT, FhG-IST, Braunschweig, Germany

## FH-2:L07 New, Highly Conducting Si-doped ZnO Thin Films Prepared by Spray Pyrolysis

**V.L. KUZNETSOV**, N. RASHIDI, P.P. EDWARDS, Inorganic Chemistry Laboratory, Department of Chemistry, University of Oxford, Oxford, UK

## FH-2:L08 Conductive Path Formation Using Lattice Defects in Insulating Oxide Crystals

**A. NAKAMURA**, Nagoya University, Nagoya, Japan; E. TOCHIGI, Y. SATO, T. MIZOGUCHI, N. SHIBATA, Y. IKUHARA, University of Tokyo, Tokyo, Japan; K. TOYOURA, K. MATSUNAGA, Nagoya University, Nagoya, Japan

## FH-2:L09 Chemical Solution Deposition via Ink Jet Printing of Aqueous Al-doped ZnO Precursors

**K. VERNIEUWE**, P. LOMMENS, K. DE BUYSSEN, Ghent University, Department of Inorganic and Physical Chemistry, Belgium

## FH-2:L10 Combinatorial Synthesis and Thin Film Deposition of Transparent Conductors and Semiconductors

**J.D. PERKINS**, A. ZAKUTAYEV, J.J. BERRY, P.A. PARILLA, M.A.F.M. VAN HEST, T. GENNETT, D.S. GINLEY, National Renewable Energy Laboratory, Golden, CO, USA

## FH-2:L11 Efficiency Improvement of n-Oxide Semiconductor/p-Cu<sub>2</sub>O Heterojunction Solar Cells Fabricated on Thermally Oxidized Cu<sub>2</sub>O Sheets

**T. MIYATA**, Y. NISHI, T. MINAMI, Optoelectronic Device System R&D Center, Kanazawa Institute of Technology, Ishikawa, Japan

## FH-2:L12 Structural, Electrical and Optical Properties of Nanostructured Ta-doped TiO<sub>2</sub>

**P. MAZZOLINI**<sup>1,2</sup>, P. GONDONI<sup>1</sup>, C.S. CASARI<sup>1,2</sup>, A. LI BASSI<sup>1,2</sup>, <sup>1</sup>Dipartimento di Energia and NEMAS - Center for NanoEngineered Materials and Surfaces, Politecnico di Milano, Milano, Italy; <sup>2</sup>Center for Nano Science and Technology @PoliMI, Istituto Italiano di Tecnologia, Milano, Italy

## FH-2:L13 Structural, Electrical and Optical Characteristics of Spin-coated ZnO-based Transparent Thin Films

**N. VOROBYEVA**, M. RUMYANTSEVA, R. VASILIEV, V. KOZLOVSKIY, YU. SOSHNIKOVA, D. FILATOVA, A. GASKOV, Chemistry Department, Moscow State University, Moscow, Russia

## FH-2:L14 Nano- and Mesoscale Engineering of Al-doped ZnO by Pulsed Laser Deposition: Towards Flexible Scattering Electrodes

**P. GONDONI**<sup>1</sup>, P. MAZZOLINI<sup>1,2</sup>, V. RUSSO<sup>1</sup>, C.E. BOTTANI<sup>1,2</sup>, A. LI BASSI<sup>1,2</sup>, C.S. CASARI<sup>1,2</sup>, <sup>1</sup>Dipartimento di Energia and NEMAS - Center for NanoEngineered Materials and Surfaces, Politecnico di Milano, Milano, Italy; <sup>2</sup>Center for Nano Science and Technology @PoliMI, Istituto Italiano di Tecnologia, Milano, Italy

## FH-2:L15 Rational Design of p-type TCOs

**D.O. SCANLON**, University College London, Kathleen Lonsdale Materials Chemistry, Department of Chemistry, London, UK

## FH-2:L16 Site Occupancy in TCOs and the Relationship to Functional Properties

**M.F. TONEY**, SLAC National Accelerator Laboratory, Menlo Park, CA, USA

## FH-2:L17 Band Structure Engineering of Oxides for Energy Applications

**SU-HUAI WEI**, National Renewable Energy Laboratory, Golden, CO, USA

## FH-2:L18 Highly Diffuse Fluorine-doped SnO<sub>2</sub> Thin Films for Photovoltaic Applications

G. GIUSTI<sup>1</sup>, V. CONSONNI<sup>1</sup>, D.P. LANGLEY<sup>1,2</sup>, G. REY<sup>1</sup>, S. ZHANG<sup>1</sup>, Y. PELLEGRIN<sup>3</sup>, N.D. NGUYEN<sup>2</sup>, **D. BELLET**<sup>1</sup>, <sup>1</sup>Laboratoire des Matériaux et du Génie Physique, CNRS - Grenoble INP, Grenoble Cedex, France; <sup>2</sup>Laboratoire de Physique des Solides, Interfaces et Nanostructures, Département de Physique, Université de Liège, Liège, Belgique; <sup>3</sup>Laboratoire Chimie et Interdisciplinarité, Synthèse, Analyse, Modélisation, CNRS - Faculté des Sciences et des Techniques de Nantes, Nantes Cedex, France

## FH-2:L19 Effect of Temperature on Phase Transition of Ni-Co Oxide and Its Application on Optoelectronics

**SHU-YI TSAI**<sup>1</sup>, K.-Z. FUNG<sup>1</sup>, C.-N. WEI<sup>2</sup>, H.-Y. BOR<sup>2</sup>, <sup>1</sup>Research Center for Energy Technology and Strategy, Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan, ROC; <sup>2</sup>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology(CSIST), Gaoping village, Longtan Township, Taoyuan County, Taiwan, ROC

## Session FH-3

### Device Development and Applications

## FH-3:L01 Developing New TCOs for Renewable Applications

**D. GINLEY**, A. ZAKUTAYEV, N. WIDJONARKO, P. NDIONE, A. SIGDEL, P. PARILLA, J. BERRY, S. LANY, T. GENNETT, D. OLSON, J. PERKINS, NREL, Golden, CO, USA

## FH-3:L02 Advances in Photocatalytic Applications Utilizing Metal Oxide Compounds

**G. KIRIAKIDIS**<sup>1,2</sup>, V. BINAS<sup>1</sup>, <sup>1</sup>Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology (FORTH), Vasilika Vouton, Heraklion, Crete, Greece; <sup>2</sup>University of Crete, Physics Department, Heraklion, Crete, Greece

**FH-3:IL03 Preparation and Optical Characterization of ZnO Nanowires for Sensing and Optoelectronic Applications**

C. BARATTO<sup>1,2</sup>, E. COMINI<sup>2,1</sup>, I. CONCINA, M. FERRONI<sup>2,1</sup>, G. FAGLIA<sup>2,1</sup>, V. GALSTYAN<sup>2,1</sup>, R. KUMAR<sup>2,1</sup>, A. PONZONI<sup>2,1</sup>, A. VOMIERO<sup>2,1</sup>, D. ZAPPA<sup>2,1</sup>, **G. SBERVEGLIERI**<sup>2,1</sup>, <sup>1</sup>CNR INO, SENSOR, Brescia, Italy; <sup>2</sup>University of Brescia, Dept. of Information Engineering, Brescia, Italy

**FH-3:IL04 CMOS Oxides used for Amplifiers and Logic Circuits on Paper**

**R. MARTINS**<sup>1</sup>, A. NATHAN<sup>2</sup>, P. BARQUINHA<sup>1</sup>, L. PEREIRA<sup>1</sup>, E. FORTUNATO<sup>1</sup>, <sup>1</sup>CENIMAT/I3N, Departamento de Ciéncia dos Materiais, Faculdade de Ciéncias e Tecnologia (FCT), Universidade Nova de Lisboa (UNL), Caparica, Portugal; <sup>2</sup>Department of Engineering, Cambridge University, Cambridge, UK

**FH-3:IL05 Why Amorphous Transparent Conducting Oxides are so Interesting?**

**E. FORTUNATO**, G. GONÇALVES, P. BARQUINHA, L. PEREIRA, R. MARTINS, CENIMAT/I3N, Departamento de Ciéncia dos Materiais, Faculdade de Ciéncias e Tecnologia, FCT, Universidade Nova de Lisboa and CEMOP-UNINOVA, Caparica, Portugal

**FH-3:IL06 All Amorphous Metal Oxide p-n Diodes**

**M. GRUNDMANN**, Universität Leipzig, Institut für Experimentelle Physik II, Leipzig, Germany

**FH-3:IL07 Preparation of Large Area Graphene by a Roll-to-roll Microwave Plasma Chemical Vapor Deposition for Transparent Electrode Applications**

**M. HASEGAWA**, Nanotube Research Center, National Institute of Advance Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan

**FH-3:IL08 Transparent P-type Cu<sub>2</sub>O/SnO Bilayer Thin Film Transistors**

**H.A. AL-JAWHARI**, J.A. CARAVEO-FRESCAS, M.N. HEDHILI, H.N. ALSHAREEF, Department of Physics, King Abdulaziz University, Jeddah, Saudi Arabia; Materials Science and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

**Poster Presentations****FH:P01 Oxyfluoride Glasses as Promising Materials**

**N. SAVCHENKO**, L. IGNATEVA, YU. MARCHENKO, Institute of Chemistry FEB RAS, Vladivostok, Russia; V. BOUZNIK, Baikov Institute of Metallurgy and Materials Science, Moscow, Russia

**FH:P02 Electrical and Optical Properties of ZnO:Er Films**

**Y. KAFADARYAN**<sup>1</sup>, N. AGHAMALYAN<sup>1</sup>, A. IGITYAN<sup>1</sup>, S. PETROSYAN<sup>1</sup>, N. ARAMYAN<sup>2</sup>, R. HOVSEPYAN<sup>1</sup>, <sup>1</sup>Institute for Physical Research, NAS, Ashtarak, Armenia; <sup>2</sup>Institute of Radiophysics & Electronics, NAS, Ashtarak, Armenia

**FH:P03 Synthesis and Characterization of Doped Form of Poly o-anisidine Nanoparticles by Chemical Oxidation Polymerization**

**K. KHAMNGOEN**, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

**FH:P04 Facile Synthesis of One-dimensional Bismuth Oxychloride Nanostructures as Potential Visible Light-driven Photocatalysts**

**LI-CHIA TIEN**, YU-CHEN LAI, YU-LIN LIN, SENG-YU CHEN, Department of Materials Science and Engineering, National Dong Hwa University, Shoufeng, Hualien, Taiwan

**FH:P05 Synthesis of Homogeneous Indium-free Conductive Nanomaterials by a Water Controlled-release Solvothermal Process**

**SHU YIN**, C.S. GUO, B. LIU, Q. DONG, T. SATO, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

**FH:P06 ZnS Thin Films by Chemical Bath Deposition**

**P.A. LUQUE**<sup>1</sup>, M.A. QUEVEDO-LOPEZ<sup>2</sup>, A. OLIVAS<sup>1</sup>, <sup>1</sup>Centro de Nanociencias y Nanotecnología-UNAM, Ensenada, B.C. México; <sup>2</sup>Department of Materials Science and Engineering, University of Texas at Dallas, Richardson, TX, USA

**FH:P07 Effect of Oxygen Partial Pressure on Electrical Properties of Ga<sub>x</sub>P co-doped ZnO Thin Films**

WOO-SEOK NOH, JUNG-A LEE, JOON-HYUNG LEE, YOUNG-WOO HEO, HEE-YOUNG LEE\*, **JEONG-JOO KIM**, Kyungpook National University, Daegu, Korea; \*Yeungnam University, Korea

**FH:P08 Polymorphism and Properties in Bi<sub>2</sub>Mo<sub>1-x</sub>NbxO<sub>6-y</sub> Solid Solutions**

**E.P. KHARITONOV**, V.I. VORONKOVA, M.V. Lomonosov Moscow State University, Moscow, Russia

**FH:P09 Synthesis of Indium Doped ZnO TCO Films for Organolead Hybrid PV Cells**

**O. DINNER**, G.E. SHTER, G.S. GRADER, Technion-Israel Institute of Technology, Haifa, Israel

**FH:P10 In<sub>2</sub>O<sub>3</sub>-ZnO-SnO<sub>2</sub> Transparent Conducting Oxide Thin Films with Very Low Indium Content**

M.A. PUTRI, KI HWAN KIM, CHANG YOUNG KOO, JUNG-A LEE\*, JEONG-JOO KIM\*, **HEE YOUNG LEE**, Yeungnam University, Gyeongsan, South Korea; \*Kyungpook National University, South Korea

## SYMPOSIUM FI MATERIALS AND TECHNOLOGIES FOR SOLID STATE LIGHTING

**Oral Presentations****Session FI-1****Material Growth and Processing****FI-1:IL01 The Transition to Solid State Lighting: Trends and Challenges**

**B. WESSLER**, OSRAM GmbH, Munich, Germany

**FI-1:IL02 Nanostructure InGaN / GaN Light Emitting Diodes**

**P.D. DAPKUS**, Y. LIN, Y. NAKAJIMA, A. SEYED, Center for Energy Nanoscience, Ming Hsieh Department of Electrical Engineering, University of Southern California, Los Angeles, CA, USA

**FI-1:IL03 Fabrication of Nitride Devices by Pulsed Sputtering Deposition**

**H. FUJIOKA**, Institute of Industrial Science, The University of Tokyo, Tokyo, Japan; CREST-JST, Chiyoda-ku, Tokyo, Japan

**FI-1:IL04 Universal Bipolar Host Materials for Highly Efficient Electrophosphorescent Devices**

**KEN-TSUNG WONG**, Department of Chemistry, National Taiwan University, Taipei, Taiwan

**FI-1:IL05 Semipolar GaN-based Optoelectronic Structures on Large Area Substrates**

**F. SCHOLZ**, T. MEISCH, M. CALIEBE, Institute of Optoelectronics, University of Ulm, Ulm, Germany; B. NEUSCHL, K. THONKE, Institute of Quantum Matter, University of Ulm, Ulm, Germany

**FI-1:IL06 AlGaN Growth for Electron-Beam-Excitation Ultraviolet Light Source**

**H. MIYAKE**<sup>1</sup>, F. FUKUYO<sup>1,2</sup>, K. HIRAMATSU<sup>1</sup>, Y. KOBAYASHI<sup>2</sup>, <sup>1</sup>Department of Electrical and Electronic Engineering, Mie University, Japan; <sup>2</sup>Hamamatsu Photonics K.K., Japan

**FI-1:IL07 Novel Blue Fluorescent Organic Emitters Based on Dual Core Chromophores for Highly Efficient OLED Device**

**JONGWOOK PARK**, Department of Chemistry, Catholic University of Korea, Yokkog, Bucheon, Kyunggi, Korea

**FI-1:IL08 DERI Method; Possible Approach to Longer Wavelength Light Emitters Based on NitrideSemiconductors**

**Y. NANISHI**<sup>1</sup>, T. YAMAGUCHI<sup>1</sup>, T. ARAKI<sup>1</sup>, <sup>1</sup>Ritsumeikan University, Kusatsu, Japan; <sup>2</sup>Kogakuin University, Hachioji, Japan

**FI-1:IL09 Development of AlN-based Technology for Deep UV Light Sources**

**Z. SITAR**<sup>1,2</sup>, B. MOODY<sup>1</sup>, S. CRAFT<sup>1</sup>, R. SCHLESSER<sup>1</sup>, R. DALMAU<sup>1</sup>, J. XIE<sup>1</sup>, S. MITA<sup>1</sup>, T. RICE<sup>2</sup>, J. TWEEDY<sup>2</sup>, J. LEBEAU<sup>2</sup>, L. HUSSEY<sup>2</sup>, R. COLLAZO<sup>2</sup>, B. GADDY<sup>2</sup>, D. IRVING<sup>2</sup>, <sup>1</sup>HexaTech, Inc., Morrisville, North Carolina, USA; <sup>2</sup>Dept. of Materials Science and Engineering, North Carolina State Univ., Raleigh, USA

**FI-1:IL10 Manufacturing OLED Using Plate-source Evaporation**

**CHIENCHIH CHEN**, S.H. LAI, F.C. TUNG, S.H. CHEN, Y.S. WANG, K.C. CHEN, B.K. CHANG, C.-C. WANG, C.-Y. CHEN, Mechanical and Systems Research Laboratories, Industrial Technology Research Institute, Chutung, Hsinchu, Taiwan, ROC

**FI-1:L11 Monolithic White-light LED Based on GaN Doped with Beryllium**

**H. TEISSEYRE**<sup>1,2</sup>, M. BOCKOWSKI<sup>2</sup>, S. GRZANKA<sup>2</sup>, I. GRZEGORY<sup>2</sup>, A. KOZANECKI<sup>1</sup>, B. DAMILAN<sup>2</sup>, YA. ZHYDACHEVSKII<sup>1</sup>, M. KUNZER<sup>4</sup>, K. HOLC<sup>4</sup>, U.T. SCHWARZ<sup>4</sup>, <sup>1</sup>Institute of Physics PAS, Warsaw, Poland; <sup>2</sup>Institute of High Pressure PAS, Warsaw, Poland; <sup>3</sup>CRHEA-CNRS, Valbonne Sophia Antipolis, France; <sup>4</sup>Fraunhofer Institute for Applied Solid State Physics IAF, Freiburg, Germany

## FI-1:L12 Development of Organic and Inorganic Phosphors for White Emitting Blue and Near UV LEDs

**G. CHADEYRON**, R. BOONSIN, J-P. ROBLIN, D. BOYER, R. MAHIOU, Clermont Université, Université Blaise Pascal, Ecole Nationale Supérieure de Chimie, Institut de Chimie (ICCF), Clermont-Ferrand, France

## FI-1:L13 Steering the Si Doping of the Ultimate Solid-state Semiconductor AlN

**A. KAKANAKOVA-GEORGIEVA**, R.B. DOS SANTOS, Department of Physics, Chemistry and Biology (IFM), Linköping University, Sweden; R. RIVELINO, F. DE BRITO MOTA, Instituto de Física, Universidade Federal da Bahia, Brazil; G.K. GUEORGUIEV, Department of Physics, Chemistry and Biology (IFM), Linköping University, Sweden

## Session FI-2 Electro-optical Characterization

### FI-2:IL01 Advanced Characterization Methods of InGaN-based LEDs

**JONG-IN SHIM**, HYUNSUNG KIM, DONG-SOO SHIN, Hanyang University, ERICA Campus, Ansan, Korea

### FI-2:IL02 Tailoring Electro-optical Properties of Cyclometalated Iridium Complexes

**E. BARANOFF**, School of Chemistry, the University of Birmingham, Edgbaston, Birmingham UK

### FI-2:IL03 Aberration Corrected High Resolution TEM Characterisation of Nitrides Materials and Devices

**M. ALBRECHT**, T. SCHULZ, T. MARKURT, T. REMMELE, Leibniz-Institut für Kristallzüchtung, Berlin, Germany; A. DUFF, J. NEUGEBAUER, Max-Planck-Institut für Eisenforschung, Germany; F. NIPPERT, G. CALLSEN, A. HOFFMANN, Technische Universität Berlin, Fakultät II, Institut für Festkörperphysik Sekretariat EW 5-1, Berlin, Germany

### FI-2:IL04 Novel Microlenses for Light Extraction in OLED Lighting

**MAO-KUO WEI**, Department of Materials Science and Engineering, National Dong Hwa University, Taiwan, ROC; JIUN-HAW LEE, HOANG-YAN LIN, Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan, ROC

### FI-2:IL05 Terahertz Spectroscopy Study of Semiconductor Nano-structures

**XINHAI ZHANG**, Department of Electrical and Electronic Engineering, South University of Science and Technology of China, Shenzhen, China

### FI-2:IL06 Hydrogen Trap Mediated Cathodoluminescence Kinetics in Mg Doped p-type GaN

**M.R. PHILLIPS<sup>1</sup>**, C. NENSTIEL<sup>1,2</sup>, M. HOFFMANN<sup>2,3</sup>, G. CALLSEN<sup>1,2</sup>, M. WINTREBERT-FOUQUET<sup>4</sup>, C. TON-THAT<sup>1</sup>, A. HOFFMANN<sup>2</sup>, <sup>1</sup>Microstructural Analysis Unit, University of Technology, Sydney, Broadway, Australia; <sup>2</sup>Technische Universität Berlin, Department of Solid State Physics, Berlin, Germany; <sup>3</sup>Material Science and Engineering, North Carolina State University, Raleigh, NC, USA; <sup>4</sup>BluGlass Limited, Silverwater, NSW, Australia

### FI-2:IL07 Human- and Artwork-friendly Lighting Sources Based on Candle Light-style OLED

**JWO-HUEI JOU**, Department of Materials Science and Engineering, National Tsing Hua University, Hsin-Chu, Taiwan, ROC

### FI-2:IL08 Luminescence Enhancement of ZnS:Mn by Eu<sup>2+</sup> Doping

**WEI CHEN**, The SAVANT Center Department of Physics, The University of Texas at Arlington, Arlington, TX, USA

## Session FI-3 Device Structures and Manufacturing

### FI-3:IL01 Nano Technologies for Light Extractions in OLEDs

JIN-WOOK SHIN, DOO-HEE CHO, CHUL WOONG JOO, JAEHYUN MOON, SEUNK KOO PARK, JONGHEE LEE, JUN-HAN HAN, NAM SUNG CHO, JOOHYUN HWANG, JIN WOO HUH, HYE YONG CHU, **JEONG-IK LEE**, ETRI, Daejeon, Korea

### FI-3:IL02 Microstructured GaN Light Emitting Diodes for Visible Light Communications and Solid State Lighting

**M.D. DAWSON**, Institute of Photonics, University of Strathclyde, Wolfson Centre, Glasgow, UK

### FI-3:IL03 InGaN/GaN Quantum Dot and Nanowire LEDs and Lasers

**P. BHATTACHARYA**, T. FROST, A. BANERJEE, S. JAHANGIR, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, USA

### FI-3:IL04 Electrically Pumped Low-threshold Random Lasing from Hydrothermal ZnO Film

**CANXING WANG**, YANG YANG, XIANGYANG MA, DEREN YANG, State Key Laboratory of Silicon Materials and Department of Materials Science and Engineering, Zhejiang University, Hangzhou, China

### FI-3:IL05 White LEDs on Flexible Substrates

**M. WILLANDER**, Dept. of Science and Technology, Linköping University, Norrköping, Sweden

### FI-3:IL06 Tandem OLEDs for Lighting

**LIANG-SHENG LIAO**, Institute of Functional Nano and Soft Materials (FUN-SOM), Soochow University, Suzhou, Jiangsu, China

### FI-3:IL07 Quantum Dots Based on Nitrides Candidates for Single Photon Sources and Light Emitting Devices

**A. HOFFMANN**, Technical University of Berlin, Institute of Solid State Physics, Berlin, Germany

### FI-3:IL08 Laser Diode Arrays as a Source of Solid State Lighting

**M. LESZCZYNSKI**, P. PERLIN, R. CZEKNECKI, E. GRZANKA, S. GRZANKA, A. KAFAR, G. TARGOWSKI, M. SARZYNSKI, T. SUSKI, Institute of High Pressure Physics UNIPRESS and TopGaN, Warsaw, Poland

## Poster Presentations

### FI:P01 Wide Emission Spectra of Eu<sup>2+</sup>-doped (Sr,M)2Si(O1-xNx)4 (M: Ca<sup>2+</sup>, Ba<sup>2+</sup>) Oxynitrides Under Near UV Excitation

JAEHAN PARK, JUNGKYU PARK, YOUNG JIN KIM, Department of Materials Science and Engineering, Kyonggi University, Suwon, Korea

### FI:P02 Synthesis, Structural and Electrical Properties of PPy-DBSA-Y2O3 Composites

**M. SAEED**, ABDUL SHAKOOR, EJAZ AHMAD, Polymer Physics Laboratory, Department of Physics, Bahauddin Zakariya University Multan, Pakistan

### FI:P03 Tunable Upconversion Luminescence of Scheelite Structural Crystals

JUNG-IL LEE, SUNG-LIM RYU, **JEONG HO RYU**, Department of Materials Science and Engineering, Korea National University of Transportation, Chungju, Chungbuk, Korea; JOON HWANG, Department of Aeronautical and Mechanical Design Engineering, Korea National University of Transportation, Chungju, Chungbuk, Korea; CHANG WOO HONG, Department of Civil Engineering, Korea National University of Transportation, Chungju, Chungbuk, Korea

### FI:P04 Electrical and Optical Properties of Ge<sub>1-y</sub>Sny Grown on Si Substrates

**MEE-YI RYU<sup>1</sup>**, YUNG KEE YEO<sup>2</sup>, T. HARRIS<sup>2</sup>, J. KOUVETAKIS<sup>3</sup>, R. BEELER<sup>3</sup>, <sup>1</sup>Kangwon National University, Korea; <sup>2</sup>Air Force Institute of Technology, USA; <sup>3</sup>Arizona State University, USA

### FI:P05 Determination of Barrier Lowering of ZnO Schottky Nanodevice upon UV Light Illumination

**SHUEN-JIUM YOU**, YING-JHE WANG, CHENG-YAO CHIU, MING-YEN LU, Graduate Institute of Opto-Mechatronics and Advanced Institute of Manufacturing with High-tech Innovations, National Chung Cheng University, Chiayi, Taiwan

### FI:P06 The Effect of UV Treatment to the Growth of ZnO Nanowires on Graphene

**CHENG-YAO CHIU**, YING-JHE WANG, SHUEN-JIUM YOU, MING-YEN LU, Graduate Institute of Opto-Mechatronics and Advanced Institute of Manufacturing with High-tech Innovations, National Chung Cheng University, Chiayi, Taiwan

### FI:P07 Selective-grown ZnO Nanowires on Periodic Si Nanorod Arrays for Optoelectronic Applications

**YING-JHE WANG**, SHUEN-JIUM YOU, CHENG-YAO CHIU, MING-YEN LU, Graduate Institute of Opto-Mechatronics and Advanced Institute of Manufacturing with High-tech Innovations, National Chung Cheng University, Chiayi, Taiwan

# SYMPOSIUM FJ

## MATERIALS CHALLENGES FOR FUTURE NUCLEAR FISSION AND FUSION TECHNOLOGIES

### *Oral Presentations*

#### Session FJ-1

##### Structural Components for Nuclear Fission and Fusion Applications

**FJ-1:L01 Materials Challenges for Sustainable Fuel Cycles and Nuclear Waste Transmutation**

**C. FAZIO**, JRC-ITU, Eggenstein Leopoldshafen, Germany

**FJ-1:L02 Advanced Steels for Fission and Fusion Reactors**

**A. MOESLANG**, KIT, IAM, Karlsruhe, Germany

**FJ-1:L03 Adding Toughness to Nano-structured Ferritic Alloys**

**THAK SANG BYUN**, D.T. HOELZER, Oak Ridge National Laboratory, Oak Ridge, TN, USA; JI HYUN YOON, Korea Atomic Energy Research Institute, Daejeon, S. Korea; JEOUNG HAN KIM, Korea Institute of Materials Science, Changwon, S. Korea; G.R. ODETTE, University of California - Santa Barbara, Santa Barbara, CA, USA; S.A. MALOY, Los Alamos National laboratory, Los Alamos, NM, USA

**FJ-1:L04 Challenges in Fusion Divertor Design**

**M. RIETH<sup>1</sup>**, S. ANTUSCH<sup>1</sup>, L. COMMINT<sup>1</sup>, J. HOFFMANN<sup>1</sup>, J. REISER<sup>1</sup>, T. BARRET<sup>2</sup>, D. HANCOCK<sup>2</sup>, M. PORTON<sup>2</sup>, W. TIMMIS<sup>2</sup>, C. WALDON<sup>2</sup>, D. ARMSTRONG<sup>3</sup>, B. GHIDERSA<sup>4</sup>, <sup>1</sup>Karlsruhe Institute of Technology (KIT), Institute for Applied Materials, Karlsruhe, Germany; <sup>2</sup>Culham Centre for Fusion Energy, Culham Science Centre, Abingdon, UK; <sup>3</sup>Department of Materials, University of Oxford, UK; <sup>4</sup>Karlsruhe Institute of Technology (KIT), Institute for Neutron Physics and Reactor Technology, Karlsruhe, Germany

**FJ-1:L05 Study on the Fabrication and Joining Technologies of Ferritic/Martensitic ODS Steel Structural Components for Future Fast Reactor Applications**

**SUK HOON KANG**, SANHOON NOH, YOUNG-BUM CHUN, JINSUNG JANG, TAE KYU KIM, Nuclear Materials Division, Korea Atomic Energy Research Institute, Daejeon, Republic of Korea

**FJ-1:L06 Crystallographic Relationship of Y<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub> Particles with Matrix in Austenitic ODS Steels**

**JINSUNG JANG**, XIAODONG MAO, CHANG HEE HAN, TAE KYU KIM, Nuclear Materials Division, Korea Atomic Energy Research Institute, Daejeon, Korea

**FJ-1:L07 Behavior at High Temperature of Metallic Liners (Ta, Nb) Used in the Sandwich Cladding Material of the GFR**

**L. CHARPENTIER**, M. BALAT-PICHELIN, PROMES-CNRS, Odeillo, France

**FJ-1:L08 Investigation of Mechanical and Corrosion Properties of Ni-based Alloy for VHTR at 950 °C with Alloying Element and Heat Treatment**

**DONG-JIN KIM**, SU JIN JUNG, BYUNG HAK MOON, SUNG WOO KIM, YUN SOO LIM, HONG PYO KIM, Nuclear Materials Division, Korea Atomic Energy Research Institute (KAERI), Yuseong, Daejeon, Korea

#### Session FJ-2

##### Low Activation Structural Materials for Nuclear Fusion Systems

**FJ-2:L01 Indian Test Blanket Module in ITER - Development of RAFM Steel and Fabrication Technology**

**T. JAYAKUMAR**, Metallurgy & Materials Group Indira Gandhi Centre for Atomic Research, Kalpakkam, India; E. RAJENDRA KUMAR, TBM Division, Institute of Plasma Research, Gandhi Nagar, India

**FJ-2:L02 Recent Developments on RAFM Steels**

**E. WAKAI**, M. ANDO, N. OKUBO, K. WATANABE, H. NAKAMURA, H. TANIGAWA, Japan Atomic Energy Agency, Naka-gun, Japan; D. BERNARDI, ENEA, Italy

**FJ-2:L03 Effects of Neutron Irradiation on MAX-phase Ceramics**

**Y. KATOH**, CHUNGHAO SHIH, A. PEREZ-BERGQUIST, K.J. LEONARD, S.J. ZINKLE, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, USA; T. TOYAMA, T. SHIKAMA, Institute of Materials Research, Tohoku University, Japan

**FJ-2:L04 Study on the Creep and Fatigue Properties of CLAM Steel**

**YANYUN ZHAO<sup>1,2</sup>**, **SHAOJUN LIU<sup>2</sup>**, **QUNYING HUANG<sup>2</sup>**, **BOYU ZHONG<sup>2</sup>**, <sup>1</sup>FDS Team alnstitute of Nuclear Energy Safety Technology, Chinese Academy of Sciences, Hefei, Anhui, China; <sup>2</sup>University of Science and Technology of China, Hefei, Anhui, China

**FJ-2:L05 Effect of Phase Transformation on Impact Properties In the Weld Heat-affected Zone of a Reduced Activation Ferritic/Martensitic Steel**

**JOONOH MOON**, CHANG-HOON LEE, TAE-HO LEE, Korea Institute of Materials Science (KIMS), Changwon, South Korea

**FJ-2:L06 Effect of Cooling Rate of Normalizing on Microstructures and Mechanical Properties of Low Activation Ferritic Martensitic Steels**

**CHANG-HOON LEE**, JOONOH MOON, TAE-HO LEE, Korea Institute of Materials Science, Changwon, South Korea

#### Session FJ-3

##### Materials for First Wall Components of Nuclear Fusion Systems

**FJ-3:L01 The Comprehensive First Mirror Test in the JET Tokamak for ITER**

**M. RUBEL<sup>1</sup>**, D. IVANOVA<sup>1</sup>, P. PETERSSON<sup>1</sup>, A. GARCIA-CARRASCO<sup>1</sup>, J. LIKONEN<sup>2</sup>, A. WIDDOWSON<sup>3</sup> and JET-EFDA Contributors\*, \*JET-EFDA, Culham Science Centre, Abingdon, UK; <sup>1</sup>Alfvén Laboratory, Royal Institute of Technology, Association Euratom - VR, Stockholm, Sweden; <sup>2</sup>Association EURATOM-TEKES, VTT, Espoo, Finland; <sup>3</sup>CCFE/EURATOM Fusion Association, Culham Science Centre, Abingdon, UK \*See the Appendix of F. Romanelli et al, Proceedings of the 24th IAEA Fusion Energy Conference 2012, San Diego, USA

**FJ-3:L02 New Materials for Nuclear Fusion Plasma-facing Components**

**C. LINSMEIER**, Forschungszentrum Jülich GmbH, Institut für Energie- und Klimaforschung - Plasmaphysik, Jülich, Germany

**FJ-3:L03 Modeling Irradiation Damage and Dislocation Plasticity in Tungsten for Fusion Applications**

**J. MARIAN**, Lawrence Livermore National Laboratory, Livermore, CA, USA

**FJ-3:L04 Plasma Materials Interactions**

**J. LINKE**, J. DU, TH. LOEWENHOFF, G. PINTSUK, T. WEBER, M. WIRTZ, Forschungszentrum Juelich, Euratom Association, Juelich, Germany

#### Session FJ-4

##### Functional Materials

**FJ-4:L01 Utilization Research and Development of Hydride Materials in Fast Reactors**

**K. KONASHI**, Tohoku University, Ibaraki, Japan

**FJ-4:L02 Superconductivity Materials for ITER and DEMO Fusion Reactors**

**A.E. VOROBIEVA**, I. M. ABDYUKHANOV, Y. V. KARASEV, V. A. DROBUSHEV, I.N. GUBKIN, E.A. DERGUNOVA, K.A. MAREEV, JSC "A.A.Bochvar Institute"; A.K. SHIKOV, National Research Centre "Kurchatov Institute", Moscow, Russia

**FJ-4:L03 In-reactor and In-situ Studies of Dynamic Radiation Effects in Materials for Burning Nuclear Fusion Systems**

**T. SHIKAMA**, Institute for Materials Research, Tohoku University, Katahira, Sendai, Japan

**FJ-2:L04 Depleted Uranium as Hydrogen Storage Material**

**M. YAMAWAKI**, Y. ARITA, T. YAMAMOTO, F. NAKAMORI, University of Fukui, Tsuruga-shi, Fukui, Japan; K. OHSAWA, Kyushu University, Japan

#### Session FJ-5

##### Nuclear Fuel Materials

**FJ-5:L01 Ceramic-based Materials for Accident Tolerant Nuclear Fuels**

**T.M. BESMANN**, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA

**FJ-5:L02 Microstructural Features of the High Burnup Structure**

**T. WISS**, V.V. RONDINELLA, R.J.M. KONINGS, D. STAICU, D. PAPAIOANNOU, S. BREMIER, O. BENES, J.-Y. COLLE, P. PÖML, P. VAN UFFELEN, F. CAPPIA, European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

**FJ-5:L03 Characterization of SiC Ceramic Tube Prepared by CVI/CVD Process**

**JI YEON PARK**, DAEJONG KIM, WEON-JU KIM, Korea Atomic Energy Research Institute, Daejeon, Korea

**FJ-5:L04 Status of the Low Enriched Uranium Fuel Development for High Performance Research Reactors**  
**L. SANNEN**, S. VAN DEN BERGHE, SCK.CEN, Mol, Belgium

**FJ-5:L05 Fabrication of Nuclear Fuel Beads by a Microfluidic Sol-gel Process**

**ZHEN-QI CHANG**, X. LI, Y.T. YANG, M. ZHANG, Q.Y. HUANG, L.S. SHENG, SNST and INEST of USTC, HeFei, AnHui, P.R. China; C. SERRA, ICPEES - UMR 7515 CNRS and ECPM of Uds, Strasbourg, France

**FJ-5:L06 Modelling and Simulation of Nuclear Fuel Rods with the BaCo Code**

**A.C. MARINO**, División SiM<sup>3</sup>, Gerencia Ciclo del Combustible Nuclear (GCCN), Comisión Nacional de Energía Atómica (CNEA), Centro Atómico Bariloche (CAB), Bariloche, Argentina

**FJ-5:L07 Low-temperature Deposition of SiC Coatings in TRISO Particle Fuel and Evaluation of Properties**

**WEON-JU KIM**, D. KIM, J.Y. PARK, Y.-K. KIM, M.S. CHO, Korea Atomic Energy Research Institute, Daejeon, Korea

**FJ-5:L08 A Diffusion Model for UF<sub>4</sub> Reaction with Yttria at 1740 K**

**Z.E. ERKMEN**, Marmara Univ. Dept. of Metallurgy & Materials Eng., Göztepe Campus, Istanbul, Turkey

## Session FJ-6 Radiation Effects

**FJ-6:L01 Modeling of Neutron Irradiation Embrittlement of Highly Irradiated Reactor Pressure Vessel Steels in Japan**

**N. SONEDA**, K. NAKASHIMA, K. NISHIDA, A. NOMOTO, K. DOHI, CRIEPI, Yokosuka, Kanagawa, Japan

**FJ-6:L02 Irradiation Effects on RAFM Steel**

**E. GAGANIDZE**, C. DETHLOFF, J. AKTAA, Karlsruhe Institute of Technology, Institute for Applied Materials, Eggenstein-Leopoldshafen, Germany

**FJ-6:L03 Irradiation Effect on Structure and Properties of Nanomaterials**

**R.A. ANDRIEVSKI**, Institute of Problems of Chemical Physics, Russian Academy of Sciences, Chernogolovka, Moscow Region, Russia

**FJ-6:L04 Effects of Solute Elements on Hardening of Thermally-aged RPV Model Alloys**

**K. NISHIDA**, K. DOHI, A. NOMOTO, N. SONEDA, CRIEPI, Komae, Tokyo, Japan; L. LIU, N. SEKIMURA, Bunkyo-ku, Tokyo, Japan; Z. LI, Beijing, China

**FJ-6:L05 Nuclear Data Needs for Materials of Fission and Fusion Power Reactors**

**A.I. BLOKHIN<sup>1</sup>**, V.M. CHERNOV<sup>2</sup>, <sup>1</sup>A.I. Leypunsky Institute for Physics and Power Engineering, Obninsk, Russia; <sup>2</sup>JSC "A.A. Bochvar High-Technology Research Institute of Inorganic Materials", Moscow, Russia

**FJ-6:L06 Neutron Induced Degradation of Plasma Facing Materials and Components**

**G. PINTSUK**, J. LINKE, M. RÖDIG, Forschungszentrum Jülich, Euratom Association, Jülich, Germany

**FJ-6:L07 Experiments for Helium Bubble Formation in the Microstructure of EUROFER97 with Dual-beam Injection**

**O. TRÖBER**, C. DETHLOFF, E. GAGANIDZE, J. AKTAA, Karlsruhe Institute for Technology, Institute for Applied Materials, Karlsruhe, Baden-Württemberg, Germany; D. BRIMBAL, P. TROCELLIER, L. BECK, CEA, DEN, Service de Recherches de Métallurgie Physique, Laboratoire JANNUS, Gif-sur-Yvette, France

**FJ-6:L08 Evolution of Microstructure and Nanohardness in Hastelloy N Alloy under Xe26+ Ion Irradiation**

**HEFEI HUANG**, D.H. LI, J.J. LI, R.D. LIU, G.H. LEI, S.X. HE, Q. HUANG, L. YAN, Division of Nuclear Materials Science and Engineering, Shanghai Institute of Applied Physics, Chinese Academy of Science, Jiading district, Shanghai, China

## Session FJ-7

### Materials Modelling and Database

**FJ-7:L01 Ab Initio Modelling of Dislocations in bcc Metals**

**F. WILLAIME**, **L. VENTELON**, L. DÉZERALD, CEA Saclay, SRMP, Gif-sur-Yvette, France; D. RODNEY, Université Claude Bernard Lyon 1, ILM, France

**FJ-7:L02 The IFMIF Project: Status and Prospects for Fusion Materials Irradiation**

**J. KNASTER**, IFMIF/EVEDA, Obuchi, Rokkasho-mura, Japan

**FJ-7:L03 Characterization and Modeling of the Ratcheting Behavior of the Ferritic-martensitic Steel P91**

**KUO ZHANG**, J. AKTAA, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials, Eggenstein Leopoldshafen, Germany

**FJ-7:L04 Modeling of Radiation Effects in SiC**

**I. SZLUFARSKA**, D. MORGAN, M.J. ZHENG, C. JIANG, Department of Materials Science and Engineering, University of Wisconsin, Madison, WI, USA

**FJ-7:L05 Impact of Materials Modelling on Fusion Reactor Design**

**S.L. DUDAREV**, EURATOM/CCFE Fusion Association, Culham Science Centre, Abingdon, Oxfordshire, UK

**FJ-5:L06 Ab Initio Modelling of H and He Effects in Ferritic Alloys**

**CHU-CHUN FU**, E. HAYWARD, LEI ZHANG, CEA, DEN, Service de Recherches de Métallurgie Physique, Gif sur Yvette, France

## Session FJ-8

### Crosscutting Materials Issues for Nuclear Fission and Fusion Systems

**FJ-8:L01 Steels for Fission and Fusion Applications**

**J.-L. BOUTARD**, Cabinet du Haut-Commissaire à l'Energie Atomique, Gif sur Yvette Cedex, France

**FJ-8:L02 Low Activation Structural Materials for Fission and Fusion Power Reactors**

**V.M. CHERNOV**, M.V.LEONTIEVA-SMIRNOVA, M.M. POTAPENKO, V.A. DROBYSHEV, D.A. BLOKHIN, JSC "A.A.Bochvar High-technology Research Institute of Inorganic Materials", Moscow, Russia; A.N.TYUMENTSEV, Tomsk State University, Tomsk, Russia; A.I. BLOKHIN, N.I. LOGINOV, A.I. LEYPUNSKY, Institute of Physics and Power Engineering, Obninsk, Russia

**FJ-8:L03 Development of Silicide Coatings on Vanadium Alloys**

**S. MATHIEU**, N. CHAIA, M. VILASI, IJL-Université de Lorraine, Vandoeuvre lès Nancy, France; F. ROUILARD, J.L. COUROUAU, LECNA, CEA Saclay, France

## Poster Presentations

**FJ:P01 Thermal Stability of Microstructure and Texture of Hot-rolled Ferritic ODS Steel**

**Y.B. CHUN**, S.H. KANG, S. NOH, **TAE KYU KIM**, Nuclear Materials Division, Korea Atomic Energy Research Institute, Daejeon, Korea

**FJ:P02 Characterization of Oxide Dispersion Strengthened Steels Fabricated by Different Hot Consolidation Processes**

**SANGHOON NOH**, YOUNG-BUM CHUN, SUK HOON KANG, JINSUNG JANG, TAE KYU KIM, Nuclear Materials Division, Korea Atomic Energy Research Institute, Daejeon, Rep. of Korea

**FJ:P03 Effects of Zr Addition on Mechanical Behavior of Reduced-activation Ferritic-martensitic Steel**

**YOUNG-BUM CHUN<sup>1</sup>**, S.H. KANG<sup>1</sup>, S. NOH<sup>1</sup>, T.K. KIM<sup>1</sup>, D.W. LEE<sup>2</sup>, S. CHO<sup>3</sup>, Y.H. JEONG<sup>1</sup>, <sup>1</sup>Nuclear Materials Division, Korea Atomic Energy Research Institute, Daejeon, Korea; <sup>2</sup>Nuclear Fusion Engineering Development Division, Korea Atomic Energy Research Institute, Daejeon, South Korea; <sup>3</sup>National Fusion Research Institute, Daejeon, Korea

**FJ:P04 Microstructural Investigation of Tungsten Exposed to ITER Relevant ELM Loads of Deuterium Plasma Emitted by Powerful Plasma Focus Device**

**L. CIUPINSKI**, Warsaw University of Technology, Warsaw, Poland

**Special Session FJ-10**  
**MATERIALS TECHNOLOGY FOR**  
**NUCLEAR WASTE TREATMENT AND**  
**DISPOSAL**

**Oral Presentations****Session FJ-10.1****Waste Form Development, Including Glass, Ceramic, and Metallic Waste Forms****FJ-10.1:IL01 Selective Decontamination and Stable Solidification of Cs and Sr by Zeolites****H. MIMURA**, Tohoku University, Sendai, Japan**FJ-10.1:IL02 Fabrication and Chemical Durability of Ceramic Technetium-based Pyrochlores and Perovskites as Potential Waste Forms****T. HARTMANN**, I.J. ALANIZ, A.J. ALANIZ, University of Nevada - Las Vegas, Las Vegas, NV, USA**FJ-10.1:IL03 Recent Advances in Ceramics for Nuclear Waste Immobilization****A. BUKAEMSKIY**, S. FINKELDEI, F. BRANDT, S. NEUMEIER, G. MODOLO, D. BOSBACH, Institute of Energy and Climate Research (IEK-6) - Nuclear Waste Management and Reactor Safety, Forschungszentrum Juelich GmbH, Jülich, Germany**FJ-10.1:IL04 Behaviour of Fuel and Structural Materials in Severely Damaged Reactors****N. SATO**, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan**FJ-10.1:IL05 Cost-effective and Permanently Safe Containerization of Nuclear Solid Waste Using MgAl<sub>2</sub>O<sub>4</sub> Spinel Ceramics****A. ROKHVARGER**, E. VAUGHN-FLAM, Rokon Systems, Inc., New York, NY, USA**FJ-10.1:IL06 A New Matrix for Conditioning Chloride Salt Wastes from the Electrorefining of Spent Nuclear Fuel****G. DE ANGELIS**, M. CAPONE, C. FEDELI, G.A. MARZO, ENEA, Centro Ricerche Casaccia, Roma, Italy; M. MARIANI, E. MACERATA, M. GIOLA, Politecnico di Milano, Milano, Italy**FJ-10.1:IL07 Structure Determination of (Al, Nd)-doped Zirconolite Grown from CaO-SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub>-ZrO<sub>2</sub>-Nd<sub>2</sub>O<sub>3</sub>-Na<sub>2</sub>O Glass****CHANGZHONG LIAO**, KAIMIN SHIH, Department of Civil Engineering, The University of Hong Kong, Hong Kong**Session FJ-10.2****Challenging Waste Constituents, such as Actinides, Noble Metals, and Volatile Species****FJ-10.2:IL01 Recent Developments in the Glass Formulation for the Hanford Tank Waste Treatment and Immobilization Plant and their Impacts on its Mission****J.D. VIENNA**, D.S. KIM, PNNL, Richland, WA, USA; A.A. KRUGER, US DOE/ ORP, Richland, WA, USA**FJ-10.2:IL02 Spent Fuel Characterisation by Advanced Spectroscopic Techniques****C. DEGUELDRÉ**, LNM/LES, NES, Paul Scherrer Institute, Villigen, Switzerland**FJ-10.2:IL03 Adsorption Materials Development for the Separation of Actinides and Specific Fission Products from High Level Waste****YUE-ZHOU WEI**, School of Nuclear Science and Engineering, Shanghai Jiao Tong University, Shanghai, China**FJ-10.2:IL04 Actinides and Actinide Surrogates Solubilities in Borosilicate Glass****A. KIDARI, I. BARDEZ-GIBOIRE**, M. MAGNIN, J-L. DUSSOSSOY, CEA, DEN, DTCD/SEC/M/LDMC - Marcoule, Bagnols-sur-Cèze, France**FJ-10.2:IL05 Silver-functionalized Silica Aerogel as a Mean to Capture and Immobilize Lutetium-176****J. MATYAS**, Pacific Northwest National Laboratory, Richland, WA, USA**Session FJ-10.3****Waste Form Modeling, Performance Testing, and Advanced Characterization Techniques****FJ-10.3:IL01 Development and Characterization of Radiation Resistant Waste Glass for Immobilization of Radionuclides****S. PEUGET**, J.M. DELAYE, E.A. MAUGERI, C. MENDOZA, A.H MIR, R. CARABALLO, M. TRIBET, O BOUTY, C. JÉGOU, CEA, DEN, Laboratoire d'Étude des Matériaux et Procédés Actif, Bagnols-sur-Cèze, France**FJ-10.3:IL02 Experimental, Simulation, and Natural Analogue Studies of Nuclear Wasteform Materials****G.R. LUMPKIN**, E.Y. KUO, S.C. MIDDLEBURGH, M.J. QIN, G.J. THOROGOOD, Y. ZHANG, Z. ZHANG, D.J. GREGG, ANSTO, Kirrawee DC, NSW, Australia; M. ROBINSON, N.A. MARKS, Nanochemistry Research Institute, Curtin University, Perth, WA, Australia**FJ-10.3:IL03 The Belgian Approach Towards the Investigation of the Compatibility with Geological Disposal of Eurobitum Bituminized Intermediate Level Radioactive Waste****E. VALCKE**<sup>1</sup>, N. BLEYEN<sup>1</sup>, S. SMETS<sup>1</sup>, M. VASILE<sup>1</sup>, X. SILLEN<sup>2</sup>, <sup>1</sup>W&D Expert Group, SCK.CEN, Mol, Belgium; <sup>2</sup>ONDRAF/NIRAS, Brussels, Belgium**FJ-10.3:IL04 New Insight into Nuclear and Natural Glasses Dissolution Mechanisms Controlling Long-term Rate****S. GIN**, Marcoule DTCD/SEC/M, Bagnols sur Ceze, France**FJ-10.3:IL05 Helium Solubility and Helium Bubble Nucleation in Nuclear Glasses****G. GUTIERREZ**<sup>1</sup>, S. PEUGET<sup>1</sup>, E.A. MAUGERI<sup>1</sup>, T. FARES<sup>1</sup>, C. JÉGOU<sup>1</sup>, R. BES<sup>2</sup>, T. SAUVAGE<sup>2,3</sup>, R. PODOR<sup>4</sup>, T. WISS<sup>5</sup>, E. OLIVIERO<sup>6</sup>, S. DONNELLY<sup>7</sup>, <sup>1</sup>CEA, DEN, Laboratoire d'Étude des Matériaux et Procédés Actif, Bagnols-sur-Cèze, France; <sup>2</sup>CNRS, UPR3079 CEMHTI, Orléans cedex, France; <sup>3</sup>Université d'Orléans, Faculté des Sciences, Orléans cedex, France; <sup>4</sup>ICSM, Institut de Chimie Séparative de Marcoule, Bagnols-sur-Cèze, France; <sup>5</sup>European Commission, JRC, Institute for Transuranium Elements (ITU), Karlsruhe, Germany; <sup>6</sup>CSNSM, Centre de Science Nucléaire et de Sciences de la Matière, Orsay, France; <sup>7</sup>Huddersfield University, Huddersfield, UK**Session FJ-10.4****Design and Operation of Waste Immobilization facilities, Repository Design, Requirements, and Licensing****FJ-10.4:IL01 Progress at ANSTO on a Synroc Plant for Intermediate-level Waste from Reactor Production of 99Mo****E.R. VANCE**, S. MORICCA, M.W.A. STEWART, ANSTO, Kirrawee DC, NSW, Australia**FJ-10.4:IL02 Vitrification of UK Higher Activity Wastes and the Dissolution Mechanisms of Simulant Waste Glasses in Hyperalkaline Conditions Relevant to a Cementitious Geological Disposal Facility****N. HYATT**, Department of Materials Science & Engineering, The University of Sheffield, Sheffield, UK**FJ-10.4:IL03 Review of the Development of the Proposed Yucca Mountain Geologic Repository****C.E. SANDERS**, University of Nevada, Las Vegas, Las Vegas, NV, USA**FJ-10.4:IL04 RADON Operational Experience in High-temperature Treatment of Radioactive Wastes****S.V. STEFANOVSKY**, FSUE RADON, Moscow, Russia**Poster Presentations****FJ-10:P01 Preparation of Anionic Exchange Adsorbent by Pre-radiation Method and Its Adsorption Performance toward Rhenium Ions****JIANHUA ZU**, RUIQIN LIU, YUEZHOU WEI, MAOSONG YE, FANGDONG TANG, LINFENG HE, Nuclear Science and Engineering College, Shanghai Jiaotong University, Shanghai, China**FJ-10:P02 Leaching Behaviour of Salt Wastes Conditioned with Sodium Blended with two Different Glass Powders****M. CAPONE**, G. DE ANGELIS, C. FEDELI, ENEA, Centro Ricerche Casaccia, Roma, Italy; F. GIACOBBO, M. DA ROS, E. MACERATA, M. MARIANI, Politecnico di Milano, Milano, Italy

**FK - 5th International Conference**  
**NOVEL FUNCTIONAL CARBON**  
**NANOMATERIALS**

**Oral Presentations**

**Session FK-1**  
**Growth and Processing**

**FK-1:IL01 Graphene Growth and Integration in Nanoelectronic Devices**

**L. COLOMBO**<sup>1</sup>, Y. HAO<sup>2</sup>, S. MCDONNELL<sup>3</sup>, R. ADDOU<sup>3</sup>, A. ISMACH<sup>2</sup>, A. AZCATL<sup>3</sup>, S.S. SONDE<sup>2</sup>, S. BANERJEE<sup>2</sup>, R.S. RUOFF<sup>2</sup>, R.M. WALLACE<sup>3</sup>, <sup>1</sup>Texas Instruments, Dallas, TX, USA; <sup>2</sup>University of Texas at Austin, Austin, TX, USA; <sup>3</sup>University of Texas at Dallas, Dallas, TX, USA

**FK-1:IL02 Science and Applications of Doped Nanocrystalline Diamond Films and Particles**

**K. HAENEN**, Hasselt University, Institute for Materials Research (IMO) & IMEC vzw, IMOMEC, Diepenbeek, Belgium

**FK-1:IL03 Oriented Attachment Growth of Micro-sized Diamond Crystals from Detonation Nanodiamonds**

**F.M. SHAKHOV**, S.V. KIDALOV, P.G. BARANOV, R.A. BABUNTS, D.A. SAKSEEV, D.A. KIRILENKO, A.E. ALEKSENKII, M.V. BAIDAKOVA, A.YA. VUL', Ioffe Institute, Saint-Petersburg, Russia

**FK-1:IL04 Large Scale Growth of Graphene on SiC**

**R. YAKIMOV**<sup>1,2</sup>, G.R. YAZDI<sup>1</sup>, T. IAKIMOV<sup>1,2</sup>, V. DARAKCHIEVA<sup>1</sup>, <sup>1</sup>Linkoping University, Linkoping, Sweden; <sup>2</sup>Graphensic AB, Sweden

**FK-1:IL05 Synthesis & Assembly of Chemically Modified Graphitic Carbon Nanostructures**

**SANG OUK KIM**, Center for Nanomaterials and Chemical Reactions, Institute for Basic Science (IBS) Materials Science & Engineering, KAIST Daejeon, Republic of Korea

**FK-1:IL06 Nanoporous Carbon Materials for Electrochemical Capacitors: Focus on Structure-property Relationships**

**G. YUSHIN**, Georgia Institute of Technology, School of Materials Science, Atlanta, GA, USA

**FK-1:IL07 Graphene Nanopatterning with Nanometer Precision and Edge Orientation Control**

**L. TAPASZTO**, Research Centre for Natural Sciences, Institute of Technical Physics and Materials Science, Budapest, Hungary

**FK-1:IL08 Growth of Large-size Single-crystal Graphene Domains and Three-dimensional Interconnected Graphene Networks**

**WENCAI REN**, LIBO GAO, TENG MA, ZONGPING CHEN, HUI-MING CHENG, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, P.R. China

**FK-1:IL09 What Would be the First Industrial Scale Application of Single-walled Carbon Nanotubes and Why?**

**KENJI HATA**, AIST, Tsukuba, Japan

**FK-1:IL10 Hierarchical Nanoporous Carbon Materials for Supercapacitors and Lithium Sulfur Batteries**

**S. KASKEL**, Dresden University of Technology, and Fraunhofer IWS, Germany

**FK-1:IL11 Insights in the Synthesis of Carbon Nanostructures from Computer Simulation**

**C. BICHARA**, M. DIARRA, CINaM, CNRS and Aix Marseille University, France; H. AMARA, F. DUCASTELLE, LEM, ONERA and CNRS, Chatillon, France

**FK-1:IL12 Macro-mesoporous Nanocarbon Thin Films. Processing and Application to Energy Storage**

**M. ES-SOUNI**, D. SHOPF, Institute for Materials & Surface Technology, University of Applied Sciences, Kiel, Germany

**FK-1:L13 Designing and Guiding the Synthesis of a New Class of Fullerene-like C-based Nanostructured Compounds**

**C. GOYENOLA**, S. SCHMIDT, S. STAFSTRÖM, L. HULTMAN, **G.K. GUE-ORGUIEV**, Department of Physics, Chemistry, and Biology - IFM, Linköping University, Linköping, Sweden

**FK-1:L14 CVD of N-Doped Graphene**

**H. SACHDEV**, Max Planck Institut für Polymerforschung, Mainz, Germany

**FK-1:L15 Spectral Tuning of Graphene Quantum Dots by Salting Out**

**KYUEUI LEE**, SEONGWOO RYU, HAESHIN LEE, Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea; **SOON HYUNG HONG**, The Graduate School of Nanoscience and Technology (WCU), Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

**Session FK-2****Structural Characterization****FK-2:IL01 Boron Doping Profiling in Diamond Multilayers by Electron Microscopy**

**D. ARAUJO**<sup>1</sup>, M.P. ALEGRE<sup>1</sup>, J.C. PIÑERO<sup>1</sup>, P. VILLAR<sup>1</sup>, A. FIORI<sup>2</sup>, E. BUS-TARRET<sup>2</sup>, <sup>1</sup>Dpto. Ciencia de los Materiales e IM y QI, Universidad de Cádiz, Puerto Real (Cádiz), Spain; <sup>2</sup>Institut Néel, CNRS-Université Joseph Fourier, Grenoble, France

**FK-2:IL02 Characterization of Diamond-molecular Interfaces by Advanced SPM**

**B. REZEK**, Institute of Physics ASCR, Prague, Czech Republic

**FK-2:IL03 Extended Defects in 2D-materials: Graphene, MoS<sub>2</sub> and Silica Bilayers**

**A.V. KRASHENINNIKOV**<sup>1,2</sup>, H.-P. KOMSA<sup>1</sup>, S. KURASCH<sup>3</sup>, J. KOTAKOSKI<sup>1,4</sup>, O. LEHTINEN<sup>1,3</sup>, U. KAISER<sup>3</sup>, <sup>1</sup>Department of Physics, University of Helsinki, Finland; <sup>2</sup>Department of Applied Physics, Aalto University, Finland; <sup>3</sup>Central Facility for Electron Microscopy, Group of Electron Microscopy of Materials Science, Ulm University, Ulm, Germany; <sup>4</sup>Department of Physics, University of Vienna, Austria

**FK-2:IL04 Kelvin Force Microscopy on Graphene**

**W. MERTIN**, C. ALVARADO, G. BACHER, Universität Duisburg-Essen, Duisburg, Germany

**FK-2:IL05 Atomic Imaging and Spectroscopy of Two-dimensional Carbon and Non-carbon Materials**

**K. SUENAGA**, Nanotube Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan

**FK-2:IL06 Time-resolved Optoelectronic Characterization of Graphene-based Nanoscale Circuits**

**A. HOLLEITNER**, Walter Schottky Institut and Physik-Department, Technische Universität München, Garching, Germany

**FK-2:IL07 Growth, Structure, and Properties of Carbon Nanomaterials Studied by In-situ Electron Microscopy**

**F. BANHART**, O. CRETU, J.A. RODRIGUEZ-MANZO, Institut de Physique et Chimie des Matériaux de Strasbourg, UMR 7504, Université de Strasbourg, CNRS, Strasbourg, France

**FK-2:IL08 In Situ Raman Spectroscopy Studies of Carbon Nanotubes, Nanodiamond, and Graphene**

**S. OSSWALD**, Department of Physics, Naval Postgraduate School, Monterey, CA, USA

**FK-2:IL09 X-ray Diffraction and Small Angle X-ray Scattering for Characterization of Carbon Nanostructures**

**M.V. BAIDAKOVA**, A.T. DIDEIKIN, A. YA. VUL, Ioffe Physical-Technical Institute, St. Petersburg, Russia

**FK-2:IL10 Endohedral Fullerenes: the Importance of Size, Shape and Electronic Complementarity between Encapsulated Clusters and Cages**

**L. ECHEGOYEN**, University of Texas-El Paso, El Paso, TX, USA

**FK-2:L11 Early Stages of Nanodiamond-to-onion Transformation - A Magnetic Resonance Study**

**A.M. PANICH**, A.I. SHAMES, Ben-Gurion University of the Negev, Be'er Sheva, Israel; N.A. SERGEEV, M. OLSZEWSKI, University of Szczecin, Szczecin, Poland; J.K. McDONOUGH, V. MOCHALIN, Y. GOGOTSI, Drexel University, Philadelphia, PA, USA

**FK-2:L12 Use of XPS and Synchrotron Radiation Techniques to Investigate Metal Matrix Composites with Non-agglomerated Nanodiamonds**

**V.A. POPOV**<sup>1</sup>, D.N. TOEBBENS<sup>2</sup>, E.A. SKRYLEVA<sup>1</sup>, I.I. KHODOS<sup>3</sup>, A.S. PROSVIRYAKOV<sup>1</sup>, I.M. KARNAUKH<sup>1</sup>, <sup>1</sup>National University of Science and Technology "MISIS", Moscow, Russia; <sup>2</sup>Helmholtz-Zentrum Berlin for Materials and Energy, Berlin, Germany; <sup>3</sup>Institute of Microelectronics Technology and High Purity Materials RAS, Chernogolovka, Moscow region, Russia

**FK-2:L13 Clusterization of Shungite Nonplanar Graphenes in Water and its Hybrids**

**N.N. ROZHKOVA**<sup>1</sup>, S.S. ROZHKOVA<sup>1</sup>, A.A. MIKHAILINA<sup>1</sup>, E.F. SHEKA<sup>2</sup>,

<sup>1</sup>Institute of Geology Karelian Research Centre RAS, Petrozavodsk, Russia;

<sup>2</sup>Peoples' Friendship University of Russia, Moscow, Russia

**Session FK-3****Properties****FK-3:IL01 Structure, Properties, and Applications of Nanodiamonds**

**V.N. MOCHALIN**, I. NEITZEL, A. PENTECOST, Y. GOGOTSI, Department of Materials Science & Engineering, Drexel University, Philadelphia, PA, USA

**FK-3:L02 Properties of Graphene Accounting for Thermomechanical Ripple Effects****R. MELNIK**, S. PRABHAKAR, Wilfrid Laurier University, Waterloo, Canada**FK-3:L03 Carbon Nanotubes: Computational Modeling of Elasticity, Electronic and Magnetic Properties****K. MARINOVA SIMEONOVA**, Institute of Mechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria**FK-3:L04 Nonlinear Properties of Detonation Nanodiamond Sols and Gels****A.E. ALEKSENSKII**, M.V. BAIDAKOVA, A.T. DIDEIKIN, A.V. SHVIDCHENKO, **A.Ya. VUL**, Ioffe Physical-Technical Institute, St.Petersburg, Russia**FK-3:L05 Plasma Hydrogenation of Nanodiamonds: From Surface Properties to Applications****H.A. GIRARD**, J.C. ARNAULT, T. PETIT, C. GESSET, P. BERGONZO, CEA, LIST, Diamond Sensors Laboratory, Gif sur Yvette, France**FK-3:L06 Electrochemical and Bioactive Properties of Diamond Coatings****J.S. FOORD**, University of Oxford, Department of Chemistry, Oxford, UK**FK-3:L07 Thermionic and Photon-enhanced Emission from CVD Diamond: Influence of Nanostructure, Doping, and Substrate****R.J. NEMANICH**, M.D. BROWN, G. HEMBREE, F.A.M. KOECK, TIANYIN SUN, Department of Physics, Arizona State University, Tempe, AZ, USA**FK-3:L08 Plasma Hydrogenation of Nanodiamonds: Fundamentals and Surface Properties****J.C. ARNAULT**, T. PETIT, H.A. GIRARD, C. GESSET, A. TROUVÉ, P. BERGONZO, CEA, LIST, Diamond Sensors Laboratory, Gif sur Yvette, France**FK-3:L09 Chemically Modified Graphene Heterostructures****M.C. HERSAM**, Northwestern University, Evanston, IL, USA**FK-3:L10 Raman Fingerprint of Aligned h-BN/Graphene Superlattices****C. CASIRAGHI**, School of Chemistry, University of Manchester, Manchester, UK**FK-3:L11 The Uniqueness of Physical and Chemical Natures of Graphene: their Coherence and Conflicts****E.F. SHEKA**, Peoples' Friendship University of Russia, Moscow, Russia**FK-3:L12 Ultrafast Dynamics in Graphene****TING YU**, Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore; Department of Physics, Faculty of Science, National University of Singapore, Singapore; Graphene Research Center, National University of Singapore, Singapore**Session FK-4****Applications****FK-4:L01 Nanodiamond-therapeutic Hybrids for Systemic and Localized Drug Delivery****DEAN HO**, Division of Oral Biology and Medicine, Department of Bioengineering, The Weintraub Center for Reconstructive Biotechnology, California NanoSystems Institute, Jonsson Comprehensive Cancer Center, University of California, Los Angeles, CA, USA**FK-4:L02 Boron Doped Diamond Biotechnology: From Sensors to Neurointerfaces****P. BERGONZO**, C. HÉBERT, E. SCORSONE, H. GIRARD, CEA LIST, Diamond Sensors Laboratory, Gif-sur-Yvette, France; L. ROUSSEAU, M. COTTANCE, G. LISSORGUES, ESIEE-Paris, ESYCOM University Paris-EST, Cité Descartes, Noisy le Grand Cedex, France; A. BENDALI, M. DJILAS, E. DUBUS, J. DEGARDIN, S. PICAUD, INSERM, U968 Institut de la vision Paris, France; B. YVERT, CNRS, Institut des Maladies Neurodégénératives, UMR5293, Bordeaux, France**FK-4:L03 Nanocrystalline Diamond for Micro-Electro-Mechanical Systems****O.A. WILLIAMS**, School of Physics and Astronomy, Cardiff University, Cardiff, UK**FK-4:L04 High Electric Field Diamond Power Devices****E. GHEERAERT**, University of Grenoble-Alps, Grenoble, France**FK-4:L05 Compact High Voltage Power Switches Based on PIN Diamond Diode Emitters****D. TAKEUCHI**, T. MAKINO, H. KATO, M. OGURA, H. OHASHI, H. OKUSHI, S. YAMASAKI, Energy Technology Research Institute, AIST, Japan; S. KOIZUMI, Wide Bandgap Materials Group, NIMS, Japan; all Advanced Low Carbon Society Technology Development Program (ALCA), JST c/o AIST, Japan, and Core Research for Evolutional Science and Technology (CREST), JST c/o AIST, Japan**FK-4:L06 Magnetic Properties of Graphene and Graphene-nanoribbon Supported Materials****HWAY CHUAN KANG**, S.W. ONG, E.S. TOK, H.C. KANG, Dept Chemistry, National University of Singapore; S.W. ONG, Dept Physics, National Central University, Taiwan; E.S. TOK, Dept Physics, National University of Singapore**FK-4:L07 Graphene-based Nanosandwiches for Energy Storage and Conversion****XINLIANG FENG**, Max Planck Institute for Polymer Research, Mainz, Germany**FK-4:L08 Graphene Applications in Sensors and Analog Devices****A.A. BALANDIN**, Nano-Device Laboratory, Department of Electrical Engineering and Materials Science and Engineering Program, Bourns College of Engineering, University of California - Riverside, Riverside, CA, USA**FK-4:L09 Technology of Field Emitters Based on Carbon Nanotubes****M.L. TERRANOVA**, Dip. di Scienze e Tecnologie Chimiche, MINIMAlab, University of Roma Tor Vergata, Roma, Italy; and NANOSHARE Srl**FK-4:L10 Electrochemical Behavior of Carbon Nanofibers and Related Materials****V. PRESSLER**, D. WEINGARTH, J.S. ATCHISON, M. ASLAN, INM - Leibniz Institute for New Materials & Saarland University, Saarbrücken, Germany**FK-4:L11 Exploration of Carbon-based Nanocomposite Materials for Electrochemical Energy Storage Applications****YUEGANG ZHANG**, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou, Jiangsu, China**FK-4:L12 Catalytic Application of Nanoporous Carbon Materials****B. HASSE**, J. GLÄSEL, F. REISSNER, P. HAUSMANN, C. DICENTA, **B.J.M. ETZOLD**, Lehrstuhl für Chemische Reaktionstechnik, Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany**FK-4:L13 Carbon Nanomaterials for Capacitive Energy Storage****Y. GOGOTSI**, Department of Materials Science and Engineering and A.J. Drexel Nanotechnology Institute Drexel University, Philadelphia, PA, USA**FK-4:L14 Design and Fabrication of Printed, Carbon Nanotube Transistors Operating in the GHz Range for Electronic Systems****J. VAILLANTCOURT**, A. AKYURTLU, **C. ARMIENTO**, University of Massachusetts, Lowell, MA, USA**FK-4:L15 Application of Carbon-based Gradient Materials for the Design of Rail Bumpers****P. ZAKIEWICZ**, P. PACKO, K. KOZLOWSKA, **T. UHL**, Department of Robotics and Mechatronics, AGH-University of Science and Technology, Krakow, Poland; K. KYZIOL, Department of Material Engineering and Ceramics, AGH-University of Science and Technology, Krakow, Poland; J. MIZERA, Materials Design Division, Warsaw University of Technology, Poland**FK-4:L16 Graphene Oxides and their Hybrids for Solar to Hydrogen and CO<sub>2</sub> Photofixation Applications****LI-CHYONG CHEN<sup>1</sup>**, YAN-GU LIN<sup>1,2</sup>, HSIN-CHENG HSU<sup>3</sup>, YU-CHUNG CHANG<sup>3</sup>, INDRAJIT SHOWN<sup>2</sup>, CHEN-HAO WANG<sup>3</sup>, KUEI-HSIEN CHEN<sup>1,2</sup>, <sup>1</sup>Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; <sup>2</sup>Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan; <sup>3</sup>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan**FK-4:L17 Graphene Oxide Coated Silica Microspheres and their Electrorheological Characteristics****YONGSOK SEO**, Seoul National University, Seoul, Korea; HYOUNG JIN CHOI, Inha University, Korea**FK-4:L18 Electrochemical Measurements and Metal Deposition on Graphene Layers at Liquid/Liquid Interface****P.S. TOTH**, R.A.W. DRYFE, School of Chemistry, University of Manchester, Manchester, UK**FK-4:L19 Dual Functionalization of Carbon Nano-onions with Targeting and Imaging Units****S. GIORDANI**, Istituto Italiano di Tecnologia (IIT), Genova, Italy; L. MARKEY, K. FLAVIN, E. SCANLAN, Trinity Biomedical Sciences Institute, Trinity College, Dublin, Ireland; V. SPAMPINATO, G. CECCONE, European Commission, Joint Research Centre, IHCP, Ispra (VA), Italy; L. ECHEGOYEN, University of Texas at El Paso, El Paso, TX, USA**FK-4:L20 Effect of Carbon Nanotube on the Properties of Micro Injection Molded Polylactide Nanocomposites****SEONG HUN KIM**, S.H. PARK, Department of Organic and Nano Engineering, Hanyang University, Seoul, Korea; H. ITO, Department of Polymer Science and Engineering, Yamagata University, Yonezawa, Yamagata, Japan**FK-4:L21 Photo-thermal Desorption of Toluene from Single Walled Carbon Nanotube Adsorbent Pads in Air Samplers****C.T. LUNGU**, J. OH, University of Alabama at Birmingham, Birmingham, AL, USA; E. FLOYD, University of Oklahoma, Oklahoma City, OK, USA

**FK:4:L22 Understanding the Performance of Bucky Gel Actuators by Means of their Electrical Model**

**G. BUBAK**, A. ANSALDO, D. RICCI, Istituto Italiano di Tecnologia, Robotics, Brain and Cognitive Sciences Department, Genova, Italy

**FK:4:L23 Surface-modified Carbon Nanotubes Multifunctional Sensor**

**P. ZBYRAD<sup>1,2</sup>**, K. GRABOWSKI<sup>1</sup>, T. UHL<sup>1</sup>, <sup>1</sup>AGH University of Science and Technology, Faculty of Mechanical Engineering and Robotics, <sup>2</sup>AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland

**Poster Presentations****FK:P01 Research of Diamond-like Carbon Film Deposited by Double Beam Pulsed Laser**

**YONG CHEN**, SHUYUN WANG, YIMIN LU, YANLONG GUO, GUOJUN HUANG, XU LIU, QIANG WAN, Opto-Electronics Facility of Wuhan Mechanical College, Wuhan, China

**FK:P02 Effect of Surface Morphology and Crystalline Orientation of Copper Substrate on the Quality and Structure of Graphene Synthesized by Chemical Vapor Deposition**

**A. IBRAHIM<sup>1</sup>**, A. OWAIS<sup>2</sup>, M. ATIEH<sup>2</sup>, R. KARNIK<sup>3</sup>, T. LAOUI<sup>1</sup>, <sup>1</sup>Department of Mechanical Engineering, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia; <sup>2</sup>Department Chemical Engineering, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia; <sup>3</sup>Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA

**FK:P03 Large-scale Synthesis of Nanoporous Carbide-derived Carbons**

**A. GOGOTSI<sup>1</sup>**, Y. GOGOTSI<sup>2</sup>, <sup>1</sup>Materials Research Centre, Kiev, Ukraine; <sup>2</sup>A.J. Drexel Nanotechnology Institute, Department of Material Science and Engineering, Drexel University, Philadelphia, PA, USA

**FK:P04 Mesoporous Carbon Entrapped with Pd Nanoparticles as Highly Active and Recyclable Heterogeneous Catalysts**

**HUI MAO<sup>1,2</sup>**, YANG LIAO<sup>1</sup>, JUN MA<sup>1</sup>, XUEPIN LIAO<sup>3</sup>, SHILIN ZHAO<sup>1</sup>, <sup>1</sup>College of Chemistry and Materials Science, Sichuan Normal University, Chengdu, P.R. China; <sup>2</sup>School of Materials Science and Engineering, Nanyang Technological University, Singapore; <sup>3</sup>National Engineering Laboratory for Clean Technology of Leather Manufacture, Sichuan University, Chengdu, P.R. China

**FK:P05 Obtaining and Characterization of Antistatic Packing for Electronic Components Based on Pet Loaded with Carbon Black**

**L. FIGUEIREDO DE MIRANDA**, A. DOS SANTOS MESQUITA, A.H. MUÑOZ JR., T.J. MASSON, M.C. TERENCE, S.B. FALDINI, Universidade Presbiteriana Mackenzie, Sao Paulo, Brazil

**FK:P06 A Facile Route for the Synthesis of Graphitic Carbon-Fe-based Nanocomposites from K2CO3-activated Sugarcane Bagasse**

**V. LORYUENYONG<sup>1,2</sup>**, J. PHONGTHONGCHAROEN<sup>1</sup>, K. KLOMCHIT<sup>1</sup>, R. CHAIKLANG<sup>1</sup>, A. BUASRI<sup>1,2</sup>, <sup>1</sup>Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Nakhon Pathom, Thailand; <sup>2</sup>National Center of Excellence for Petroleum, and Advanced Materials, Chulalongkorn University, Bangkok, Thailand

**FK:P07 Modelling of the Low Molecular Fluoropolymer Forms. Characterization of the IR- and NMR Spectra**

**L. IGNATIEVA**, Institute of Chemistry, FEB RAS, Vladivostok, Russia; V. BOUZNİK, A.A. Baykov Institute of Metallurgy and Material Science RAS, Moscow, Russia

**FK:P08 Effect of Explosive Processing on the Structure and Properties of Ultrafine Polytetrafluoroethylene**

**G.A. ZVEREV**, L.N. IGNATIEVA, V.G. KURYAVYI, E.B. MERKULOV, A.B. SLOBODYUK, Institute of Chemistry FEB RAS, Vladivostok, Russia; N.A. ADAMENKO, A.V. KAZUROV, Volgograd State Technical University, Volgograd, Russia; V.M. BUZNIK, Institute of Metallurgy and Material Science, Moscow, Russia

**FK:P09 Spin-polarized Electrons in Bilayer Graphene Nanoribbons**

**P.A. ORELLANA<sup>1</sup>**, L. ROSALES<sup>1</sup>, L. CHICO<sup>2</sup>, M. PACHECO<sup>1</sup>, <sup>1</sup>Departamento de Física, Universidad T. Federico Santa María, Valparaíso, Chile; <sup>2</sup>Departamento de Teoría y Simulación de Materiales, Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco, Spain

**FK:P10 Graphene Nanoribbon Thermopower as a Tool for Molecular Spectroscopy**

**L. ROSALES<sup>1</sup>**, C.D. NUNEZ<sup>1</sup>, M. PACHECO<sup>1</sup>, A. LATGÉ<sup>2</sup>, P.A. ORELLANA<sup>1</sup>, <sup>1</sup>Departamento de Física, Universidad Técnica Federico Santa María, Valparaíso, Chile; <sup>2</sup>Instituto de Física, Universidade Federal Fluminense, Niterói-RJ, Brazil

**FK:P11 Electronic Properties of Twisted Bilayer Nanoribbons**

**M. PACHECO**, R. VERGARA, E. SUÁREZ MORELL, Departamento de Física, Universidad Técnica Federico Santa María, Valparaíso, Chile; L. BREY, L. CHICO, Instituto de Ciencia de Materiales de Madrid (ICMM), Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain

**FK:P12 Liquid Crystal Assisted Selective Separation of Large Graphene Oxide and its Size Dependent Oxygen Reduction Catalytic Effect**

**KYUNGUN LEE**, JIEUN KIM, JOON WOON LIM, SANG OUK KIM, IBS, KAIST, Daejeon, South Korea

**FK:P13 Fabrication of Compliant Electrode based on Natural Rubber filled with Graphene Nanofiller**

**S. KORATTANAWITTAYA**, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

**FK:P14 The Possibilities of Graphenes Application in Textronic Devices**

**I. KRUCINSKA**, **M. PUCHALSKI**, E. SKRZETUSKA, Lodz University of Technology, Department of Material and Commodity Sciences and Textile Metrology, Lodz, Poland

**FK:P15 Improvement of Performance of Paper Transistor Using Carbon-nanotube-composite Paper and Its Application to Logic Circuit**

**Y. HAMANA**, Y. KAWAMURA, T. OYA, Yokohama National University, Yokohama, Japan

**FK:P16 Development of Carbon-nanotube-composite-thread and its Application to "Thread Transistor"**

**M. YOSHIDA**, T. OYA, Yokohama National University, Yokohama, Japan

**FK:P17 Energy Gap Associated to Photocatalytic Activity of MWCNT/TiO<sub>2</sub> Nanocomposites**

**S. DA DALT<sup>1,2</sup>**, A.K. ALVES<sup>1</sup>, J.S. PINTO<sup>1</sup>, C.P. BERGMANN<sup>1</sup>, <sup>1</sup>Department of Materials, Federal University of Rio Grande do Sul, RS, Brazil; <sup>2</sup>Engineering Center, Federal University of Pelotas, RS, Brazil

**FL - 4th International Conference****MASS, CHARGE AND SPIN TRANSPORT  
IN INORGANIC MATERIALS:  
FUNDAMENTALS TO DEVICES****Oral Presentations****Session FL-1****Mass and Charge Transport Mechanisms****FL-1:IL01 Quantum Spintronics: Engineering and Manipulating Atom-like Spins in Semiconductors**

**D.D. AWSCHALOM**, Institute for Molecular Engineering, University of Chicago, Chicago, IL, USA

**FL-1:IL02 Local Investigation of Interference and Quantum Coherence in Ballistic Nanostructures Using a Scanning Gate**

**A.A. KOZIKOV**, C. RÖSSLER, T. IHN, K. ENSSLIN, C. REICHL, W. WEGSCHEIDER, Solid States Physics laboratory, ETH Zürich, Zürich, Switzerland; D. WEINMANN, IPCMS, Université de Strasbourg, CNRS UMR 7504, Strasbourg, France

**FL-1:IL03 Diffusion and Segregation in Special Grain Boundaries**

**H. EDELHOFF**, G. WILDE, **S.V. DIVINSKI**, Institute of Materials Physics, University of Münster, Germany

**FL-1:IL04 Recent Advances in the Theory and Computer Modelling of Interdiffusion in Alloys/Intermetallics and Ionic Compounds**

**G.E. MURCH**, I.V. BELOVA, A.V. EVTEEV, E.V. LEVCHENKO, University of Newcastle, Callaghan, NSW, Australia; P. SOWA, D.R. KUZUBSKI, Jagiellonian University, Krakow, Poland

**FL-1:IL05 Mobility of Li Ions in Solids**

**P. HEITJANS**, Leibniz Universität Hannover, Institute of Physical Chemistry and Electrochemistry, Hannover, Germany

**FL-1:IL06 Nucleation and Growth at Reactive Interfaces**

**A. GUSAK**, Cherkasy National University, cherkasy, Ukraine; F. HODAJ, Grenoble University, France; KING NING TU, University of California, Los Angeles, CA, USA

**FL-1:L07 Effects of Elastic Strain on Oxygen Transport and Reduction Kinetics in Oxides**

**B. YILDIZ<sup>1</sup>, ZHUHUA CAI<sup>1</sup>, A. KUSHIMA<sup>1</sup>, QIYANG LU<sup>1</sup>, N. TSVETKOV<sup>1</sup>, JEONG WOO HAN<sup>1</sup>, YAN CHEN<sup>1</sup>, J. FLEIG<sup>2</sup>, M. KUBICEK<sup>2</sup>, <sup>1</sup>Laboratory for Electrochemical Interfaces, Department of Nuclear Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA; <sup>2</sup>Institute of Chemical Technologies and Analytics, Vienna University of Technology, Vienna, Austria**

**FL-1:L08 Direct Evaluation of Electrochemical Reactions in Solid Oxide Fuel Cells under Operation**

**K. AMEZAWA<sup>1</sup>, Y. FUJIMAKI<sup>1</sup>, T. NAKAMURA<sup>1</sup>, K. NITTA<sup>1</sup>, Y. TERADA<sup>1</sup>, F. IGUCHI<sup>1</sup>, H. YUGAMI<sup>1</sup>, T. KAWADA<sup>1</sup>, Tohoku University, Sendai, Japan**

**FL-1:L09 Ionic and Electronic Transport under Chemical Potential Gradients**

**M. MARTIN**, Institute of Physical Chemistry, RWTH Aachen University, Aachen, Germany

**FL-1:L10 Electron Quantum Transport in Disordered Graphene**

**I. DERETZIS**, A. LA MAGNA, CNR-IMM, Catania, Italy

**FL-1:L11 Mass Transport in Grain Boundaries: Mechanism and Controversial Subjects**

**B. BOKSHTEYN**, National University of Science and Technology "MISIS", Moscow, Russia

**FL-1:L12 Capillary-driven Interdiffusion Along Interphase Boundaries in Solids**

**E. RABKIN**, D. AMRAM, L. KLINGER, Department of Materials Science and Engineering, Technion - Israel Institute of Technology, Haifa, Israel

**FL-1:L13 Interpretation of the I-V Characteristics of Blocking Grain Boundaries in Solid Conductors: A New Diffusion Model**

**SANGTAE KIM<sup>1</sup>, SEONG K. KIM<sup>1</sup>, S. KODOROV<sup>2</sup>, I. LUBOMIRSKY<sup>2</sup>, <sup>1</sup>Department of Chemical Engineering and Materials Science, University of California, Davis, USA; <sup>2</sup>Department of Materials Science, Weizmann Institute of Science, Rehovot, Israel**

**FL-1:L14 Formalism for the Measurement of Tracer Diffusion and Interdiffusion Coefficients in a Single Experiment**

**I.V. BELOVA**, G.E. MURCH, University of Newcastle, NSW, Australia; N.S. KULKARNI, Oak Ridge National Laboratory, TN, USA; Y. SOHN, University of Central Florida, FL, USA

**FL-1:L15 Vacancy Diffusion under a Stress and Kinetic of Nanovoid Growth in Cubic Metals**

**A.V. NAZAROV**, National Research Nuclear University (MEPhI), Moscow, Russia; A.A. MIKHEEV, Moscow State University of Design and Technology, RUSSIA; A.G. ZALUZHNYI, SSC RF Institute for Theoretical and Experimental Physics (ITEP), Moscow, Russia

**FL-1:L16 Silicon Spin Diffusion Length Measured in Local Configuration under Field Emission Regime**

**C.I. LEVARTOSKI DE ARAUJO**, Departamento de Física, Universidade Federal de Viçosa, MG, Brazil; M.A. TUMELEIRO, Departamento de Física, Universidade Federal de Santa Catarina, SC, Brazil; A.A. PASA, Departamento de Física, Universidade Federal de Santa Catarina, SC, Brazil

**FL-1:L17 Percolation of Electronic and Ionic Carrier in Single Phase Materials**

**S. YAMAGUCHI<sup>1</sup>, DONGYOUNG KIM<sup>2</sup>, T. TSUCHIYA<sup>3</sup>, S. MIYOSHI<sup>1</sup>, Y. SHIBUYA<sup>1</sup>, <sup>1</sup>Dept. Materials Engg., School of Engg., The University of Tokyo, Tokyo, Japan; <sup>2</sup>Samsung Research Center, Korea; <sup>3</sup>MANA, NIMS, Japan**

**FL-1:L18 Atomistic Modelling of Diffusion Processes of Light Elements in Metals**

**J. ROGAL**, R. DRAUTZ, ICAMS, Ruhr-Universität Bochum, Bochum, Germany

**FL-1:L19 Spin-related Properties of the GeTe Ferroelectric Rashba Semiconductor**

**C. RINALDI**, S. BERTOLI, M. CANTONI, R. BERTACCO, Department of Physics - Politecnico di Milano, Como, Italy; I. VOBORNIK, G. PANACCIONE, TASC Laboratory - Elettra Synchrotron IOM-CNR, Trieste, Italy; J. KREMPASKY, Swiss Light Source at the Paul Scherrer Institut, Villigen, Switzerland; R.-N. WANG, J. BOSCHKER, A. GIUSSANI, R. CALARCO, Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany; D. DI SANTE, S. PICOZZI, CNR-SPIN, L'Aquila, Italy

**FL-1:L20 Conductivity Manipulation of Metal Single Crystals by Grain Boundary Control and Impurity Doping**

**SE-YOUNG JEONG**, Department of Cogno-Mechatronics Engineering, Pusan National University, Miryang, Republic of Korea; J.Y. KIM, C.-R. CHO, Department of Nano Fusion Technology, Pusan National University, Miryang, Republic of Korea; M.-W. OH, Fundamental and Creativity Research Division, Korea Electrotechnology Research Institute, Changwon-si, Republic of Korea; S. LEE, The Institute of Basic Science, Korea University, Seoul, Republic of Korea; Y. C. CHO, Crystal Bank Research Institute, Pusan National University, Miryang, Republic of Korea; J.-H. YOON, Busan center, Korea Basic Science Institute, Busan, Republic of Korea; G.W. LEE, Korea Research Institute of Standards and Science & Department of Science of Measurement, University of Science and Technology, Daejeon, Republic of Korea; C.H. PARK, Department of Physics Education & RCDAMP, Pusan National University, Busan, Republic of Korea

**Session FL-2****Role of Transport in Materials Development, Properties and Behaviour****FL-2:L01 Grain Boundary Growth in Evolving Microstructure**

**A. ZIGELMAN**, **A. NOVICK-COHEN**, Department of Mathematics, Technion-IIT, Haifa, Israel; A. VILENKOIN, The Rachah Institute of Physics, The Hebrew University of Jerusalem, Jerusalem, Israel

**FL-2:L02 Effects of Strain, Orientation, and Microstructure on Oxygen Reduction in SOFC Cathode Materials**

**M. YAN**, J. INFANTE, PH. LEE, L. YAN, R. CHAO, K.R. BALASUBRAMANIAM, **P. A. SALVADOR**, Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, USA

**FL-2:L03 Wetting Phase Transition in Grain Boundaries**

**B.B. STRAUMAL**<sup>1,2</sup>, B. BARETZKY<sup>2</sup>, <sup>1</sup>Institute of Solid State Physics Russian Academy of Sciences, Chernogolovka, Russia; <sup>2</sup>Karlsruhe Institut für Technologie (KIT), Institut für Nanotechnologie, Eggenstein-Leopoldshafen, Germany

**FL-2:L04 Atomic Transport and Defect Reactions in Semiconductors**

**H. BRACHT**, Institute of Materials Physics, University of Münster, Münster, Germany

**FL-2:L05 Oxygen Surface Exchange Kinetics Studies by Time-resolved X-ray Diffraction**

**J. SANTISO**, R. MORENO, J. ROQUETA, P. GARCÍA, J. ZAPATA, ICN2, Institut Català de Nanociència i Nanotecnologia, Campus UAB, Bellaterra, Barcelona, Spain

**Session FL-3****Role of Mass and Charge Transport in Application Engineering****FL-3:L01 Graphene for Low Energy Applications**

**ZHIHONG CHEN**, Purdue University, West Lafayette, IN, USA

**FL-3:L02 Effects of Lattice Strain on Oxide Ion Diffusivity in Pr<sub>2</sub>NiO<sub>4</sub> Doped with Cu and Ni**

**T. ISHIHARA**, J. HOYODO, J. DRUCE, S. IDA, J.A. KILNER, International Institute for Carbon Neutral Energy Research, Kyushu University, Fukuoka, Japan

**FL-3:L03 Role of Defects in Non-equilibrium Impurity Transport Applied to Semiconductor Processing**

**L. PELAZ**, M. ABOY, I. SANTOS, P. LÓPEZ, L. MARQUES, Universidad de Valladolid, Valladolid, Spain

**FL-3:L04 Spin Orientation and Transport in Germanium: Hole and Electron Spin Diffusion Lengths**

**M. CANTONI**, C. RINALDI, S. BERTOLI, R. BERTACCO, CNISM and LNESS - Dipartimento di Fisica, Politecnico di Milano, Como, Italy

**FL-3:L05 Mass and Charge Transport in Solid Oxide Fuel Cells**

**T. KAWADA**, Tohoku University, Sendai, Japan

**FL-3:L06 Structural and Thermochemical Constraints of Mixed Conducting BSCF and SCF Electrodes for Fuel Cells**

**J. FRADE**, A. YAREMCHENKO, S. MIKHALEV, Department of Materials and Ceramic Engineering, CICECO, University of Aveiro, Aveiro, Portugal

**FL-3:L07 Protonic SOFC Based on LaSrSc<sub>3</sub> Perovskite-type Proton Conductor**

**H. YUGAMI**, Graduate School of Engineering, Tohoku University, Japan; H. KATO, Tohoku Electric Power Co., Inc, Japan; F. IGUCHI, Graduate School of Engineering, Tohoku University, Japan

**FL-3:IL08 Mixed Ionic Conduction for Electrochemical Membranes and Fuel Cells**

**F.M.B. MARQUES**, Materials and Ceramic Eng. Dept./CICECO, University of Aveiro, Aveiro, Portugal

**FL-3:IL09 Antiferromagnetic Spintronics**

**T. JUNGWIRTH**, Institute of Physics ASCR, v.v.i., Praha, Czech Republic and School of Physics and Astronomy, University of Nottingham, Nottingham, UK

**FL-3:IL10 Multi-species Transport in Protonic Ceramic Membranes Based on Y-doped Barium Cerate/Zirconate**

**W.G. COORS**, CoorsTek, Inc. Corporate R&D, Golden, CO, USA

**Poster Presentations****FL-P01 Effect of Ultrasonic Treatment on the Defect Structure of the Si-SiO<sub>2</sub> System**

**D. KROPMAN**, Tallinn University of Technology, Tallinn, Estonia

**FL-P02 Chiral Transmission to Self-assembling Nanostructures from Circularly Polarized Light**

**JIHYEON YEOM<sup>1</sup>**, BONGJUN YEOM<sup>2</sup>, SUNG JIN CHANG<sup>3</sup>, WEI-SHUN CHANG<sup>4</sup>, GONGPU ZHAO<sup>5</sup>, PEIJUN ZHANG<sup>5</sup>, S. LINK<sup>4</sup>, N.A. KOTOV<sup>1,2</sup>, <sup>1</sup>Department of Macromolecular Science and Engineering, University of Michigan, Ann Arbor, MI, USA; <sup>2</sup>Department of Chemical Engineering, University of Michigan, Ann Arbor, MI, USA; <sup>3</sup>Division of Material Sciences, Korea Basic Science Institute, Daejeon, Republic of Korea; <sup>4</sup>Department of Electrical and Computer Engineering, Rice University, Houston, TX, USA; <sup>5</sup>University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

**FM-1:IL06 Low-power Operation and Reliability of Oxide-based RRAM D. IELMINI**, DEIB, Politecnico di Milano, Milano, Italy**FM-1:IL07 On the Origin of Failure Mechanism of Endurance and Retention of HfO<sub>2</sub> based ECM Cells**

HANGBING LV, XIAOXIN XU, RUOYU LIU, HONGTAO LIU, QI LIU, SHIBING LONG, **MING LIU**, Laboratory of Nano-Fabrication and Novel Devices Integrated Technology, Institute of Microelectronics, Chinese Academy of Sciences, Beijing, China

**FM-1:IL08 CBRAM vs OxRAM: Active Material Selection Depending on the Final Application**

**E. VIANELLO<sup>1</sup>**, G. MOLAS<sup>1</sup>, P. BLAISE<sup>1</sup>, O. THOMAS<sup>1</sup>, F. LONGNOS<sup>1</sup>, B. TRAORE<sup>1</sup>, G. PALMA<sup>1</sup>, J. GUY<sup>1</sup>, T. CABOUT<sup>1</sup>, K. XUE<sup>1</sup>, M. BERNARD<sup>1</sup>, A. ROULE<sup>1</sup>, E. SOUCHIER<sup>1</sup>, C. CARABASSE<sup>1</sup>, M. REYBOZ<sup>1</sup>, H. GRAMPEIX<sup>1</sup>, J.F. NODIN<sup>1</sup>, A. TOFFOLI<sup>1</sup>, E. JALAGUIER<sup>1</sup>, O. PIRROTTA<sup>2</sup>, A. PADOVANI<sup>2</sup>, L. LARCHER<sup>2</sup>, L. FONSECA<sup>3</sup>, Y. NISHI<sup>4</sup>, B. DE SALVO<sup>1</sup>, L. PERNIOLA<sup>1</sup>, <sup>1</sup>CEA, LETI, MINATEC, Grenoble, France; <sup>2</sup>DISMI Università di Modena e Reggio Emilia, Reggio Emilia, Italy; <sup>3</sup>State University of Campinas, Brazil; <sup>4</sup>Department of Electrical Engineering, Stanford University, California, USA

**FM-1:IL09 Evaluating I-V Relations and Defect Distribution of metal1|MIEC|metal2 Devices for Understanding the Functioning of Redox Memory Devices**

**I. RIESS**, D. KALAEV, Physics Department, Technion-IIT, Haifa, Israel

**FM-1:L10 Bottom-up Fabrication of Metal-oxide-metal Nanowires with Controlled Resistive Switching Functionality**

**S. BRIVIO<sup>1</sup>**, G. TALLARIDA<sup>1</sup>, D. PÉREGO<sup>2</sup>, S. FRANZ<sup>2</sup>, S. SPIGA<sup>1</sup>, <sup>1</sup>Laboratorio MDM, IMM-CNR, Agrate Brianza, Italy; <sup>2</sup>Dipartimento di Chimica, Materiali ed Ing. Chimica "G.Natta", Politecnico di Milano, Milano, Italy

**FM-1:L11 Two-terminal Non-volatile Memory Devices Using Silicon Nanowires as the Storage Medium**

**K. SARANTI**, S. PAUL, Emerging Technologies Research Centre, De Montfort University, The Gateway, Leicester, UK

**FM-1:L12 A New Ferroelectric RRAM with Fast Switching Speed and Extremely Long Endurance Compatible to DRAM**

CHUN-HU CHENG, Department of Mechatronic Technology, National Taiwan Normal University, Taipei, Taiwan; **ALBERT CHIN**, Department of Electronics Engineering, National Chiao Tung University, Hsinchu, Taiwan

**FM-1:L13 Review of Selector Devices for Crossbar Memory Arrays AN CHEN**, GLOBALFOUNDRIES, Sunnyvale, CA, USA**FM-1:L14 Vertical Structures for High-density Resistive Switching Based RAM**

B. HUDEC, P. JANCOVIC, A. ROSOVÁ, **K. FRÖHLICH**, Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia; C.C. WAN, C-W. HSU, I-T. WANG, T-H. HOU, Department of Electronics Engineering and Institute of Electronics, National Chiao Tung University, Hsinchu, Taiwan

**FM-1:L15 Resistive Switching in MIM-structures Based on Hf<sub>x</sub>Al<sub>1-x</sub>O<sub>y</sub> and TiN both Grown by ALD**

**K.V. EGOROV**, A.M. MARKEEV, YU.YU. LEBEDINSKII, A.V. ZABLOTSKIY, A.A. KUZIN, Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Region, Russia

**Session FM-2****Phase Change Memories (PCM)****FM-2:IL01 The Impact of Disorder on Transport in Crystalline Phase Change Materials**

**M. WUTTIG**, RWTH Aachen University of Technology, Aachen, Germany

**FM-2:IL02 Neural Network Simulation of Phase Change Materials: Handling Large Models with DFT Accuracy**

G.C. SOSSO, S. GABARDI, G. MICELI, S. CARAVATI, **M. BERNASCONI**, Department of Materials Science, University of Milano-Bicocca, Milano, Italy; J. BEHLER, Lehrstuhl fuer Theoretische Chemie, Ruhr-Universitaet, Bochum, Germany

**FM-2:L03 TEM Study of the Low Resistance State in GST Ge Rich & N Doped PRAM Devices**

**M. COUE<sup>1</sup>**, G. NAVARRO<sup>1</sup>, V. SOUSA<sup>1</sup>, V. DELAYE<sup>1</sup>, L. PERNIOLA<sup>1</sup>, N. BERNIER<sup>1</sup>, P. NOÉ<sup>1</sup>, F. FILLOT<sup>1</sup>, C. SABBIONE<sup>1</sup>, D. BLACHER<sup>1</sup>, P. ZULIANI<sup>2</sup>, R. ANNUNZIATA<sup>2</sup>, G. REIMBOLD<sup>1</sup>, <sup>1</sup>CEA, LETI, MINATEC Campus, Grenoble Cedex, France; <sup>2</sup>STMicroelectronics, Technology R&D, Agrate Brianza, Italy

**FM-2:L04 Engineering of Chalcogenide Materials for Embedded Applications of Phase Change Memory**

**P. ZULIANI**, E. PALUMBO, E. VARESI\*, G. DALLA LIBERA, M. BORGHI, R. ANNUNZIATA, STMicroelectronics, Agrate Brianza, Italy; \*Micron, Agrate Brianza, Italy

**Oral Presentations****Session FM-1**

# FM - International Conference NOVEL NON-VOLATILE INORGANIC MEMORY DEVICES: MATERIALS, CONCEPTS AND APPLICATIONS

**Oral Presentations****Session FM-1****Resistance Switching Memories (ReRAM)****FM-1:IL01 Energy-efficiency in Redox-based Memristive Devices**

**R. WASER**, V. RANA, ST. MENZEL, E. LINN, PGI-7 & JARA-FIT, Forschungszentrum Jülich, Jülich, and IWE2 & JARA-FIT, RWTH Aachen University, Aachen, Germany

**FM-1:IL02 Hafnia-based ReRAM Memory**

**G. BERSUKER**, SEMATECH, Albany, NY, USA

**FM-1:IL03 Resistive Switching in the Chalcogenide Compounds AM4Q8 (A= Ga, Ge; M=V, Nb, Ta, Mo; Q=S, Se, Te): Towards Mott Memories**

**E. JANOD**, B. CORRAZE, J. TRANCHANT, M. QUERRÉ, P. STOLIAR, M.-P. BESLAND, L. CARIO, Institut des Matériaux Jean Rouxel, Université de Nantes - CNRS, Nantes Cedex, France; V. TAPHUOC, GREMAN, CNRS UMR 7347-CEA, Université F. Rabelais, UFR Sciences, Parc de Grandmont, Tours, France; M. ROZENBERG, Laboratoire de Physique des Solides, CNRS UMR 8502, Université Paris Sud, Orsay, France; V. DUBOST, T. CRENN, D. RODITCHEV, Institut des Nanosciences de Paris, Université Pierre et Marie Curie, CNRS UMR 7588, Paris, France

**FM-1:IL04 TMO-based Memristive Devices and Application for Neuromorphic Systems**

**JINFENG KANG**, B. GAO, Y.J. BI, B. CHEN, X.Y. LIU, Peking University, Beijing, China; S.M. YU, Arizona State University, Tempe, AZ, USA; H-Y. CHEN, H.-S. PHILIP WONG, Stanford University, Stanford, CA, USA

**FM-1:IL05 A Review of Three-dimensional Resistive Switching Cross-Bar Array Memories from the Integration and Materials Property Points of View**

JUN YEONG SEOK<sup>1,2</sup>, SEUL JI SONG<sup>1</sup>, JUNG HO YOON<sup>1</sup>, KYUNG JEAN YOON<sup>1</sup>, TAE HYUNG PARK<sup>1</sup>, DAE EUN KWON<sup>1</sup>, HYUNGKWANG LIM<sup>1,2</sup>, GUN HWAN KIM<sup>1</sup>, DOO SEOK JEONG<sup>2</sup>, **CHEOL SEONG HWANG**<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering and Inter-University Semiconductor Research Center, Seoul National University, Seoul, South Korea; <sup>2</sup>Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, South Korea

**FM-2:L05 Chemical Bonding and Spectroscopy of Phase Change Materials**

**A.V. KOLOBOV**, P. FONS, J. TOMINAGA, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

**FM-2:L06 Chalcogenide Nanowires for Highly-scaled Phase Change Memories: from Synthesis to Functional Analysis**

**M. LONGO**, Laboratorio MDM, IMM-CNR, Agrate Brianza, Italy

**FM-2:L07 Thermal Characterization of In-Sb-Te Thin Film**

**H.T. NGUYEN**, A. KUSIAK, J.L. BATTAGLIA, Laboratoire I2M, UMR 8508, Université Bordeaux 1, Talence Cedex, France; R. FALLICA, C. WIEMER, T. STOYCHEVA, M. LONGO, Laboratorio MDM, CNR-IMM, Agrate Brianza (MB), Italy

**FM-2:L08 Temperature Dependent Thermal Conductivity of a GeSbTe Nanowire**

**A. SACI**, J.-L. BATTAGLIA, M. LONGO, R. FALLICA, C. WIEMER, Laboratoire I2M, UMR 8508, Université Bordeaux 1, Talence Cedex, France, with Laboratorio MDM, CNR-IMM, Agrate Brianza (MB), Italy

**FM-2:L09 Phase Change Memory Nano-scale Evolution**

**R. BEZ**, A. PIROVANO, Micron, Agrate Brianza, Italy

**FM-2:L10 Spin Control and Storage using [(GeTe)x/(Sb2Te3)y]z Interfacial Phase Change Memory**

**J. TOMINAGA**, Y. SAITO, K. MAKINO, X. WANG, A. KOLOBOV, P. FONS, T. NAKANO, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; S. MURAKAMI, Tokyo Institute of Technology, Meguro, Tokyo, Japan; H. AWANO, Toyota Technological Institute, Nagoya, Japan; M. HASE, Tsukuba University, Tsukuba, Japan; Y. TAKAGAKI, Paul-Drude Institute, Berlin, Germany

**FM-2:L11 Structural and Electrical Properties of [(SiTe)x/(Sb2Te3)y]z Interfacial Phase Change Memory**

**Y. SAITO**, J. TOMINAGA, K. MAKINO, X. WANG, A. KOLOBOV, P. FONS, T. NAKANO, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

**Session FM-3****Magnetic, Ferroelectric and Multiferroic Materials for Memory Devices****FM-3:L01 Current Status and Prospects of Magnetoresistive Random Access Memory Technology**

**H. OHNO**, Center for Spintronics Integrated Systems, Tohoku University, Japan, Laboratory for Nanoelectronics and Spintronics Research Institute of Electrical Communication, Tohoku University, Japan, WPI-Advanced Institute for Materials Research, Tohoku University, Japan

**FM-3:L02 On the Origin of Ferroelectric Resistive Switching in BiFeO<sub>3</sub> Thin Films**

**S. FAROKHIPOOR**, **B. NOHEDA**, Zernike Institute for Advanced Materials, University of Groningen, Groningen, The Netherlands

**FM-3:L03 Ferroelectric Memories based on Resistive Switching**

**A. GRUVERMAN**, Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, USA

**FM-3:L04 Recent Developments in Manipulating Domain Wall Motion in Wires with Perpendicular Anisotropy**

**D. RAVELOSONA**, CNRS/Université Paris Sud, Orsay, France

**FM-3:L05 Ultimate Scalability of MRAMs and Logic Functionalities**

**I.L. PREJBEANU**<sup>1</sup>, R.C. SOUSA<sup>1</sup>, B. DIENY<sup>1</sup>, J.-P. NOZIERES<sup>1</sup>, S. BANDIERA<sup>2</sup>, L. LOMBARD<sup>2</sup>, Q. STAINER<sup>2</sup>, K. MACKAY<sup>2</sup>, SPINTEC, UMR8191 CEA/DSM/INAC-CNRS-UJF, Grenoble, France; <sup>2</sup>Crocus Technology, Grenoble, France

**FM-3:L06 Doped Hafnium Oxide - An Enabler for Ferroelectric Field Effect Transistors**

**T. MIKOLAJICK**<sup>1,2</sup>, U. SCHROEDER<sup>1</sup>, J. MÜLLER<sup>3</sup>, S. MÜLLER<sup>1</sup>, T. SCHENK<sup>1</sup>, E. YURCHUK<sup>1</sup>, S. SLESAZECK<sup>1</sup>, <sup>1</sup>NaMLab GmbH, Dresden, Germany; <sup>2</sup>Institut für Halbleiter und Mikrosystemtechnik, TU Dresden, Dresden, Germany; <sup>3</sup>Fraunhofer Center Nanoelectronic Technologies, Dresden, Germany

**FM-3:L07 Integration of STT-MRAM for Embedded Cache Memory**

**T. SUGII**, Y. IBA, M. AOKI, H. NOSHIRO, K. TSUNODA, A. HATADA, M. NAKABAYASHI, Y. YAMAZAKI, A. TAKAHASHI, C. YOSHIDA, Low-power Electronics Association & Project (LEAP), Tsukuba, Ibaraki, Japan

**FM-3:L08 Study of Magnetoelectric Effects in Composite FM/FE Heterostructures by Mossbauer Spectroscopy**

**V. IVANOV**, **A. ZENKEVICH**, National Research Center "Kurchatov Institute", Moscow, Russia; R. MANTOVAN, Laboratorio MDM IMM-CNR, Agrate Brianza, Italy; M. FANCIULLI, Università degli Studi Milano - Bicocca & Laboratorio MDM IMM-CNR, Agrate Brianza, Italy; K. MAKSIMOVA, Baltic Federal University, Kaliningrad, Russia

**FM-3:L09 Integration of Ferromagnetic and Ferroelectric Oxides on Semiconductors**

**A.A. DEMKOV**<sup>1</sup>, A.B. POSADAS<sup>1</sup>, P. PONATH, M. CHOI, H. SEO, K. FREDRICKSON, R. HATCH, D.J. SMITH<sup>2</sup>, M.R. MCCARTENTY<sup>2</sup>, <sup>1</sup>Department of Physics, The University of Texas, Austin, TX, USA; <sup>2</sup>Department of Physics, Arizona State University, Tempe, AZ, USA

**Session FM-4****Memristive Materials, Devices and Emerging Applications****FM-4:L01 Phase-change Memories, Memristors and Memflectors**

**C.D. WRIGHT**, Department of Engineering, University of Exeter, Exeter, UK

**FM-4:L02 Novel Functions Achieved by Atom/Ion Movement Controlled Devices**

**T. HASEGAWA**, M. AONO, WPI Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), Tsukuba, Japan

**FM-4:L03 Study of Memristive Switching Effects in MIM-stacks with the Graded Functional Layer**

**Yu. MATVEYEV**, NRU "Moscow Engineering Physics Institute", Moscow, Russia; **YU. LEBEDINSKII**, A. MARKEEV, K. EGOROV, Moscow Institute of Physics and Technology, Moscow region, Russia; **A. ZENKEVICH**, National Research Center "Kurchatov Institute", Moscow, Russia

**FM-4:L04 BiFeO<sub>3</sub> Bilayer Structures for Implementing beyond Von-Neumann Computing**

**TIANGUI YOU**, NAN DU, D. BÜRGER, I. SKORUPA, O.G. SCHMIDT, H. SCHMIDT, Material Systems for Nanoelectronics, Chemnitz University of Technology, Chemnitz, Germany; YAO SHUAI, WENBO LUO, State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; S. HENKER, C. MAYR, R. SCHÜFFNY, Faculty of Electrical Engineering and Information Technology, Institute of Circuits and Systems, Technische Universität Dresden, Dresden, Germany; T. MIKOLAJICK, NaMLab gGmbH, Dresden, Germany

**FM-4:L05 Amorphous In-Ga-Zn-O Thin-Film-Transistor Memory Devices for System-on-Panel Applications**

**SHI-JIN DING**, XING-MEI CUI, SUN CHEN, School of Microelectronics, Fudan University, Shanghai, China

**FM-4:L06 Memristor Memory: a Fundamentally New Opportunity**

**J.H. NICKEL**, J.J. YANG, J.P. STRACHAN, G. SNIDER, R.S. WILLIAMS, Hewlett Packard Laboratories, Palo Alto, CA, USA

**FM-4:L07 Nanodevices for Bio-inspired Computing: Memristors & More**

**J. GROLLIER** et al., CNRS/Thales, Palaiseau, France

**FM-4:L08 Tunnel Junction Based Memristors for Neuromorphic Processing**

**A. THOMAS**, Bielefeld University and Mainz University, Germany

**FM-4:L09 Neuromorphic Computing with Memristive Circuits**

**D.B. STRUKOV**, Electrical and Computer Engineering Department, University of California at Santa Barbara, Santa Barbara, CA, USA

**Poster Presentations****FM:P01 Block Copolymer Self Assembling for the Fabrication of Nanoscale HfO<sub>2</sub> Resistive Switching Memories**

**J. FRASCAROLI**<sup>1, 2, 3</sup>, S. BRIVIO<sup>1</sup>, F. FERRARESE LUPI<sup>1</sup>, F. VOLPE<sup>1</sup>, M. PEREGO<sup>1</sup>, L. BOARINO<sup>2</sup>, S. SPIGA<sup>1</sup>, <sup>1</sup>Laboratorio MDM, IMM-CNR, Agrate Brianza, Italy; <sup>2</sup>INRIM, NanoFacility, Division Electromagnetism, Torino, Italy; <sup>3</sup>Università degli studi di Milano, Milano, Italy

**FM:P02 Extraction of Filament Properties in Resistive Random Access Memory (ReRAM) Consisting of Binary-transition-metal-oxides**

**T. MORIYAMA**<sup>1</sup>, R. KOISHI<sup>1</sup>, K. KIMURA<sup>1</sup>, S. KISHIDA<sup>1, 2</sup>, K. KINOSHITA<sup>1, 2</sup>, <sup>1</sup>Tottori University, Koyama-Minami, Tottori, Japan; <sup>2</sup>Tottori University Electronic Display Research Center, Koyama-Kita, Japan

**FM:P03 Effect of Electrode Material on the Crystallisation of GaV4S8 Thin Films Dedicated to Mott Memory Applications**

**J. TRANCHANT**, **M.-P. BESLAND**, E. JANOD, L. CARIO, B. CORRAZE, Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, UMR CNRS 6502, Nantes, France

**FM:P04 Analysis of Resistive Switching Effect Induced by Hydrogen Introduction Using X-ray Absorption Fine Structure**

**A. HANADA**<sup>1</sup>, H. MIURA<sup>1</sup>, T. NOTSU<sup>1</sup>, H. OSAWA<sup>2</sup>, T. INA<sup>2</sup>, M. SUZUKI<sup>2</sup>, N. KAWAMURA<sup>2</sup>, M. MIZUMAKI<sup>2</sup>, T. URUGA<sup>2</sup>, **S. KISHIDA**<sup>1, 3</sup>, K. KINOSHITA<sup>1, 3</sup>, <sup>1</sup>Tottori University, Koyama-Minami, Tottori, Japan; <sup>2</sup>JASRI / SPring-8, Hyogo, Japan; <sup>3</sup>Tottori University Electronic Display Research Center, Koyama-Minami, Tottori, Japan

**FM:P05 Elucidation of Metal Diffusion Mechanism in Conducting-Bridge Random Access Memory (CB-RAM) Using First-principle Calculation**

**K. KINOSHITA**<sup>1, 2</sup>, S. YURA<sup>1</sup>, T. YAMASAKI<sup>3</sup>, K. NAKADA<sup>1</sup>, A. ISHII<sup>1</sup>, S. KISHIDA<sup>1, 2</sup>, <sup>1</sup>Tottori University, Koyama-Minami, Tottori, Japan; <sup>2</sup>Tottori University Electronic Display Research Center, Koyama-Kita, Japan; <sup>3</sup>National Institute for Materials Science, Sengen, Ibaraki, Japan

**FM:P06 Resistive Switching Behavior of Undoped Hematite Film with Low Resistivity**

**Y. OGAWA**, Y. SUTOU, D. ANDO, J. KOIKE, Department of Materials Science, Tohoku University, Sendai, Miyagi, Japan

**FM:P07 Switching in Polymer Memory Devices based on Polymer and Nanoparticles Admixture**

**Z. AL HALAFI**, S. PAUL, Emerging Technologies Research Centre, De Montfort University, Leicester, UK

**FM:P08 Two Terminal Non-volatile Memory Devices using Diamond-like Carbon and Silicon Nano-structures**

**S.R. ALOTAIBI**, D. PRIME, S. PAUL, Emerging Technologies Research Centre, De Montfort University, Leicester, UK

**FM:P09 Magnon and Electromagnon Excitations in BiFeO<sub>3</sub>**

**N. FURUKAWA**, Dept. of Physics, Aoyama Gakuin University, Sagamihara, Japan; S. MIYAHARA, Department of Applied Physics, Fukuoka University, Fukuoka, Japan

**FM:P10 Atomic Layer Deposition of HfxZr1-x Oy and TiN Thin Films for Ferroelectric Memory Applications**

**A.G. CHERNIKOVA**, A.M. MARKEEV, YU.YU. LEBEDINSKII, A.V. ZABLOTSKIY, M.G. KOZODAEV, Moscow Institute of Physics and Technology, Dolgorudny, Moscow region, Russia

**FM:P11 Memristive Switching of Thin Sputtered Vanadium Dioxide Films**

**S. FABRETTI**, S. NIEHÖRSTER, Bielefeld University, Bielefeld, Germany; A. THOMAS, Bielefeld and Mainz University, Germany

**FM:P12 TaO Based Memristive Tunnel Junctions**

**S. NIEHÖRSTER**, S. FABRETTI, M. SCHÄFERS, Bielefeld University, Bielefeld, Germany; A. THOMAS, Mainz University, Mainz, Germany

**FM:P13 Nanocrystal Memory: Charge Transport in Single- and Double Layered NVMs**

**V. IEVTUKH**, A. NAZAROV<sup>1</sup>, V. TURCHANIKOV<sup>1</sup>, V. LYSENKO<sup>1</sup>, A. NASSIOPOULOU<sup>2</sup>, <sup>1</sup>V.E. Lashkaryov Institute of Semiconductor Physics NASU, Kyiv, Ukraine; <sup>2</sup>Institute of Microelectronics, NCSR 'Demokritos', Aghia Paraskevi, Athens, Greece

**FN-1:IL05 New Phenomenon Akin to Superconductivity and yet not Superconductivity: The Zero Magnetoresistance in Polymer Nanofibers**

**YUNG WOO PARK**, Department of Physics and Astronomy, Seoul National University, Seoul, Korea

**FN-1:IL06 2D Superconductivity by Ionic Gating**

**Y. IWASA**, University of Tokyo and RIKEN, Tokyo, Japan

**FN-1:IL07 Exploring High-Tc Superconductivity by Strain and Electric Field Effect**

**D. PAVUNA**, EPFL, Lausanne, Switzerland

## Session FN-2

### New Superconductors of the Pnictides and Related Families

**FN-2:IL01 Progress in Epitaxial Thin Films of 122-type Iron-pnictide Superconductors: Non-equilibrium Impurity Doping and Critical Current Density**

**H. HIRAMATSU**<sup>1, 3</sup>, **H. HOSONO**<sup>1, 2, 3</sup>, <sup>1</sup>Materials and Structures Laboratory, Tokyo Institute of Technology, Japan; <sup>2</sup>Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan; <sup>3</sup>Frontier Research Center, Tokyo Institute of Technology, Japan

**FN-2:IL02 Interface Induced High Tc Superconductivity and its Implication on the Pairing Mechanism of Unconventional Superconductivity**

**QI-KUN XUE**, Department of Physics, Tsinghua University, Beijing, China

**FN-2:IL03 Fabrication and Properties of Iron-based Superconducting Films**

**E. BELLINGERI**, S. KAWALE, V. BRACCINI, A. GERBI, R. BUZIO, L. PELLEGRINO, A. SALA, A. PALENZONA, M. PUTTI, C. FERDEGHINI, CNR - SPIN Genova, Genova, Italy, Physics Department, University of Genova, Genova, Italy; A. JOST, U. ZEITLER, High Field Magnet Laboratory, Institute for Molecules and Materials, Radboud University Nijmegen, Nijmegen, Netherlands; C. TARANTINI, J. JAROSZYNSKI, Applied Superconductivity Center, National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, USA; E. REICH, B. HOLZAPFEL, IFW Dresden, Dresden, Germany

**FN-2:IL04 Separation of Antiferromagnetism and High-temperature Superconductivity in Ca<sub>1-x</sub>LaxFe<sub>2</sub>As<sub>2</sub>**

**J. PAGLIONE**, S.R. SAHA, T. DRYE, S.K. GOH, L.E. KLINTBERG, J.M. SILVER, F.M. GROSCHÉ, M. SUTHERLAND, T.J.S. MUNSHIE, G.M. LUKE, D. K. PRATT, J.W. LYNN, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park, MD, USA

**FN-2:IL05 Superconductivity in Iron-based Materials**

**M. PUTTI**, Department of Physics, University of Genoa and CNR-SPIN, Genoa, Italy

**FN-2:IL06 Pairing Interaction in the Fe-based Superconductors Studied with Atomically Resolved Scanning Tunneling Microscopy/Spectroscopy**

**SHUHENG H. PAN**, Department of Physics, University of Houston, Houston, TX, USA; Texas Center for Superconductivity; Institute of Physics, Chinese Academy of Sciences

**FN-2:IL07 Angle-resolved Photoemission Spectroscopy Study of Iron-pnictide Superconductors**

**HONG DING**, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, CAS, Beijing, China

**FN-2:IL08 Superconductivity at Tc = 36.5 K in Na-substituted SrFe<sub>2</sub>As<sub>2</sub> Single Crystals**

**L. SHLYK**, M. BISCHOFF, R. NIEWA, Institut für Anorganische Chemie, Universität Stuttgart, Stuttgart, Germany; E. ROSE, Physikalisches Institut, Universität Stuttgart, Stuttgart, Germany

## Session FN-3

### Properties of Superconductors (of Any Type)

**FN-3:IL01 Static to Dynamical Antiferromagnetic Correlation in Electron-doped Cuprate Superconductors Studied by ARPES**

**A. FUJIMORI**, Department of Physics, University of Tokyo, Tokyo, Japan

**FN-3:IL02 Charge Order Driven by Fermi-arc Instability in Underdoped Cuprates**

**A. DAMASCCELLI**, University of British Columbia, Vancouver, Canada

**FN-3:IL03 Designer Dirac Electronic and Superconducting Materials Synthesized via Scanning Tunneling Microscope Quantum Assembly**

**H.C. MANOHARAN**, Stanford University, Department of Physics, Stanford, CA, USA

## FN - 7th International Conference SCIENCE AND ENGINEERING OF NOVEL SUPERCONDUCTORS

### Oral Presentations

#### Session FN-1

##### Materials, Structure, Physical Chemistry and General Properties

**FN-1:IL01 Ferroelectricity and Magnetoelectric Coupling in Underdoped Cuprates**

**C. PANAGOPOULOS**, Division of Physics and Applied Physics, Nanyang Technological University, Singapore

**FN-1:IL02 Atomic-layer Engineering and Physics of Cuprate Superconductors**

**I. BOZOVIC**, Brookhaven National Laboratory, Upton, NY, USA

**FN-1:IL03 Highest Zero-resistance Temperature (153K) of Hg1223 at High Pressures**

**A. YAMAMOTO**, RIKEN Center for Emergent Matter Science, Saitama, Japan

**FN-1:IL04 Superconductivity in(Cu1-X MoX)Sr2RECu2O<sub>7+δ</sub> (RE = Y, Er, Tm) Molibdocuprates**

**M.A. ALARIO-FRANCO**, S. MARIK<sup>1, 2</sup>, E. MORÁN<sup>1</sup>, C. LABRUGERE<sup>2</sup>, O. TOULEMONDE<sup>2</sup>, A. DOS SANTOS<sup>1</sup>, I. HERRERO-ANSORREGUI<sup>1</sup>, <sup>1</sup>Dpto. Química Inorgánica, Facultad de CC. Químicas, U. Complutense de Madrid, Madrid, Spain; <sup>2</sup>CNRS, Université de Bordeaux, ICMCB, Pessac, France

**FN-3:L04 Preparation and Characterization of Superconducting (La,Sr) CuO<sub>4</sub> Nanowires by Means of Electrospinning**

**M.R. KOBLISCHKA**, X. ZENG, U. HARTMANN, Institute of Experimental Physics, Saarland University, Saarbrücken, Germany

**FN-3:L05 Influence of Spatial Disorder on Superconducting State of a 3D Superconductor**

**C. PARRA<sup>1</sup>**, F.C. NIESTEMSKI, P. GIRALDO-GALLO<sup>2,3</sup>, A.W. CONTRYMAN<sup>2,3</sup>, T.H. GEBALLE<sup>3,4</sup>, I.R. FISHER<sup>3,4</sup>, H.C. MANOHARAN<sup>2,5,6</sup>, <sup>1</sup>Departamento de Física, Universidad Técnica Federico Santa María, Valparaíso, Chile; <sup>2</sup>Department of Physics, Stanford University, Stanford, CA, USA; <sup>3</sup>Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA, USA; <sup>4</sup>Department of Applied Physics, Stanford University, Stanford, CA, USA; <sup>5</sup>Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory, Menlo Park, CA, USA

**FN-3:L06 STM Spectroscopy Probe of Magnetic Field Depairing and Vortex Lattice Transition in a Multiband Superconductor**

I. FRIDMAN<sup>1</sup>, V. LUKIC<sup>2</sup>, C. KLOC<sup>3</sup>, C. PETROVIC<sup>4</sup>, J.Y.T. WEI<sup>1,5</sup>, <sup>1</sup>University of Toronto, CANADA; <sup>2</sup>Stevens Institute of Technology, USA; <sup>3</sup>Nanyang Technological University, Singapore; <sup>4</sup>Brookhaven National Laboratory, USA; <sup>5</sup>Canadian Institute for Advanced Research, Canada

**FN-3:L07 High Tc Superconductivity in Cuprate/Titanate Hetero-structures**

**D. DI CASTRO**, G. BALESTRINO, A. TEBANO, D. INNOCENTI, F. RIDOLFI, University of Rome Tor Vergata and CNR-SPIN, Rome, Italy; C. ARUTA, CNR-SPIN, Rome, Italy

**FN-3:L08 Role of Mg-B-O Nanostructural Inhomogeneities on the Performance of Superconducting MgB<sub>2</sub>**

**T.A. PRIKHNA<sup>1</sup>**, M. EISTERER<sup>2</sup>, V.V. KOVYLAEV<sup>3</sup>, H.W. WEBER<sup>2</sup>, V. MOSHCHIL<sup>1</sup>, W. GAWALEK<sup>4</sup>, X. CHAUD<sup>5</sup>, <sup>1</sup>Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Kiev, Ukraine; <sup>2</sup>Atominstitut, Vienna University of Technology, Vienna, Austria; <sup>3</sup>Institute for Problems in Material Science of the National Academy of Sciences of Ukraine, Kiev, Ukraine; <sup>4</sup>Institut für Photonische Technologien, Jena, Germany; <sup>5</sup>CNRS/LNMP, Grenoble Cedex, France

**FN-3:L09 Microwave Measurements of Surface Resistance and Conductivity of Optimised NdBaCuO Films**

**J. MAZERSKA**, K. LEONG, James Cook University, Townsville, Australia; J. KRUPKA, Warsaw University of Technology, Poland

**Session FN-4****Theory and Mechanisms (for Normal and Superconducting States)****FN-4:L01 Spin-Polarised Supercurrents: A Paradigm Shift for Spintronics**

**J.W.A. ROBINSON<sup>1</sup>**, A. DI BERNARDO<sup>1</sup>, T. HIGGS<sup>1</sup>, A. WELLS<sup>1</sup>, N. BANNERJEE<sup>1</sup>, M. EGILMEZ, M.G. BLAMIRE<sup>1</sup>, Y. KALCHEIM<sup>2</sup>, O. MILLO<sup>2</sup>, <sup>1</sup>Department of Material Science and Metallurgy, University of Cambridge, Cambridge, UK; <sup>2</sup>Racah Institute of Physics and the Hebrew University Center for Nanoscience and Nanotechnology, The Hebrew University of Jerusalem, Jerusalem, Israel

**FN-4:L02 Peeping at Pairing Interactions with Coherent Charge Fluctuation Spectroscopy**

**J. LORENZANA**, Institute for Complex Systems - CNR and Physics Department, Sapienza, University of Rome, Italy; B. MANSART, A. MANN, A. ODEH, M. CHERGUI, F. CARBONE, EPFL, Lausanne, Switzerland

**FN-4:L03 Recent Progress in Modeling Electronic Structure and Spectroscopy of Novel Superconductors and Topological Insulators**

**A. BANSIL**, Physics Department, Northeastern University, Boston, Massachusetts, USA

**FN-4:L04 Sorting Chicken from Eggs: Polaronic or Spin Fluctuation Mediated Superconductivity in High Temperature Copper Oxides**

**A. BUSSMANN-HOLDER**, Max-Planck-Institute for Solid State Research, Stuttgart, Germany

**FN-4:L05 Density Functional Theory for Plasmon-assisted Superconductivity**

R. AKASHI, **R. ARITA**, Department of Applied Physics, University of Tokyo, Tokyo, Japan

**FN-4:L06 Magnetic and Ionic Effects in High-temperature Superconductors**

G. NIKSIC, **D.K. SUNKO**, S. BARISIC, Department of Physics, Faculty of Science, University of Zagreb, Zagreb, Croatia

**FN-4:L07 High Temperature Superconductivity within t-J Model: Comparison to Experiment**

**J. SPALEK**, J. KACZMARCZYK, Marian Smoluchowski Institute of Physics, Jagiellonian University, Krakow, Poland

**Session FN-5****Vortex Lattice Physics****FN-5:L01 Vortex Molecules in Layered Thin Films Superconductors**

**A. BUZDIN**, University of Bordeaux, LOMA, Bordeaux, France; A. MELNIKOV, A. SAMOKHVALOV, Institute for Physics of Microstructures, Nizhny Novgorod, Russia

**FN-5:L02 Vortex Structures in Iron-based Superconductors by Small-angle Neutron Scattering**

**H. KAWANO-FURUKAWA**, Ochanomizu University, Bunkyo-ku, Tokyo, Japan

**FN-5:L03 How the Macroscopic Current in a Superconductor Correlates with the Microscopic Flux-line Distribution: An Experimental Study**

**M. ZEHETMAYER**, J. HECHER, Atominstitut, Vienna University of Technology, Vienna, Austria

**FN-5:L04 Lightning in Superconductors**

T.H. JOHANSEN, **Y. GALPERIN**, J.I. VESTGAARDEN, Department of Physics, University of Oslo, Oslo, Norway

**Session FN-6****Synthesis and Processing****FN-6:L01 Dominant Second Harmonic in the Josephson Current-phase Relation: Manifestation of the Long-range Spin-triplet Proximity Effect in Ferromagnetic Bilayers**

**Z. RADOVIC**, University of Belgrade, Department of Physics, Belgrade, Serbia

**FN-6:L02 High-resolution Electron Microscopy and Electron Energy-loss Spectroscopy as Tools to Study the Structure and Bonding Nature of Complex Oxides**

**G.A. BOTTON**, M. BUGNET, N. GAUQUELIN, G.Z. ZHU, Department of Materials Science and Engineering, McMaster University, Hamilton, Canada

**FN-6:L03 Synthesis and Characterization of Phenacene Superconducting Hydrocarbons**

**G.A. ARTIOLI**, L. MALAVASI, Dip. di Chimica, Università di Pavia-INSTM UdR di Pavia, Pavia, Italy

**FN-6:L04 Synthesis of MgB<sub>2</sub> Superconducting Materials with Zr at a Pressure of 2 GPa**

**A. KOZYREV**, T. PRIKHNA, E. MOSHIL, N. SERGIENKO, Institute for Superhard Materials of National Academy of Science of Ukraine, Kiev, Ukraine; W. GAWALEK, Institute for Photonic Technologies, Jena, Germany

**FN-6:L05 Topological Electronic Structure and Properties of Single-layer Films for Spintronics Applications: Silicene and Related Materials**

**HSIN LIN**, Graphene Research Centre and Department of Physics, National University of Singapore, Singapore; WEI-FENG TSAI, CHENG-YI HUANG, FENG-CHUAN CHUANG, ZHI-QUAN HUANG, CHIA-HSIU HSU, YU-TZU LIU, HUA-RONG CHANG, Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan; TAY-RONG CHANG, HORNG-TAY JENG, Department of Physics, National Tsing Hua University, Hsinchu, Taiwan; GAURAV GUPTA, MANSOOR BIN ABDUL JALIL, GENGCHIAU LIANG, Department of Electrical and Computer Engineering, National University of Singapore, Singapore; ARUN BANSIL, Department of Physics, Northeastern University, Boston, MA, USA

**FN-6:L06 Single Crystal Growth of BaFe<sub>2</sub>As<sub>2</sub>-based Superconductors by Self-flux Method**

**H. EISAKI**, K. KIHOU, S. ISHIDA, M. NAKAJIMA, A. IYO, C.H. LEE, AIST, Tsukuba, Japan; T. SAITO, H. FUKAZAWA, Y. KOHORI, Chiba University, Japan; S. UCHIDA, Tokyo University, Japan

**FN-6:L07 Optimally Processed MgB<sub>2</sub> Bulk Magnets with High Critical Currents**

**M. MURALIDHAR<sup>1</sup>**, K. INOUE<sup>1</sup>, M.R. KOBLISCHKA<sup>2</sup>, M. MURAKAMI<sup>1</sup>, <sup>1</sup>Superconducting Materials Laboratory, Department of Materials Science and Engineering, Shibaura Institute of Technology, Tokyo, Japan; <sup>2</sup>Institute of Experimental Physics, Saarland University, Saarbrücken, Germany

**Session FN-7****Applications****FN-7:L01 Recent Progress in Superconducting Radio-frequency Cavities for High Energy Particle Accelerators**

**R.S. ORR**, Department of Physics, University of Toronto, Toronto, Canada

## **FN-7:IL02 Modelling and Measurement of AC Loss in Coated Conductor Windings**

**E. PARDO**, J. SOUC, J. KOVAC, Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia

## **FN-7:IL03 Novel Materials for High-current Superconducting Coils: from MgB<sub>2</sub> to FeSeTe**

**C. FERDEGHINI**, CNR-SPIN, Genova, Italy

## **FN-7:IL04 The Superconducting Order Parameter in Iron-based Superconductors**

**T. SHIBAUCHI**, Department of Physics, Kyoto University, Kyoto, Japan

## **FN-7:IL05 Low Loss Cable from High-temperature Superconducting Tapes**

**F. GOMORY**, J. SOUC, M. VOJENCIAK, M. SOLOVYOV, Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia

## **FN-7:IL06 Light MgB<sub>2</sub> Superconductor with Ti-barrier and Al-stabilization Suitable for Mass-limited Applications**

**P. KOVAC**, I. HUŠEK, T. MELÍSEK, L. KOPERA, Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia

## **FN-7:IL07 Superconductors beyond Nb<sub>3</sub>Sn in View of Energy Applications and Accelerators**

**R. FLÜKIGER**, Dept. Phys. Cond. Matter (DPMC), Geneva, Switzerland and CERN, TE-MSC

## **FN-7:IL08 Development of Roebel Cables for High Current Applications**

**W. GOLDACKER**, A. KARIO, A. KLING, Karlsruhe Institute of Technology, Institute for Technical Physics, Eggenstein, Germany

## **FN-7:IL09 Physics and Applications of High-Tc Superconductors**

**J.L. TALLON**, MacDiarmid Institute & Callaghan Innovation, Lower Hutt, New Zealand

## **FN-7:IL10 Nano Domain Encoding in Transport Properties of Unconventional Josephson Junctions and Nanostructures**

**F. TAFURI**<sup>1, 2</sup>, D. MASSAROTTI<sup>3, 2</sup>, D. STORNAUOLO<sup>3, 2</sup>, L. GALLETI<sup>3, 2</sup>, L. LONGOBARDI<sup>1</sup>, P. LUCIGNANO<sup>2</sup>, A. TAGLIACOZZO<sup>3, 2</sup>, G. ROTOLI<sup>1</sup>, D. MONTEMURRO<sup>4</sup>, LOMBARDI<sup>5</sup>, <sup>1</sup>Seconda Università di Napoli, Italy; <sup>2</sup>CNR-SPIN, Unità di Napoli; Italy; <sup>3</sup>Università di Napoli Federico II, Napoli, Italy; <sup>4</sup>Scuola Normale Superiore & NEST, Pisa, Italy; <sup>5</sup>Chalmers University, Gothenborg, Sweden

## **FN-7:IL11 Recent Progress in Terahertz Emission and Detection of High Temperature Superconducting Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8+d</sub>**

**L. OZYUZER**, Y. DEMIRHAN, F. TURKOGLU, H. KOSEOGLU, H. ALABOZ, M. KURT, Department of Physics, Izmir Institute of Technology, Izmir, Turkey; K. KADOWAKI, University of Tsukuba, Tsukuba, Japan

## **Poster Presentations**

### **FN:P01 Orientation Control of Bismuth-based Cuprate Thin Films by Spin Coating and MOCVD Targeting Future Electronics Applications**

**K. ENDO**, T. KANEKO, Kanazawa Institute of Technology, Hakusan, Ishikawa, Japan; P. BADICA, National Institute of Materials Physics, Bucharest, Atomistilor, Romania; S. ARISAWA, National Institute for Materials Science, Tsukuba, Ibaraki, Japan

### **FN:P02 Thermopower Studies of Multiband Superconductors**

**K. OGANISIAN**, K. ROGACKI, Institute of Low Temperature and Structure Research, Wroclaw, Poland; N.D. ZHIGADLO, J. KARPINSKI, Laboratory for Solid State Physics, ETH, Zurich, Switzerland

### **FN:P03 Critical Current Density and Pinning Energy of Partial Melted Sm-based Superconductor**

**H. IMAO**, Department of Control Engineering, Matsue National College of Technology, Matsue, Japan

### **FN:P04 Critical Current of Bi-2212 Single Crystal by Doping Oxides as a Pinning Center**

**T. AGOU**, H. IMAO, Department of Control Engineering, Matsue National College of Technology, Matsue, Japan

### **FN:P05 High Critical Currents in Single Grain YBa<sub>2</sub>Cu<sub>3</sub>O<sub>y</sub> Bulk Superconductors Produced by Infiltration-growth Process**

**K. NAKAZATO**<sup>1</sup>, M. MURALIDHAR<sup>1</sup>, K. INOUE<sup>1</sup>, M.R. KOBLISCHKA<sup>2</sup>, M. MURAKAMI<sup>1</sup>, <sup>1</sup>Superconducting Materials Laboratory, Department of Materials Science and Engineering, Shibaura Institute of Technology, Tokyo, Japan; <sup>2</sup>Institute of Experimental Physics, Saarland University, Saarbrücken, Germany

## **FN:P06 Terahertz Emission from Triple Mesa Structures Fabricated from Intrinsic Josephson Junctions in Cuprate Superconductors**

**Y. DEMIRHAN**, L. OZYUZER, H. SAGLAM, F. TURKOGLU, H. KOSEOGLU, M. KURT, H. ALABOZ, Department of Physics, Izmir Institute of Technology, Urla, Izmir, Turkey; K. KADOWAKI, University of Tsukuba, Tsukuba, Japan

## **FN:P07 Transition to the Normal State Induced by High Current Densities in High-Tc Superconductor Microbridges under Thermal Smallness Conditions**

J.M. DOVAL, J. MAZA, J.A. VEIRA, M. TELLO\*, **F. VIDAL**, LBTS, Universidad de Santiago de Compostela, Spain; \*Facultad de Ciencias, Universidad del País Vasco, Bilbao, Spain

## **FO - 10th International Conference MEDICAL APPLICATIONS OF NOVEL BIOMATERIALS AND NANO- BIOTECHNOLOGY**

### **Oral Presentations**

#### **Session FO-1**

##### **Advances in Biomaterials**

### **FO-1:IL01 Novel Nano- and Pico-technology Medical Devices: The Future is Here**

**T.J. WEBSTER**, Department of Chemical Engineering, Northeastern University, Boston, MA, USA

### **FO-1:IL02 Bioinspired 3D Structured Composites**

**A.R. STUDART**, Complex Materials, Department of Materials, ETH Zurich, Switzerland

### **FO-1:IL03 Macromolecular Crowding: The Next Frontier in Tissue Engineering**

**D.I. ZEUGOLIS**, Network of Excellence for Functional Biomaterials (NFB), National University of Ireland, Galway, Ireland

### **FO-1:IL04 Rapid Prototyping of Biomaterials for Diagnostic, Drug Delivery, and Regenerative Medicine Applications**

**R.J. NARAYAN**, UNC/NCSU Joint Department of Biomedical Engineering, Raleigh, NC, USA

### **FO-1:IL05 Engineering Materials for Regenerative Medicine**

**S. COHEN**, The Regenerative Medicine and Stem cell (RMSC) Research Center & The Avram and Stella Goldstein-Goren Department of Biotechnology Engineering, Ben-Gurion University of the Negev, Beer Sheva, Israel

### **FO-1:IL06 Self-assembled Nanostructured Biomaterials for Biomedical Devices**

**H. FENNIRI**, Northeastern University and Qatar Biomedical Research Institute, Boston, MA, USA

### **FO-1:IL07 Nanostructured Materials and Systems for Biomedical Applications**

**J.Y. YING**, Institute of Bioengineering and Nanotechnology, Singapore

### **FO-1:IL08 Multifunctional Polymer Networks for Regenerative Medicine**

**A. LENDELIN**, Institute of Biomaterials Science and Berlin-Brandenburg Centre for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany

### **FO-1:IL09 Advanced Applications of Bioactive Glasses: Vascularization, Drug Release, Wound Healing and Soft Tissue Regeneration**

**V.P. MIGUEZ, A.R. BOCCACCINI**, Institute of Biomaterials, University of Erlangen-Nuremberg, Erlangen, Germany

### **FO-1:IL10 In-vivo Toxicity Evaluation for Nanophosphors as an Alternative to Quantum Dots**

**GUN HYUK JANG, SU YEON KIM, HO SEONG JANG, KWAN HYI LEE**, Korea Institute of Science and Technology (KIST) Seoul, Republic of Korea; University of Science and Technology (UST), Seoul, Republic of Korea

### **FO-1:IL11 Facile in situ Synthesis and Impregnation of Silver Nanoparticles in a Hydrophobic Polymer for Antimicrobial Biomaterials**

**P.A. TRAN**, A.J. O'CONNOR, Department of Chemical and Biomolecular Engineering, Particulate Fluids Processing Centre, The University of Melbourne, Victoria, Australia; D.M. HOCKING, Department of Microbiology and Immunology, The University of Melbourne, Australia

**FO-1:L12 Surface Functionalization of PLLA Electrospun Scaffolds: Introduction of Amino Groups by Atmospheric Pressure Non-equilibrium Plasma**

**M.L. FOCARETE**, L. PALTRINIERI, Alma Mater Studiorum - Università di Bologna, "G. Ciamician" Chemistry Department, Bologna, Italy; S. VALERI, Dipartimento di Scienze Fisiche Informatiche e Matematiche, Università di Modena e Reggio Emilia, Modena, Italy and CNR, Institute of Nanoscience-S3, Modena, Italy; A. BALLESTRAZZI, Dipartimento di Scienze Fisiche Informatiche e Matematiche, Università di Modena e Reggio Emilia, Modena, Italy; L.S. DOLCI, Health Sciences and Technologies -Interdepartmental Center for Industrial Research (HST-ICIR), Alma Mater Studiorum - Università di Bologna, Ozzano dell'Emilia, Italy; V. COLOMBO, M. GHERARDI, R. LAURITA, A. LIGUORI, A. STANCAMPIONO, Alma Mater Studiorum - Università di Bologna, Department of Industrial Engineering (DIN), Bologna, Italy

**FO-1:L13 Biocompatible Polymers as Bi-directional Diffusion Barriers for Hermetic Encapsulation of Implantable Electronics**

**M. OP DE BEECK**, imec, Leuven & Centre for Microsystems Technology (CMST) - UGent/imec, Gent, both in Belgium; A. JARBOUI, CMST - UGent/imec, Gent, Belgium & KACST-Intel Consortium Center of Excellence in Nano-manufacturing Applications (CENA), KSA & Laboratoire des matériaux ferroélectriques (LMF), Sfax University, Tunisia; M. CAUWE, CMST - UGent/imec, Gent, Belgium Heidi Declercq, Dept. of Basic Medical Sciences, Faculty of Medicine and Health Sciences - UGent, Gent, Belgium; M. CORNELISSEN, Dept. of Basic Medical Sciences, Faculty of Medicine and Health Sciences - UGent, Gent, Belgium Griet Utterhoeven, imec, Leuven, Belgium; D. DEDUYTSCHE, Dept. of Solid-state Physics, Faculty of Sciences - UGent, Gent, Belgium; C. VAN HOOF, imec, Leuven, Belgium

**FO-1:L14 On the Formation of Apatites in the Chemically Bonded CaO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>-H<sub>2</sub>O System**

**L. HERMANSSON**, G. GÓMEZ-ORTEGA, J. LÖÖF, Doxa AB, Uppsala, Sweden

**FO-1:L15 Diopside Glass-ceramics for Dental and Biomedical Applications**

**J. AL-MUHAMADI**, N. KARPUKHINA, M. CATTELL, Centre for Adult Oral Health, Institute of Dentistry, Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK

**FO-1:L16 Systematic Approach to Preparing Ceramic-glass Composites with High Translucency for Dental Restorations**

**H.N. YOSHIMURA**, A. CHIMANSKI, Universidade Federal do ABC, Santo André, SP Brazil; PF CESAR, Universidade de São Paulo, São Paulo, SP, Brazil

**FO-1:L17 Bioactive and Biocompatible Silica/Pseudowollastonite Aerogels**

**P.J. RESÉNDIZ HERNÁNDEZ**, D.A. CORTÉS HERNÁNDEZ, CINVESTAV-IPN, Unidad Saltillo, Ramos Arizpe, Mexico

**FO-1:L18 Biocompatible Hydroxyapatite Nanotubes**

**B.B. CHANDASHIVE**, **D. KHUSHALANI**, Materials Chemistry Group, Department of Chemical Sciences, Tata Institute of Fundamental Research, Colaba, Mumbai, India

**FO-1:L19 Surface Modification of Highly Dispersed Cobalt Iron Oxide Nanoparticles by Anionic Surfactant (OA-PEG) for Hyperthermia Therapy Application**

**A.B. SALUNKHE**, V.M. KHOT, S.H. PAWAR, Center for Interdisciplinary Research, D. Patil University, Kolhapur, Maharashtra, India

## Session FO-2

### Enabling Tools

**FO-2:L01 Cell Manipulation and Processing using Inkjet Printing**

**B. DERBY**, R. DOU, R.E. SAUNDERS, School of Materials, University of Manchester, UK; C. WARD, School of Dentistry, University of Manchester, UK

**FO-2:L02 Miniaturized CMOS Imaging Devices to Measure Brain Neural Activities of Freely-moving Mice**

**J. OHTA**, Graduate School of Materials Science, Nara Institute of Science and Technology, Ikoma, Japan

**FO-2:L03 Understanding Interactions of Nanomaterials with Biological Environment: Insights from Simulations**

**I. YAROVSKY**, Health Innovations Research Institute, RMIT University, Melbourne, Australia

**FO-2:L04 Atmospheric Pressure Plasma Patterning of Biocompatible Glass: Comparison of Localized Treatment Effectiveness with Different Plasma Sources**

V. COLOMBO, M. GHERARDI, R. LAURITA, **A. LIGUORI**, A. STANCAMPIONO, Alma Mater Studiorum - Università di Bologna, Department of Industrial Engineering (DIN), Bologna, Italy

**FO-2:L05 Separation of Cells in Multiphase Systems**

**O. AKBULUT**, Z.P. GUVEN, G. AVCI, M. COKOL, Sabancı University, Istanbul, Turkey

**FO-2:L06 Surface Modulation of Carbohydrate Ligands on Cells Using Polymerization Technique**

**Y. IWASAKI**, M. SAKIYAMA, S. FUJII, Department of Chemistry and Materials Engineering, Kansai University, Suita, Osaka, Japan

**FO-2:L07 Synthesis of Dual Fluorescently Labeled Silica Nanoparticles via a Reverse Microemulsion Method for in Vitro Studies**

**S. SHAHABI**, L. TRECCANI, K. REZWAN, Advanced Ceramics, University of Bremen, Bremen, Germany

**FO-2:L08 Smart Biomaterials for DNA Analyzing Tools**

**M. MAEDA**, Bioengineering Laboratory, RIKEN Institute, Wako, Saitama, Japan

**FO-2:L09 Porous Silicon based Biosensors and Microarray**

I. REA, A. CALIO<sup>1</sup>, J. POLITI, M. TERRACCINO, **L. DE STEFANO**, IMM-CNR, Napoli, Italy

## Session FO-3

### Medical Diagnostics and Imaging

**FO-3:L01 Infrared Sensors Inspired by Pyrophilous Insects**

**H. BOUSACK**, Forschungszentrum Jülich, Jülich, Germany; H. SCHMITZ, Universität Bonn, Bonn, Germany; M. SCHLOSSIG, Technische Universität Dresden, Dresden, Germany

**FO-3:L02 Novel Nanostructured Sensors for Orthopaedics**

**S. SIRIVISOOT**, Biological Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi, Bangkok, Thailand

**FO-3:L03 Responsive Nanoparticulate MRI Contrast Agents**

**G.-L. DAVIES**, Department of Chemistry, University of Warwick, Coventry, UK; W.-Y. HUANG, J.J. DAVIS, Department of Chemistry, University of Oxford, Oxford, UK

**FO-3:L04 Organic Electrochemical Transistor as an Ideal Tool for Bio-sensing and Monitoring Biomolecules Dynamics and Drug-induced Cellular Stress**

**G. TARABELLA**<sup>1</sup>, A. ROMEO<sup>1</sup>, P. D'ANGELO<sup>1</sup>, C. CAFFARRA<sup>2</sup>, D. CRETELLA<sup>2</sup>, P.G. PETRONINI<sup>2</sup>, R. MOSCA<sup>1</sup>, A. PEZZELLA<sup>3</sup>, S. IANNOTTA<sup>1</sup>, <sup>1</sup>Institute of Materials for Electronics and Magnetism (IMEM), National Research Council (CNR), Parma, Italy; <sup>2</sup>Dept. of Experimental Medicine, University of Parma, Italy; <sup>3</sup>Dept. of Chemical Science, University of Federico II, Naples, Italy

**FO-3:L05 Synthesis and Magnetic Properties of ZnxFe3-xO4 Nanoparticles for MRI Contrast Agents**

V.V. PANKOV, D.A. KOTIKOV, **E.G. PETROVA**, Belarusian State University, Minsk, Belarus

**FO-3:L06 Analytical and Theranostic Applications of Plasmonic Nanoparticles and Nanocomposites**

**N.G. KHLEBTSOV**, V.A. BOGATYREV, L.A. DYKMAN, B.N. KHLEBTSOV, E.V. PANFILOVA, T.E. PYLAEV, V.A. KHANADEEV, Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences and Saratov State University, Saratov, Russia; G.S. TERENTYK, V.V. TUCHIN, Saratov State University, Saratov, Russia

## Session FO-4

### Tissue Engineering and Regenerative Medicine

**FO-4:L01 3D Reconstruction of Cell Sheet Tissue Engineering**

**T. OKANO**, Vice President and Professor, Institute of Advanced Biomedical and Science (TWIns), Tokyo Women's Medical University, Tokyo, Japan

**FO-4:L02 Next Generation Materials for Hard and Soft Tissue Repair**

**S. BEST**, Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK

**FO-4:L03 Regenerative Engineering: The Regeneration of Complex Human Tissues**

**C.T. LAURENCIN**, R. JAMES, University of Connecticut Health Center, Institute for Regenerative Engineering, Farmington, CT, USA

**FO-4:L04 Nanocomposite and Hybrid Tissue Engineering Scaffolds**

**MIN WANG**, Department of Mechanical Engineering, The University of Hong Kong, Hong Kong

**FO-4:L05 Bioglass Scaffolds Reinforced by Microfibrillated Cellulose Coating**

**L. BERTOLLA**, I. DLLOUHÝ, Institute of Physics of Materials ASCR, Brno, Czech Republic; A. PHILIPPART, A.R. BOCCACCINI, Institute of Biomaterials, Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Erlangen, Germany

**FO-4:L06 Effect of Surface Roughness of Glass on in Vitro Bioactivity and Interaction with Human Adipose Stem Cells**

L. BJÖRKVIK, L. HUPA, Process Chemistry Centre, Abo Akademi University, Turku, Finland; M. OJANSIVU, S. VANHATUPA, S. MIETTINEN, BioMediTech, University of Tampere, Tampere, Finland

**FO-4:L07 Development of Biomimetic 45S5 Bioglass® and Boron-containing Bioactive Glass Scaffolds by Surface Functionalization with Alkaline Phosphatase for Bone Tissue Engineering Applications**

P. BALASUBRAMANIAN<sup>1</sup>, L. HUPA<sup>2</sup>, A.R. BOCCACCINI<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering, Institute of Biomaterials, Friedrich-Alexander-University of Erlangen-Nürnberg, Erlangen, Germany; <sup>2</sup>Abo Akademi University, Finland

**FO-4:L08 Novel Microfabrication of 3D Composite Lattice Scaffold for Bone Tissue Engineering**

D. NADEEM<sup>1</sup>, M. DALBY<sup>2</sup>, GANG LI<sup>3</sup>, BO SU<sup>1</sup>, <sup>1</sup>Biomaterials Engineering Group, School of Oral & Dental Sciences, University of Bristol, UK; <sup>2</sup>Centre for Cell Engineering, University of Glasgow, UK; <sup>3</sup>School of Biomedical Sciences, Chinese University of Hong Kong, China

**FO-4:L09 Polymer-based Scaffolds with Vascular Network for Bone Tissue Engineering**

I. GERGES<sup>1</sup>, M. TAMPILENZZA<sup>1</sup>, C. RECORDATI<sup>1</sup>, A. TOCCHIO<sup>1, 2</sup>, F. MARTELLO<sup>1</sup>, P. MILANI<sup>1, 3</sup>, C. LENARDI<sup>1, 3</sup>, <sup>1</sup>Fondazione Filarette, Milano, Italy; <sup>2</sup>SEM, European School of Molecular Medicine, Campus IFOM-IEO, Milano, Italy; <sup>3</sup>CIMaIna and Dipartimento di Fisica, Università degli Studi di Milano, Milano, Italy

## Session FO-5

### Targeted Delivery, Controlled Release Systems and Nanotheranostics

**FO-5:L01 Reconstituted Stem Cell Nano-ghost: Nature Inspired Targeting Platform**

M. MACHLUF, Faculty of Biotechnology and Food Engineering, Technion-Israel Institute of Technology, Haifa, Israel

**FO-5:L02 Programmable, Targeted Drug Delivery for Musculoskeletal Regenerative Engineering**

TAO JIANG, W.H. LO, C.T. LAURENCIN, Institute for Regenerative Engineering, University of Connecticut Health Center, Farmington, CT, USA

**FO-5:L03 Development of Novel Mesoporous Silica-based Bioactive Glass Scaffolds with Drug Delivery Capabilities**

A. PHILIPPART, A.R. BOCCACCINI, Institute of Biomaterials, University of Erlangen-Nuremberg, Erlangen, Germany

**FO-5:L05 New Family of Bioactive Glass Based Scaffolds with Drug Delivery Capability for Bone Regeneration**

E. BOCCARDI, A. PHILIPPARD, A.R. BOCCACCINI, Institute of Biomaterials (WW7), Erlangen, Bayern, Germany

**FO-5:L06 Protein-based Hybrid Nanocapsules for Targeted Anti-cancer Theranostics**

JEONG YU LEE, MI HWA OH, JEONG HEON YU, HYUNG SEOK CHOI, YOON SUNG NAM, Korea Advanced Institute of Science and Technology, Department of Materials Science and Engineering, Daejeon, Republic of Korea

**FO-5:L07 Coacervate-mediated Mineralization of Calcium Carbonate Microparticles for Drug Delivery**

V. LAUTH, M. MAAS, K. REZWAN, Advanced Ceramics University of Bremen, Bremen, Germany

**FO-5:L08 Comparison of Intestinal Permeation Enhancers for Delivery of Poorly Absorbed Oral Drugs**

D.J. BRAYDEN, J. GLEESON, S. SLADEK, F. MCCARTNEY, School of Veterinary Medicine and UCD Conway Institute, University College Dublin, Ireland

**FO-5:L09 Designing Lipid-substituted Cationic Polymers for Gene Based Medicines**

H. ULUDAG, H.M. ALIABADI, L. ROSE, B. LANDRY, J. VALENCIA, REMANT K.C., Departments of Chemical & Materials, and Biomedical Engineering, University of Alberta, Canada

**FO-5:L10 Designing Cytocleavable Polyrotaxanes as a Vehicle for Molecular Logistics of Biomacromolecular Delivery into Target Cells**

N. YUI, A. TAMURA, J.-H. SEO, N. YOKOYAMA, G. IKEDA, Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Tokyo, Japan

## Session FO-6

### Materials for Neural Interfaces and Implantable Neural Devices

**FO-6:L01 Neuron-electronic Hybrid Systems for Cultured Neurons: From Extracellular to In-cell Recordings by Electrode Engulfment or Cell Electroporation**

M.E. SPIRA, The A. Silberman Life Sciences Inst. & H. Kruger Nanoscience center, The Hebrew University of Jerusalem, Israel

**FO-6:L02 Nanowires: A Promising Tool for Neural Implant Applications**

C.N. PRINZ, Division of Solid State Physics, Nanometer Structure Consortium and Neuronano Research Center, Lund University, Lund, Sweden

**FO-6:L03 New Generation CNT-based Biochips for Interfacing the Central Nervous System**

L. BALLERINI, University of Trieste, Trieste, Italy

**FO-6:L04 High-density Implantable Microelectrode Arrays for Brain-machine Interface Applications**

B. GHANE-MOTLAGH, M. SAWAN, Polystim Neurotechnologies Laboratory, Department of Electrical Engineering, Polytechnique Montreal, Montreal (Quebec), Canada

**FO-6:L05 Regenerative Peripheral Nerve Interfacing of Smart Prosthetics**

M. ROMERO-ORTEGA, University of Texas at Arlington, Arlington, TX, USA

**FO-6:L06 Molecular Self-assembly of Peptide/Neural Cells Biointerfaces**

S. YITZCHAIK, Institute of Chemistry, and the Center for Nanoscience and Nanotechnology, The Hebrew University of Jerusalem, Jerusalem, Israel

**FO-6:L07 Flexible Optical and Electronic Platforms for Neural Recording, Interrogation and Repair**

A. CANALES<sup>1</sup>, XIAOTING JIA<sup>2</sup>, A. LU<sup>1</sup>, U. FRORIEP<sup>2</sup>, P. ANIKEEVA<sup>1, 2</sup>, <sup>1</sup>Department of Materials Science and Engineering, <sup>2</sup>Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA, USA

**FO-6:L08 Modulating 3D-Cellular Networks Using Layer-by-Layer Multifunctional Interfaces**

M. MATSUSAKI, M. AKASHI, Department of Applied Chemistry, Graduate School of Engineering, Osaka University, Suita, Osaka, Japan

## Session FO-7

### Progress in Implant Prostheses

**FO-7:L01 Electrochemically Deposited Calcium Phosphate Coatings for Orthopedic and Dental Implants**

N. ELIAZ, Dept. Materials Science and Engineering, Tel-Aviv University, Ramat Aviv, Tel Aviv, Israel

**FO-7:L02 Cortical-bone-mimetic Hierarchical Composites**

E. JABBARI, Chemical Engineering Department, University of South Carolina, Columbia, SC, USA

**FO-7:L03 Polyacrylamide Hydrogels as Artificial Muscles: Sensing and Actuation**

M. BASSIL, G. AZZI, M. EL TAHCHI, LBMI, Department of Physics, Lebanese University, Faculty of Sciences II, Jdeidet, Lebanon

**FO-7:L04 Mechanical Behaviour of Alumina Toughened Zirconia Nanocomposites with Different Alumina Additions**

L.A. DIAZ<sup>1</sup>, S. RIVERA<sup>2</sup>, A. FERNÁNDEZ<sup>1</sup>, A. OKUNKOVA<sup>3</sup>, Y.U.G. VLADIMIROV<sup>3</sup>, R. TORRECILLAS<sup>1, 3</sup>, <sup>1</sup>Centro de Investigación en Nanomateriales y Nanotecnología (CINN) Consejo Superior de Investigaciones Científicas (CSIC) - Universidad de Oviedo (UO) - Principado de Asturias (PA), Llanera, Asturias, Spain; <sup>2</sup>Nanoker Research, S.L., Polígono de Olloniego, Oviedo, Asturias, Spain; <sup>3</sup>Moscow State University of Technology "STANKIN", Moscow, Moscow Oblast, Russian Federation

## Poster Presentations

**FO:P01 Preparation of a Novel Antibacterial Resin System for Improved Dental Restorative**

DONG XIE, YIMING WENG, LEAH HOWARD, Department of Biomedical Engineering, Indiana University-Purdue University at Indianapolis, Indiana, USA

**FO:P02 Bacterial Detection Based on the T7 Virus-nanoparticle Complexes**

JONG-WOOK LEE, GUN HYUK JANG, KWAN HYI LEE, Center for Biomaterials, KIST Biomedical Research Institute, Seoul, Republic of Korea; Department of Biomedical Engineering, University of Science and Technology (UST), Seoul, Republic of Korea

**FO:P03 Synthesis of Bioglass-ceramic by Sol-gel Method for Medical Application**

**P. ESLAMI**, G. BALDI, Ce.Ri.Col Research Center of Colorobbia, Sovigliana Vinci, Italy

**FO:P04 Characterization and Biocompatibility Evaluation of Hydroxyapatite Doped with Silver and/or Fluorine**

**V. GONZALEZ-TORRES**, E.R. MÉNDEZ, Centro de Ciencias de la Salud Unidad Valle de las Palmas UABC, Tijuana, Baja California, México; L.A. GAITÁN-CEPEDA, Facultad de Odontología UNAM, México; M.E. TORRES-ARELLANO, Facultad de Odontología Tijuana UABC, Tijuana, Baja California, México; C. DÍAZ-TRUJILLO, Facultad de Ciencias Químicas e Ingeniería UABC, Tijuana, Baja California, México

**FO:P05 Cytotoxicity and Cell Adhesion Studies on Alloys Used In Implants Coated with Diamond-like Carbon Containing Silver and/or Titanium Dioxide Nanoparticles**

**E.D. SANTOS<sup>1</sup>**, M.A.G. CARDOSO<sup>2</sup>, F.S. MIRANDA<sup>1</sup>, F.L.C. LUCAS<sup>1</sup>, F.K. FERRARIS<sup>3</sup>, L.V. SANTOS<sup>1</sup>, R.S. PESSOA<sup>1</sup>, H.S. MACIEL<sup>1</sup>, <sup>1</sup>Nanotecnología plasma laboratory, University of Paraíba Valley, São José dos Campos, SP, Brazil; <sup>2</sup>Immunology laboratory, University of Paraíba Valley, São José dos Campos, SP, Brazil; <sup>3</sup>Pharmacology Laboratory, Quality Control in Health National Institute (INCQS / FIOCRUZ), Rio de Janeiro, RJ, Brazil

**FO:P06 Fluorescent Dendron-CD Nanotubes for Biosensory Platform**

JEONGHUN LEE, DOOHONG MIN, CHULHEE KIM, Department of Polymer Science and Engineering, Inha University, Incheon, Korea

**FO:P07 Hyperspectral Raman Imaging Generated by Nanodiamonds in Gamma-exposed Human Red Blood Cells**

**M. PEDROZA-MONTERO<sup>1</sup>**, K. SANTACRUZ-GOMEZ<sup>2</sup>, S. ALVAREZ-GARCIA<sup>1</sup>, E. SILVA-CAMPA<sup>1</sup>, M. ACOSTA-ELIAS<sup>2</sup>, B. CASTANEDA<sup>2</sup>, R. MELENDREZ<sup>1</sup>, D. SOTO-PUEBLA<sup>1</sup>, M. BARBOZA-FLORES<sup>1</sup>, <sup>1</sup>BioNanoMed, Departamento de Investigación en Física, Universidad de Sonora, Hermosillo, Sonora, México; <sup>2</sup>Departamento de Física, Universidad de Sonora, Hermosillo, Sonora, México

**FO:P08 Coating of Hydroxyapatite on the Surface-modified Polyetheretherketone**

**N. SUZUKI<sup>1</sup>**, T. UMEDA<sup>1</sup>, H. KUWAHARA<sup>1</sup>, Y. MUSHA<sup>2</sup>, K. ITATANI<sup>1</sup>, <sup>1</sup>Department of Materials and Life Sciences, Sophia University, Tokyo, Japan; <sup>2</sup>2nd Department of Orthopaedic Surgery, Toho University, Tokyo, Japan

**FO:P09 Tailoring the Surface of Alumina/Zirconia Composites by Organic/ Inorganic Treatments to Enhance their Bioactivity and Biocompatibility**

**S. CAVALU**, V. SIMON, University of Oradea, Faculty of Medicine and Pharmacy, Oradea, Romania; Babes-Bolyai University, Faculty of Physics & Institute of Interdisciplinary Research in Bio-Nano-Sciences, Cluj-Napoca, Romania

**FO:P10 Wear Behavior of Ti-6Al-7Nb Alloy for Total Hip Prosthesis**

**M. LABAIZ<sup>1</sup>**, M. FELLAH<sup>1</sup>, O. ASSALA<sup>1</sup>, A. IOST<sup>2</sup>, <sup>1</sup>Laboratory of Metallurgy and Engineering Materials, BADJI Mokhtar-Annaba University, Algeria; <sup>2</sup>Arts et Métiers ParisTech, Lille, France

**FO:P11 Residual Thermal Stress of Spinel Based-ceramic Infiltrated with Glass Rich in Lanthanum**

**P. CIPRIANO DA SILVA<sup>1</sup>**, C. DOS SANTOS<sup>1,2</sup>, <sup>1</sup>Unifoo Centro Universitario de Volta Redonda, Volta Redonda, RJ, Brazil; <sup>2</sup>UERJ- FAT, Brazil

**Special Session FO-8****SMART POLYMERS FOR BIOMEDICAL APPLICATIONS****Oral Presentations****Session FO-8.1****Shape-memory and Shape-changing Polymers for Biomedical Applications****FO-8.1:IL01 Thermally Activated Shape Memory Polymers**

**D.J. MAITLAND**, Department of Biomedical Engineering, Texas A&M University, College Station, TX, USA

**FO-8.1:IL02 Degradable Shape Memory Polymers for Orthopedic Applications**

**JIE SONG**, JIANWEN XU, T. FILION, A. KUTIKOV, Department of Orthopedics & Physical Rehabilitation, Department of Cell & Developmental Biology, University of Massachusetts Medical School, Worcester, MA, USA

**FO-8.1:IL03 Shape-memory Nanopatterns Direct Cell Orientation**

**M. EBARA**, K. UTO, T. AOYAGI, National Institute for Materials Science (NIMS), Tsukuba, Japan

**FO-8.1:IL04 Scaffold Roughness Regulates the Endothelial Differentiation of Human Adipose Derived Mesenchymal Stem Cells**

ZHENGDONG LI<sup>1,2</sup>, WEIWEI WANG<sup>1</sup>, K. KRATZ<sup>1,3</sup>, XUN XU<sup>1,2</sup>, M. ROCH<sup>1</sup>, A. KURTZ<sup>1</sup>, M. GOSSEN<sup>1</sup>, F. JUNG<sup>1,3</sup>, **NAN MA<sup>1,3</sup>**, A. LENDLEIN<sup>1,3</sup>, <sup>1</sup>Institute of Biomaterial Science and Berlin-Brandenburg Centre for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany; <sup>2</sup>Institute of Chemistry and Biochemistry, Free University of Berlin, Berlin, Germany; <sup>3</sup>Helmholtz Virtual Institute - Multifunctional Materials in Medicine, Berlin and Teltow, Germany

**FO-8.1:IL05 Shape-changing Materials for Basic and Applied Mechanobiology**

**J.H. HENDERSON**, Syracuse University, Syracuse, NY, USA

**FO-8.1:IL06 Shape Memory Polymer Foams for Medical Device Applications**

**T.S. WILSON**, Physical and Life Sciences Directorate, Lawrence Livermore National Laboratory, Livermore, CA, USA

**FO-8.1:IL07 Reversible Actuation of Polymer Networks by Directed Crystallization**

**M. BEHL**, K. KRATZ, U. NÖCHEL, A. LENDLEIN, Institute of Biomaterial Science and Berlin-Brandenburg Center for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany

**FO-8.1:IL08 Amphiphilic Shape Recovery Functional Nanocellulose Aerogels**

**YOU-LO HSIEH**, FENG JIANG, Fiber and Polymer Science, University of California, Davis, CA, USA

**Session FO-8.2****Light-sensitive Polymers for Biomedical Applications****FO-8.2:IL01 Synthesis, Functionalization and Biological Applications of Porous Polymer Surfaces**

**P. LEVKIN**, Karlsruhe Institute of Technology, Institute of Toxicology and Genetics Heidelberg University, Applied Physical Chemistry, Eggenstein-Leopoldshafen, Germany

**FO-8.2:IL02 Multifunctionality of Mussel Inspired Adhesives**

**A. DEL CAMPO**, Max-Planck-Institut für Polymerforschung, Mainz, Germany

**FO-8.2:IL03 Reversible Photochromic Polynorbornenes Bearing Spiropyran Side Groups for Layer-by-layer Coatings**

**L. FLOREA<sup>1</sup>**, C. MOLONEY<sup>1</sup>, D. NIXON<sup>1</sup>, S. MOULTON<sup>2</sup>, G.W. WALLACE<sup>2</sup>, F. BENITO-LOPEZ<sup>1,3</sup>, D. DIAMOND<sup>1</sup>, <sup>1</sup>INSIGHT, National Centre for Sensor Research, Dublin City University, Dublin, Ireland; <sup>2</sup>ARC Centre of Excellence for Electromaterials Science and Intelligent Polymer Research Institute, University of Wollongong; <sup>3</sup>CIC microGUNE, Arrasate-Mondragón, Spain

**FO-8.2:IL04 Light-driven Polymer Nanowire for Cell Manipulation**

J. LEE<sup>1</sup>, S. OH<sup>2</sup>, J. PYO<sup>1</sup>, J. KIM<sup>2</sup>, **JUNG HO JE<sup>1</sup>**, <sup>1</sup>X-ray Imaging Center, Department of Materials Science and Engineering, Pohang University of Science & Technology, Pohang, Korea; <sup>2</sup>Institute of Nanoscience and Technology, Department of Chemical Engineering, Hanyang University, Seoul, Korea

**FO-8.2:IL05 Chemo-responsive Polymer Networks Containing Coordination Crosslinks and Covalent Netpoints**

**P. ZHANG<sup>1,2,3</sup>**, M. BEHL<sup>1,3</sup>, A. LENDLEIN<sup>1,2,3</sup>, <sup>1</sup>Institute of Biomaterial Science and Berlin-Brandenburg Center for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany; <sup>2</sup>Institute of Chemistry, University of Potsdam, Potsdam, Germany; <sup>3</sup>Tianjin University-HZG Research Center Joint Laboratory for Biomaterials and Regenerative Medicine, Tianjin, China, and Teltow, Germany

**Session FO-8.3****Smart Composites for Biomedical Applications****FO-8.3:IL01 Polyurethane Based Shape-memory Polymers**

**WEI MIN HUANG**, Nanyang Technological University, Singapore

**FO-8.3:IL02 Physicochemical Properties of Colloids**

**W. PARAK**, Philipps Universität Marburg, Marburg, Germany

**FO-8.3:IL03 Gold@pNIPAM Nanoparticles as Surface-enhanced Raman Spectroscopy (SERRS) Tags for Cell Differentiation**

G. BODELÓN, V. MONTES-GARCÍA, C. FERNANDEZ-LÓPEZ, I. PASTORIZA-SANTOS, L.M. LIZ-MARZÁN, **J. PÉREZ-JUSTE**, University of Vigo, Dept. of Physical Chemistry, Vigo, Spain

**FO-8.3:IL04 Glycopolymers Coated Gold Nanoparticle via RAFT Polymerization for Biosensing**

**Y. MIURA**, Kyushu University, Fukuoka, Japan

**FO-8.3:L05 Thermally-induced Reversible Shape-Memory Effect of Hybrid Nanocomposites Under Constant Stress**

**M.Y. RAZZAQ**, M. BEHL, A. LENDLEIN, Institute of Biomaterial Science, Helmholtz-Zentrum Geesthacht, Teltow, Germany

### Session FO-8.4

#### Biomedical Applications Based on Degradable, Stimuli-responsive Polymers

**FO-8.4:IL01 Thermo responsive Nanonets for Nano- to Micro-scale Delivery of Therapeutics**

**G. AMEER**, Institute for BioNanotechnology in Medicine, Chemistry of Life Processes Institute, Northwestern University, Evanston, IL, USA

**FO-8.4:IL02 Aliphatic Poly(carbonate)s as Versatile Materials for Tissue Engineering**

I.A. BARKER<sup>1</sup>, V.X. TRUONG<sup>1</sup>, S. TEMPELAAR<sup>1</sup>, L. MESPOUILLE<sup>2</sup>, M. TAN<sup>2</sup>, P. DUBOIS<sup>2</sup>, **A.P. DOVE**<sup>1</sup>, <sup>1</sup>Department of Chemistry, University of Warwick, Coventry, UK; <sup>2</sup>Materials Research Institute, Center of Innovation and Research in Materials and Polymers (CIRMAP), Laboratory of Polymeric and Composite Materials, University of Mons, Mons, Belgium

**FO-8.4:L03 Adhesive, Degradable Catecholamine Biopolymers as Hemostat, Gene Vector, and Encapsulation Agent**

**HAESHIN LEE**, Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea

**FO-8.4:L04 Biodegradable Coating Loaded with Cepholixin on Magnesium Alloy for Biomedical Implants**

A. ZOMORODIAN<sup>1</sup>, C. SANTOS<sup>1,2</sup>, M.J. CARMEZIM<sup>1,2</sup>, T. MOURA E SILVA<sup>1,3</sup>, J.C.S. FERNANDES<sup>1</sup>, **M.F. MONTEMOR**<sup>1</sup>, <sup>1</sup>CEMS/DEQB, Instituto Superior Técnico, Technical University of Lisbon, Av. Rovisco Pais, Lisboa, Portugal; <sup>2</sup>Instituto Politécnico de Setúbal, DEM, ESTSetúbal, Portugal; <sup>3</sup>Instituto Superior de Engenharia de Lisboa, Dep. Mech. Engineering, DEM, Lisboa, Portugal

**FO-8.4:L05 Microparticles from Photocrosslinked Polyesters**

**F. FRIESS**<sup>1,2</sup>, A. LENDLEIN<sup>1,2</sup>, C. WISCHKE<sup>1</sup>, <sup>1</sup>Institute of Biomaterial Science and Berlin-Brandenburg Centre for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany; <sup>2</sup>Institute of Chemistry, University of Potsdam, Potsdam, Germany

**FO-8.4:IL06 Multifunctional Gene Nanoparticles to Mediate Proliferation and Migration of Human Vascular Endothelial Cells**

**YAKAI FENG**<sup>1,2,3</sup>, CHANGCAN SHI<sup>1</sup>, QIAN LI<sup>1</sup>, JING YANG<sup>1</sup>, JUAN LV<sup>1</sup>, MUSAMMIR KHAN<sup>1</sup>, HAIXIA WANG<sup>1</sup>, XIANGKUI REN<sup>1</sup>, WENCHENG ZHANG<sup>4</sup>, <sup>1</sup>School of Chemical Engineering and Technology, Tianjin University, Tianjin, China; <sup>2</sup>Key Laboratory of Systems Bioengineering of Ministry of Education, Tianjin University, Tianjin, China; <sup>3</sup>Tianjin University-Helmholtz-Zentrum Geesthacht, Joint Laboratory for Biomaterials and Regenerative Medicine, Tianjin, China; <sup>4</sup>Graduate School of Tianjin Medical University, Tianjin, China; <sup>5</sup>Department of Physiology and Pathophysiology, Logistics University of Chinese People's Armed Police Force, Tianjin, China

**FO-8.4:L07 Assessment of Biodegradable Materials for Next Generation of Artificial Muscles**

**L.D. CHAMBERS**, J. WINFIELD, I. IEROPOULOS, J. ROSSITER, Bristol Robotics Laboratory, University of Bristol, Bristol, UK; Bristol Robotics Laboratory, University of the West of England, Bristol, UK

**FO-8.4:L08 Bicompatibility of a Degradable Poly[(L-lactide)-co-glycolide] Network**

**S. BRAUNE**, S. DIETZE, T. ROCH, A. KRÜGER, S. BAUDIS, M. BEHL, K. KRATZ, F. JUNG, A. LENDLEIN, Institute of Biomaterial Science and Berlin-Brandenburg Center for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany

**FO-8.4:L09 Oligotetrahydrofuran Based Shape-memory Hydrogels**

**M. BALK**<sup>1,2</sup>, M. BEHL<sup>1,2</sup>, U. NÖCHEL<sup>1</sup>, A. LENDLEIN<sup>1,2,3</sup>, <sup>1</sup>Institute of Biomaterial Science, Helmholtz-Zentrum Geesthacht, Teltow, Germany; <sup>2</sup>Tianjin University - Helmholtz-Zentrum Geesthacht, Joint Laboratory for Biomaterials and Regenerative Medicine; <sup>3</sup>Berlin-Brandenburg Center for Regenerative Therapies (BCRT), Teltow, Germany

### Session FO-8.5

#### Smart, Swollen Systems for Biomedical Applications

**FO-8.5:IL01 Self-oscillating Gel as Novel Biomimetic Materials**

**R. YOSHIDA**, Department of Materials Engineering, School of Engineering, The University of Tokyo, Japan

**FO-8.5:L02 Functional Thermo responsive Nanogels for Biomedical Applications**

**M. CALDERON**, Institute of Chemistry and Biochemistry, Freie Universität Berlin, Berlin, Germany

**FO-8.5:L03 Star-shaped Oligo(Ethylene Glycols) Functionalized with Desaminotyrosine and Desamino Tyrosyl Tyrosine**

**K.K. JULICH-GRUNER**, T. ROCH, A.T. NEFFE, A. LENDLEIN, Institute of Biomaterial Science and Berlin-Brandenburg Center for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany

**FO-8.5:L04 Multi-functional Flexible Devices Based on PEDOT-PSS-ionic Liquid**

**H. RANDRIAMAHAZAKA**<sup>1</sup>, H. OKUZAKI<sup>2</sup>, <sup>1</sup>Université Paris Diderot, Sorbonne Paris Cité, ITODYS, UMR 7086 CNRS, Paris Cedex, France; <sup>2</sup>University of Yamanashi, Kofu, Japan

**FO-8.5:L05 3D Printing of Smart Gels**

**H. FURUKAWA**, JIN GONG, M. HASNAT KABIR, M. MAKINO, Soft & Wet Matter Engineering Lab (SWEL), Life-3D Printing Innovation Center (LPIC), Yamagata University, Yonezawa, Japan

### Session FO-8.6

#### Smart Polymers in Biomedical Applications

**FO-8.6:IL01 Responsive Nanomaterials and Anti-inflammatory Therapies**

**N. TIRELLI**, School of Medicine/Institute of Inflammation and Repair, and School of Materials, University of Manchester, Stopford building, Manchester, UK

**FO-8.6:L02 The Engineering of a Somanaut: How to get from A to B in a Human Body**

**G. BATTAGLIA**, Department of Chemistry and The MRC/UCL Centre for Medical Molecular Virology, University College London, London, UK

**FO-8.6:L03 Reactions at the Interface of Droplets: A Molecular "Screw Clamp" for the Formation of Smart Nanocapsules for Biomedical Applications**

**K. LANDFESTER**, Max Planck Institute for Polymer Research, Mainz, Germany

**FO-8.6:L04 Chemical Cross-linking and Mechanical Properties of Thermosensitive Tissue Adhesive Hydrogels**

D.G. BARRETT, G. BUSHNELL, **P.B. MESSERSMITH**, Northwestern University, Evanston, IL, USA

### Poster Presentations

**FO-8:P01 Photo-responsive Soft Actuators Based on Spiropyran Functionalised Hydrogels**

**A. DUNNE**, L. FLOREA, D. DIAMOND, INSIGHT, National Centre for Sensor Research, School of Chemical Sciences, Dublin City University, Dublin, Ireland

**FO-8:P02 Effect of Titanium Dioxide Nanoparticles on Mechanical and Thermal Properties of Poly(Lactic Acid) and Poly(Butylene Succinate) Blends**

**A. BUASRI**, G. BURANASING, R. PIEMJAISWANG, S. YOUSATIT, V. LORY-UENYONG, Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Nakhon Pathom, Thailand

**FO-8:P03 Bioactive Glasses/Poloxamer 407 Based Composites Systems for Delivery of Ropivacaine**

R. BORGES, A.C.S. AKKARI, K.C. KAI, D.R. DE ARAUJO, **J. MARCHI**, Centro de Ciências Naturais e Humanas, Universidade Federal do ABC, Santo André, SP, Brazil

**FO-8:P04 In Vitro Release Studies of Poloxamer - Calcium Phosphate - Ropivacaine Local Delivery System**

K.C. KAI, A.C.S. AKKARI, J. MARCHI, **D.R. DE ARAUJO**, Centro de Ciências Naturais e Humanas, Universidade Federal do ABC, Santo André, SP, Brasil

**FO-8:P05 Electrically Controlled Release of Indomethacin from Poly-carbazole / Natural Rubber Blend Film**

**P. THORNGKHAM**, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

**FO-8:P06 Chitosan-g-oligo(epsilon-caprolactone) Polymeric Micelles as Drug Nanocarriers: Synthesis, Characterization and Rifampicin Encapsulation**

S. QUINTANA<sup>1,2</sup>, R.J. GLISONI<sup>1,2</sup>, **M.A. MOLINA SOLER**<sup>3</sup>, A.G. MOGLIONI<sup>1,2</sup>, M. CALDERÓN<sup>3</sup>, A. SOSNIK<sup>1,2,4</sup>, <sup>1</sup>Faculty of Pharmacy and Biochemistry, University of Buenos Aires, Buenos Aires, Argentina; <sup>2</sup>National Science Research Council (CONICET), Buenos Aires, Argentina; <sup>3</sup>Institute of Chemistry and Biochemistry, Free University of Berlin, Berlin, Germany; <sup>4</sup>Group of Pharmaceutical Nanomaterials Science, Department of Materials Science and Engineering, Technion, Haifa, Israel

**FO-8:P07 Tannic Acid, as a Plant-inspired Molecular 'Stapler', for Degradable DNA Hydrogels**

**M. SHIN**, Graduate School of Nanoscience & Technology (WCU), KAIST, Daejeon, Korea; H. LEE, Graduate School of Nanoscience & Technology (WCU) and Department of Chemistry, KAIST, Daejeon, Korea

**FO-8:P08 Multi-material Swollen Polymeric Films with Biocidal Properties**

**L.G. KOLZUNOVA**, Institute of Chemistry, FEB RAS; Far Eastern Federal University, Vladivostok, Russia

**FO-8:P09 Stimuli-controlled Movement of Droplets and Polymeric "Vehicles"**

**W. FRANCIS**, L. FLOREA, D. DIAMOND, INSIGHT, National Centre for Sensor Research, School of Chemical Sciences, Dublin City University, Dublin, Ireland

**FO-8:P10 Increased Stability of Polyphenol-tethered Alginate Hydrogels**

**SANG HYEON HONG<sup>1</sup>**, J.H. RYU<sup>2</sup>, H. LEE<sup>1</sup>, <sup>1</sup>Chemistry Department, KAIST, Daejeon, Republic of Korea; <sup>2</sup>Program in Nanoscience & Technology, KAIST, Republic of Korea

**FO-8:P11 New Strategy to Fabricate Catalyst-mediated Hydrogel, in which the Catalyst is not Included in the Gel**

**EUNKYOUNG BYUN**, H. LEE, Department of Chemistry, KAIST, Daejeon, Republic of Korea; J.H. RYU, The Graduate School of Nanoscience and Technology, KAIST, Daejeon, Republic of Korea

**FO-8:P12 Natural Polymers as Heat and Moisture Exchange Devices for Medical Applications**

**B. VAZQUEZ**, A. NICOSIA, F. BELOSI, G. SANTACHIARA, Institute of Atmospheric Sciences and Climate (ISAC-CNR), Bologna, Italy; P. MONTICELLI, Pollution Srl, Budrio (Bo), Italy; M. SANDRI, E. SAVINI, A. TAMPIERI, Institute of Science and Technology for Ceramics (ISTEC-CNR), Faenza (RA), Italy

## Special Session FO-9

### WEARABLE AND IMPLANTABLE SENSORS AND BODY SENSOR NETWORKS

#### Oral Presentations

#### Session FO-9.1

##### Sensor Technology

**FO-9.1:IL01 Body Sensor Networks - Considerations for Surgical Implants**

**GUANG-ZHONG YANG**, Imperial College London, London, UK

**FO-9.1:IL02 A Wearable Computer Platform "WeWear" for Healthcare Monitoring**

**G.K. STYLIOS**, L. LUO, RIFLEX, Heriot Watt University, Galashiels, UK

**FO-9.1:IL03 Durability Testing of Woven Pressure Sensors for Use in Emergency Equipment**

**P. BOSOWSKI**, D. ERARSLAN, Y.-S. GLOY, T. GRIES, S. JOCKENHOEVEL, RWTH Aachen, Germany

#### Session FO-9.2

##### Smart Fabrics and Wearables

**FO-9.2:IL01 Tools for Care of Elderly People**

**T. TAMURA**, Department of Biomedical Engineering, Osaka Electro-communication University, Neyagawa, Osaka, Japan

**FO-9.2:IL02 Electronic Textile Platforms for Monitoring in Physiological Parameter**

**R. PARADISO**, Smartex srl, Cascina (PI), Italy

**FO-9.2:IL03 On-Body Chem/Bio-Sensing - Opportunities and Challenges**

**D. DIAMOND**, INSIGHT, National Centre for Sensor Research, Dublin City University, Dublin, Ireland

**FO-9.2:IL04 Stretchable Circuits with Horseshoe Shaped Conductors Embedded in Elastic and Thermoplastic Polymers**

**J. VANFLETEREN**, F. BOSSUYT, T. VERVUST, M. JABLONSKI, B. VAN KEYMEULEN, I. CHTIOUI, B. PLOVIE, R. VERPLANCKE, A. JAHANSNAHI, J. DE BAETS, CMST, Ghent University and imec, Ghent, Belgium

**FO-9.2:IL05 Programmable 'Soft' Machines and Future Ways of Living**

**D.K. ARVIND**, School of Informatics, University of Edinburgh, UK; R. OLIVER, Chair Active & Interactive Materials, Northumbria University, UK

**FO-9.2:IL06 Textile Based Wearable Sensors for Health Care Applications**

K. EUFINGER, B. PAQUET, J. LEONARD, CENTEXBEL, Chaineux, Belgium

## Session FO-9.3

### Wearable and Implantable Sensor Systems

**FO-9.3:IL01 Ambulatory Sensing in Balance Control and Fall Prevention: Application in Parkinson's Disease**

**L. CHIARI**, Department of Electrical, Electronic, and Information Engineering - Guglielmo Marconi (DEI) & Health Sciences and Technologies - Inter-departmental Center for Industrial Research (HST-ICIR) Università di Bologna, Bologna, Italy

**FO-9.3:IL02 Fluctuations in Frequency Composition of Neural Activity Observed by Portable Brain Intention Detection Device**

**R.A. SHOURESHI**, New York Institute of Technology, Old Westbury, New York, USA; C.M. AASTED, Center for Pain and the Brain, Harvard Medical School and P.A.I.N. Group, Boston Children's Hospital, Boston, MA, USA

**FO-9.3:IL03 Metallization on Polymer Substrates for Functional Contact Lenses**

**S. TINKU**, C. COLLINI, S. PEDROTTI, L. LORENZELLI, Center for Materials and Microsystems, Fondazione Bruno Kessler, Trento, Italy; R.S. DAHIYA, Electronics and Nanoscale Engineering, University of Glasgow, UK

**FO-9.3:IL04 Mobile Health: Design of In-body Wearable Sensor System by Flexible and Stretchable Electronics**

**C.C.Y. POON<sup>1,2</sup>**, NINGQI LUO<sup>2</sup>, NI ZHAO<sup>2</sup>, <sup>1</sup>Department of Surgery, The Chinese University of Hong Kong, HKSAR; <sup>2</sup>Department of Electronic Engineering, The Chinese University of Hong Kong, HKSAR

**FO-9.3:IL05 Wearable Microfluidics as New Tools for Bio- and Chemical Sensing**

**F. BENITO-LOPEZ<sup>1,2</sup>**, S. COYLE<sup>2</sup>, V.F. CURTO<sup>2</sup>, L. FLOREA<sup>2</sup>, D. DIAMOND<sup>2</sup>, <sup>1</sup>CIC microGUNE, Arrasate-Mondragón, Spain; <sup>2</sup>INSIGHT, National Centre for Sensor Research, Dublin City University, Ireland

**FO-9.3:IL06 Pervasive Sensors for Real Time Monitoring**

**F. DI FRANCESCO<sup>1</sup>**, P. SALVO<sup>1</sup>, N. CALISI<sup>1</sup>, B. MELAI<sup>1</sup>, S. GHIMENTI<sup>1</sup>, V. CASTELVETRO<sup>1</sup>, S. BIANCHI<sup>1</sup>, A. PUCCI<sup>1</sup>, C. CHIAPPE<sup>1</sup>, R. FUOCO<sup>1</sup>, M. CORREVON<sup>2</sup>, G. DUDNIK<sup>2</sup>, G. VOIRIN<sup>2</sup>, I. TEXIER<sup>3</sup>, P. MARCOUX<sup>3</sup>, P. PHAM<sup>3</sup>, N. BUE<sup>4</sup>, J. CRISTENSEN<sup>4</sup>, M. LAURENZA<sup>5,6</sup>, A. RAPTOPOULOS<sup>7</sup>, A. BARTZAS<sup>7</sup>, D. SOUDRIS<sup>8</sup>, C. SAXBY<sup>9</sup>, T. NAVARRO<sup>10</sup>, M. ROMANELLI<sup>11</sup>, V. DINI<sup>11</sup>, A. PAOLICCHI<sup>12</sup>, M. MULLER<sup>13</sup>, P.-Y. BENHAMOU<sup>13</sup>, L. LYMPEROPoulos<sup>7</sup>, <sup>1</sup>University of Pisa, Dipartimento di Chimica e Chimica Industriale, Pisa, Italy; <sup>2</sup>Centre Suisse d'Electronique et de Microtechnique, Neuchâtel, Switzerland; <sup>3</sup>CEA Leti, MINATEC Campus, Grenoble, France; <sup>4</sup>European Wound Management Association, Frederiksberg, Denmark; <sup>5</sup>Euroresearch, Milano, Italy; <sup>6</sup>Haemopharm Biofluids, Tovo di S. Agata, Italy; <sup>7</sup>EXUS, Athens, Greece; <sup>8</sup>National Technical University of Athens / ICCS, School of Electrical & Computer Engineering, Athens, Greece; <sup>9</sup>Smith and Nephew Wound Management, Hull, UK; <sup>10</sup>Swissinnov, Gland, Switzerland; <sup>11</sup>University of Pisa, Wound healing research unit, Clinica Dermatologica, Pisa, Italy; <sup>12</sup>University of Pisa, Department of Translational Research and New Technologies in Medicine and Surgery, Pisa, Italy; <sup>13</sup>Clinique d'Endocrinologie Diabetologie, Pôle DigiDune, CHU de Grenoble, Grenoble, France

**FO-9.3:IL07 Soft Conductive Polymer Dry Electrodes for High-quality and Comfortable ECG/EEG Measurements**

**YUN-HSUAN CHEN<sup>1</sup>**, M. OP DE BEECK<sup>2</sup>, L. VANDERHEYDEN<sup>3</sup>, H. VANDORMAEL<sup>3</sup>, C. VAN HOOF<sup>1</sup>, <sup>1</sup>Imec & Electrical Engineering Department, KU Leuven, both at Leuven, Belgium; <sup>2</sup>imec, Leuven, Belgium; <sup>3</sup>Department of R&D and Innovation, Datwyler Sealing Solutions, Alken, Belgium

**FO-9.3:IL08 Electro-textile for Embedded Data and Power Networks in Combat Uniforms**

**J. DUMAS**, Defense R&D Canada - Valcartier, Quebec, Canada

## Session FO-9.4

### Energy Harvesting and Management

**FO-9.4:IL01 Flexible Batteries and Electroactive Fibers for Smart Textiles**

**M. SKOROBOGATIY**, Canada Research Chair in Micro and Nanophotonics Génie Physique, Ecole Polytechnique de Montréal, Montréal, Canada

**FO-9.4:IL02 Tailoring the Electrical and Optical Properties of Graphene for Energy Harvesting**

**M. CRACIUN**, Centre for Graphene Science, University of Exeter, Exeter, UK

**FO-9.4:IL03 Power Management for Vibrational Energy Harvesters**  
**S. STANZIONE**, C. VAN LIEMPD, IMEC-NL, Eindhoven, The Netherlands; C. VAN HOOF, IMEC-NL, The Netherlands, and KU Leuven, Belgium

**FO-9.4:IL04 Hybrid Energy Harvesting using Electroactive Polymers Combined with Piezoelectric Materials**  
**A. CORNOGOLUB**, L. PETIT, P.-J. COTTINET, INSA de Lyon, LGEF, Villeurbanne, France

## Session FO-9.5

### Antennas, Data Transmission, Signal Processing

**FO-9.5:IL01 Textile-based Antennas**

**C. HERTLEER**, Ghent University, Dept. of Textiles, Zwijnaarde, Belgium; H. ROGIER, Ghent University, Dept. of Information Technology, Belgium

**FO-9.5:IL02 Combination of Body Sensor Networks and On-body Signal Processing Algorithms**

**J. LUPRANO**, CSEM SA, Neuchâtel, Switzerland

**FO-9.5:IL03 Kinematics Analysis of Human Movement with Wearable Sensors - A Multiple-modality Approach**

**LEI WANG**, Shenzhen Institutes of Advanced Technology, CAS, Shenzhen Low-cost Healthcare Lab., Shenzhen, China

**FO-9.5:IL04 Signal Processing for Ultra Low Power Communications: Capsule Endoscope**

**I. BALASINGHAM**, Oslo University Hospital & Norwegian University of Science and Technology, Oslo, Norway

## Poster Presentation

**FO-9:P01 Wearable Chemical Sensing - Sensor Design and Sampling Techniques for Real-time Sweat Analysis**

**J.A. DEIGNAN**, S. COYLE, G. MATZEU, C. O'QUIGLEY, C. ZULIANI, D. DIAMOND, INSIGHT, National Centre for Sensor Research, Dublin City University, Glasnevin, Dublin, Ireland; P. FITZPATRICK, G. WARRINGTON, School of Health and Human Performance, Dublin City University, Glasnevin, Dublin, Ireland

# INFORMATION TO AUTHORS & PARTICIPANTS

## LOCATION AND DATES

CIMTEC 2014 will be held in Montecatini Terme, an international renowned Spa and tourist resort in the environments of Florence, the historical centre of the European Renaissance. The town is placed in a strategic position to reach the most interesting historical and tourist places in Tuscany, such as Florence, Pisa, Siena, San Gimignano, Pistoia, Arezzo, Volterra, "Le Cinque Terre (Five Lands)", and several others.

The 2014 edition of CIMTEC - International Conferences Materials & Technologies will include the **13<sup>th</sup> International Ceramics Congress (June 8-13, 2014)** and the **6<sup>th</sup> Forum on New Materials (June 15-19, 2014)**.

## CONFERENCE SECRETARIAT

CIMTEC 2014  
Corso Mazzini 52  
48018 Faenza  
Italy  
Tel.: +39 0546 22461  
Fax: +39 0546 664138  
E-mail: congress@technagroup.it

## CONFERENCE VENUE

**Palazzo dei Congressi**  
**Via Amendola 2**  
**I-51016 Montecatini Terme (PT) - Italy**

Due to the need for a much larger number of parallel sessions than the ones formerly expected for both the Ceramics Congress and the Forum, some Symposia will be held in satellite meeting rooms, very close to the Palazzo dei Congressi (2-3 min walking distance).

For the **Ceramics Congress** the registration desk will open at 11.00 a.m. on Sunday June 8. Technical Sessions will start Monday June 9 morning and continue until Friday June 13. The Congress will close with the *Conference Dinner* on Friday June 13 evening.

For the **Forum on New Materials** the registration desk will open at 11.00 a.m. on Sunday June 15. Technical Sessions will start Monday June 16 morning and continue until Thursday June 19. The Forum will close with the *Conference Dinner* on Thursday June 19, evening.

## REGISTRATION DESK AND SECRETARIAT

Registration desk and secretariat will be open at the **Palazzo dei Congressi** according to the following time schedule:

International Ceramics Congress			
June 8	Sunday	11.00-13.00	15.00-19.00
June 9	Monday	8.00-13.00	14.30-19.30
June 10	Tuesday	8.00-13.00	14.30-19.30
June 11	Wednesday	8.00-13.00	14.30-19.30
June 12	Thursday	8.00-13.00	14.30-19.30
June 13	Friday	8.00-13.00	14.30-18.30

Forum on New Materials			
June 15	Sunday	11.00-13.00	15.00-19.00
June 16	Monday	8.00-13.00	14.30-19.30
June 17	Tuesday	8.00-13.00	14.30-19.30
June 18	Wednesday	8.00-13.00	14.30-19.30
June 19	Thursday	8.00-13.00	14.30-18.30

**No credit cards are accepted at the registration desk. On site registration payments can be made only by cash**

## HOW TO REACH MONTECATINI TERME

Montecatini Terme is located in Central Italy between Florence and Pisa. It can be reached:

### By Plane:

**To Florence** - International Airport "Amerigo Vespucci". From the airport you may reach Florence Central Railway Station "Santa Maria Novella" by public services or by taxi, then continue your journey by train to Montecatini Terme.

*N.B. A public bus service to Montecatini Terme is also available at the Airport exit from 7.00 (first run) to 20.25 (last run) every hour in working days, and from 8.25 (first run) to 18.25 (last run), but just for a few runs, on Sunday. Travel time is about 50 min. Tickets may also be made directly on the bus.*

**To Pisa** - International Airport Galileo Galilei. Then by train to Montecatini Terme as explained below. To reach Pisa Railway Station from the airport there is a bus service (Bus PisaMover) every 10 minutes from 6.00 to 24.00.

### By Train:

**From Florence:** train connections to Montecatini Terme are excellent and very frequent (from about 6.00 a.m. to about 22.30 p.m.). Travel time from Florence Central Railway Station to Montecatini Central Railway Station (Montecatini Centro) is about 50 min.

**From Pisa:** Take the train of line Pisa-Lucca, then, at the Lucca Railway Station, change to line Lucca-Montecatini Centro. Travelling time from Pisa to Montecatini Terme (via Lucca) is about 90 min. Last departure from Pisa Railway Station at 21.50.

*NOTE - Montecatini Terme has two railway stations. The closest to the Congress Centre and to the hotels is "Montecatini Centro".*

### By Car:

Montecatini Terme can be reached easily by car from any direction via the network of Italian highways. The exit to Montecatini Terme is located about midway between Florence and Pisa on the Firenze-Pisa (Florence-Pisa) express-way which is connected directly with the Central Italian expressway "Autostrada del Sole" ("Sun Highway").

**A complimentary bus transfer service will be arranged for CIMTEC attendees from both the Florence and Pisa Airports to Montecatini Terme on Sunday June 8 and Sunday June 15 (i.e. the arrival days for the Ceramics Congress and the Forum on New Materials, respectively) with departure at every hour from 2.00 p.m. to 11.30 p.m. CIMTEC reception hostesses will be available at the exit of arrivals terminal on June 8 and June 15 (2.00 p.m to 11.30 p.m.) to assist delegates.**

## REGISTRATION AND FEES

All those planning to attend CIMTEC 2014 must register and receive badges. Advanced and late registrations fees are offered as well as special student registration fees. All Registration Fees include 22% government taxes. Registration rates are in EUR, but payments may be also effected in US\$ at the exchange rate of the day in which the payment is made.

	CERAMICS CONGRESS (June 8-13)	FORUM ON NEW MATERIALS (June 15-19)	WHOLE CIMTEC (CONGRESS+FORUM) (June 8-19)
<b>Early (by April 20, 2014)</b>			
Full Member*	690.00 EUR	670.00 EUR	1,190.00 EUR
Student under 27**	420.00 EUR	400.00 EUR	720.00 EUR
Invited Lecturer***	345.00 EUR	335.00 EUR	845.00 EUR
<b>Late and on site</b>			
Full Member*	740.00 EUR	720.00 EUR	1,240.00 EUR
Student under 27**	470.00 EUR	450.00 EUR	770.00 EUR
Invited Lecturer***	395.00 EUR	385.00 EUR	895.00 EUR

\* authors of lectures (L), posters (P), other Participants

\*\* evidence of status and xerocopy of passport or other document showing the student age must accompany the registration

\*\*\* and/or Member of Conference Committees

Fees include 22% VAT, general and secretariat costs, participation in the scientific sessions, coffee tickets, printed booklet of the Final Programme and other conference material, free access to the on-line Proceedings, and complimentary participation in the Social Programme.

Every attendee is requested to fill in and return the Registration Form, unless the payment is made on-line.

## PAYMENTS

All payments shall be made in EU or US\$, **net of all charges**, by:

- Bank transfer made payable to: **Techna Group Srl**

Name of the bank: **Cassa di Risparmio di Cesena SpA, 505**

**Filiale Faenza 1**

Address of the bank: **Corso Mazzini 95, 48018 Faenza, Italy**

**SWIFT: CECRIT2C**

**IBAN: IT58 Q061 2023 705C C505 0002 852**

(copy of the bank transfer to be attached to the Registration Form)

Credit cards **cannot** be charged directly by the Conference organization, therefore payment by credit card cannot be accepted. However **on-line payment** by credit card can be made.

### ON-LINE PAYMENT

To make on-line payment please go at:

**[www.cimtec-congress.org/onlinereg](http://www.cimtec-congress.org/onlinereg)**

a 3% commission is charged by the bank for on-line payment

Participants are encouraged to take advantage of the discounted rate, applicable only if **both** registration and **payment** are received by April 20.

## CANCELLATION

Prepaid registration fees (conference, companions programme) are refundable, minus a 20% administration fee, if written notification of the cancellation is received before May 20, 2014. No refund can be made for cancellations received after May 20, 2014. However delegate substitution can be accepted. All refunds will be made after the Conference.

## LANGUAGE

English will be the official language for the Conference.

## PRESENTATION FORMATS

### Oral Presentations

Electronic presentation (Power Point) facilities will be available, including videoprojector, PC and laser pointer. Cost for any special audio-visual request will be responsibility of the individual speaker.

Allowed time for presentation:

- Invited Lectures 30 min including discussion
- Contributed Lectures 20 min including discussion

### Poster Presentations

Poster board: 200 cm (vertical) x 100 cm (horizontal). Pins can be used to attach the poster. Authors are kindly requested to be present at their poster for discussion with attendees during the Poster Session. It is each author's responsibility to remove the poster immediately after the end of the session. The organisers do not assume any responsibility for posters left up after this time. Guidelines for Poster preparation are available at the Conference web site. Attendance by at least one of the authors is mandatory for poster presentation and publication in CIMTEC 2014 Proceedings.

## FINAL PROGRAMME

The booklet of the Final Programme including titles and detailed timetable of Lectures, Posters and "HOT POSTERS" will be given at the registration desk. It also will be hopefully available on the conference web site approx. 10 days before the beginning of the conference.

## ABSTRACTS

A book of abstracts of all Oral and Poster Presentations will be made available at the conference web site well in advance of the beginning of the conference.

## WEATHER

The weather in Montecatini Terme at the beginning of June is usually fine with temperatures ranging from 20 to 25 °C during the day and 12 to 15 °C during the night. Clothing suitable for (early) summer is recommended.

## PROCEEDINGS

Official Proceedings of the contributions (Oral/Posters) presented at CIMTEC 2014 will be published by Trans Tech Publications Ltd., Switzerland, in the Techna Group series "Advances in Science and Technology" as Volume 87 onwards. Attendance of the Presenting Author is requested for publication. Submission and uploading instructions are provided by Trans Tech Publications Ltd. to the Presenting Author of each paper. **Submission of the written text for the Proceedings is not mandatory.** Free access to the on-line edition is included in the registration fee.

## SOCIAL PROGRAMME

**CC** is for Ceramic Congress; **FNM** is for Forum on New Materials

### June 9 (CC) / June 16 (FNM)

Evening: Welcome Party

### June 11 (CC) / June 18 (FNM)

Evening: Gala Concert

### June 13(CC) / June 19 (FNM)

Evening: Conference Dinner

## OPTIONAL TOURS

### June 9 (CC) / June 16 (FNM)

Afternoon: Guided tour to Pistoia

### June 10 (CC) / June 17 (FNM)

Full day: Guided tour to Florence

### June 11 (CC)

Morning: Guided tour to Arezzo

### June 12 (CC) / June 18 (FNM)

Full day: Guided tour to Siena and San Gimignano

### June 13 (CC) / June 19 (FNM)

Morning: Guided tour to Pisa

Registration and payment for optional tours is to be made on site by cash only. Subjected to availability of places.

## COMPANIONS PROGRAMME Ceramics Congress

### June 9

Afternoon: Guided tour to Pistoia

Evening: Welcome Party

### June 10

Full day: Guided tour to Florence

### June 11

Morning: Guided tour to Arezzo

Evening: Gala Concert

### June 12

Full day: Guided tour to Siena and San Gimignano

### June 13

Morning: Guided tour to Pisa

Evening: Conference Dinner

Appropriate booking space may be found in the Registration Form. On-line registration is also available.

Registration Fee: **290 EUR** - After April 20: **310 EUR**

On-site registration is subject to availability of places.

## "HOT" POSTERS (Last-minute Posters)

Late-news papers will be accepted for poster presentation, provided the following mandatory conditions be verified:

- Only Poster submission from Presenting Authors who **do not** have oral or poster presentations already scheduled in the conference programme will be accepted.
- Only one "HOT POSTER" may be contributed by the same Presenting Author.
- Submission shall be accompanied by the payment of the registration fee.
- The submission deadline of **April 20, 2014** be strictly respected.

To submit go to:  
[www.cimtec-congress.org/  
abstract\\_submission](http://www.cimtec-congress.org/abstract_submission)

The Conference Secretariat will confirm receipt of the Hot Poster and will supply the Presenting Author with proper information about Poster Presentation.

Submission and uploading instructions for the preparation of the text for the Proceedings Volumes will be supplied by Trans Tech Publications Ltd. to the Presenting Author.

## CURRENCY, BANKING AND INSURANCE

Banks are generally open Monday to Friday from 8.30 a.m. to 1.30 p.m. and from 3.00 p.m. to 4.00 p.m. Banks are closed on Saturdays and Sundays. Major credit cards are accepted in most hotels, and in some restaurants and shops.

The Organizers do not assume any responsibility for participant's personal accidents, sickness, thefts or property damage.

## COMPANIONS PROGRAMME Forum on New Materials

### June 16

Afternoon: Guided tour to Pistoia

Evening: Welcome Party

### June 17

Full day: Guided tour to Florence

### June 18

Full day: Guided tour to Siena and San Gimignano

Evening: Gala Concert

### June 19

Morning: Guided tour to Pisa

Evening: Conference Dinner

Appropriate booking space may be found in the Registration Form. On-line registration is also available.

Registration Fee: **265 EUR** - After April 20: **285 EUR**

On-site registration is subject to availability of places.

## HOTEL ACCOMMODATION

Rooms have been reserved in a number of hotels located at walking distance from the Congress Centre. The following prices have been agreed:

### Prices per Day per Person (EUR)

HOTEL CATEGORY	BB-Bed & Breakfast		HB-Half Board*		FB-Full Board**	
	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)
<b>5 star (Luxury)</b>	<b>135.00</b>	<b>92.00</b>	<b>150.00</b>	<b>107.00</b>	<b>165.00</b>	<b>122.00</b>
<b>4 star super</b>	<b>130.00</b>	<b>87.00</b>	<b>140.00</b>	<b>97.00</b>	<b>155.00</b>	<b>112.00</b>
<b>4 star</b>	<b>100.00</b>	<b>70.00</b>	<b>110.00</b>	<b>80.00</b>	<b>122.00</b>	<b>92.00</b>
<b>3 star super</b>	<b>89.00</b>	<b>56.00</b>	<b>98.00</b>	<b>65.00</b>	<b>108.00</b>	<b>75.00</b>
<b>3 star</b>	<b>65.00</b>	<b>44.00</b>	<b>72.00</b>	<b>49.00</b>	<b>80.00</b>	<b>57.00</b>
<b>2 star</b>	<b>55.00</b>	<b>38.00</b>	<b>60.00</b>	<b>43.00</b>	<b>65.00</b>	<b>48.00</b>

*FB in Montecatini Terme is the most recommended option, being restaurants limited in number and expensive*

*All rooms are with private bath or shower. Third occupancy with additional bed in double room: 30% discount on third occupancy. Children 0-2 years old: no charge with no additional bed.*

*Prices include 1/4 wine and 1/2 mineral water at each meal, service and government taxes. Prices do not include the city tax to be paid directly to the hotel (5 stars EUR 1.70 - 4 stars EUR 1.40 - 3 stars EUR 1.00 - 2 stars EUR 0,80 per day per person (children up to 10 years do not pay this tax).*

\*Prices for Half Board include breakfast and served lunch.

\*\*Prices for Full Board include breakfast, served dinner and lunch. Full board starts from the dinner of the arrival day of the participant.

Room reservations have to be made by returning by **April 20, 2014** the Hotel Accommodation Form accompanied by one night hotel deposit to:

#### PAM Hotel Booking Centre

Via Palestro 2/A

51016 Montecatini Terme (PT)

Italy

Tel. +39 0572 75365

Fax +39 0572 771546

e-mail: pam@montecatinipromozione.com

#### VISA ASSISTANCE

All travel, lodging and registration expenses will be responsibility of the individual participants. Special letters of invitation to be used for visa application will be provided upon written request by the participant to the conference organizers.

As the application for a visa may be a lengthy process, we recommend to start your visa application process in due advance. Those attendees who need a visa to entry in Europe are suggested to contact CIMTEC Secretariat as soon as possible indicating full mailing address, date and place of birth, passport number and date of expiration and any other information useful to obtain visa to: CIMTEC 2014 Secretariat, info@technagroup.it

All letter of invitations will be sent by airmail and PDF e-mail attachment or fax.

**CIMTEC organisation is unable to contact Embassies in support of an individual attempting to gain entry to attend the Conference.**

#### SUMMARY OF DEADLINES

**April 20, 2014**

Paper uploading for Proceedings Volumes

**April 20, 2014**

Registration at reduced rate

**May 20, 2014**

Conference Fees Cancellations (80% refund)

#### FURTHER INFORMATION

For scientific and organizational aspects  
of the conference (**until May 30**)

**CIMTEC 2014**  
**Ms Stefania Bianchedi**  
**Corso Mazzini, 52**  
**48018 FAENZA - ITALY**  
Tel. +39 0546 22461  
Fax +39 0546 664138  
e-mail: congress@technagroup.it

For aspects related to hotel accommodation  
(booking, schedule changes, cancellations, etc.)

**PAM Hotel Booking Centre**  
Via Palestro 2/A  
51016 Montecatini Terme (PT)  
Italy  
Tel. +39 0572 75365  
Fax +39 0572 771546  
e-mail: pam@montecatinipromozione.com

# SOCIAL PROGRAMME

The Social Programme for Registered Members to CIMTEC 2014 will include:

## **Welcom Party - Terme Tettuccio (Monday June 9, evening)**

The Welcome Party of CIMTEC 2014 will be held on June 10 evening for the Ceramics Congress and on June 16 evening for the Forum on New Materials at the magnificent "Tettuccio" ("Small Roof") establishment, the most important and renowned Spa in Montecatini. The Tettuccio establishment, known as the "bagno nuovo" (new baths) from as early as the 14th century, derived its name from the canopy (or tettoia) that covered the spring. The building, designed by architect Gaspero Maria Paoletti, between 1779 and 1781, had a particularly striking rusticated door. In 1916, Florentine architect Ugo Giovannozzi drew up plans to renovate the entire complex. This project, based on the concept of the Roman baths, was for a Spa establishment set in leafy grounds planted with Lebanon cedars, palms, sequoias, acacias, laurel trees, wisteria, pines and lime trees, and adorned with impressive colonnades, rostra, fountains and large flower-beds bordered by box hedges. The building's main focus was to be a conch-shaped granite fountain, held up by a group of bronze statues of marine figures, whose waters would be collected in a pool with a parapet decorated with seahorses.

At the Welcome Party delegates will enjoy a taste of a large variety of the world renowned Tuscania traditional dishes and drinks in an elegant and friendly environment.



Entrance ticket for non-registered companions: 30.00 EUR

## **Gala Concert - Terme Tettuccio (Wednesday June 11, evening)**

The "Gala Concert" will be performed by the "Quartetto D'Archi dell'Arena di Verona" ("String Quartet of the Arena di Verona" in the magnificent open spaces of "Terme Tettuccio".

The string quartet of the Arena of Verona springs up from the idea of conveying into chamber language the authentic magic of the Arena the millenary temple where music has enchanted and moved the audience from all over the world for centuries.

The original and deep musical message proposed by the Arena String Quartet expresses the passions, dramas, possible or impossible love stories which are inborn in melodrama; succeeding in this way to transmit the emotions of the atmosphere of Arena, the most beautiful theatre in the world.

Gunther Sanin, Vincenzo Quaranta, Sara Airoldi and Luca Pozza, trained and specialized in some of the most prestigious international academies, have enlivened the artistic essence of the Orchestra of the Arena of Verona for years. All this turns into a deep and careful knowledge of melodrama that is developed and worked out in music chamber key, thus giving origin to a new musical formula which is both refined, elegant and lively and innovative. From lyrical music essence new perfumes and atmosphere spring out, which are like small art gems respectful of the text and of the author's original idea, idea that in this way is cherished by refined and gentle sonorities.

Besides all this the Arena of Verona string Quartet interpreters the best known repertoires of the most important classic, romantic and contemporary authors most enthusiastically.

### **Quartetto d'Archi dell'Arena di Verona**

Gunther Sanin 1st Violino

Vincenzo Quaranta 2nd Violino

Sara Airoldi Violoncello

Luca Pozza Viola

**Pianoforte:** Roberto Corliano

**Soprano:** Teresa di Bari

**Tenore:** Aldo Caputo

### **Technical Management**

Associazione Culturale "Il Parnaso"

The "Gala Concert" of the **Ceramics Congress** will be held Wednesday, June 11 evening (21.30-23.00). The programme will include pieces by: Bellini, Bizet, Mascagni, Puccini, Messenet, Falvo/Fusco, and Verdi.

The "Gala Concert" of the **Forum on New Materials** will be held Wednesday, June 18 evening (21.30-23.00). The programme will include pieces by: Rossini, Donizetti, Caijkovsky, Lear, Mozart, Falvo/Fusco, Harold Arlen, Puccini and Sanin/Gianmoena.

Entrance ticket for non-registered companions: 20.00 EUR (subjected to place availability)



## **Conference Dinner - Fattoria Medicea (Medici Farm)**

The CIMTEC 2014 Conference Dinner will be held at the "Fattoria Medicea" (Medici Farm) on Friday, June 13 evening (20.00-23.30) for the **Ceramics Congress** and on Thursday, June 19 evening (20.00-23.30) for the **Forum on New Materials**.

Located in Monsummano Terme, near Pistoia in the heart of the Valdinievole area, the Fattoria Medicea was built in 1515 by order of the Grand Duke Ferdinando I, the Grandson of Lorenzo de' Medici, on the design and under the management of the architect John Mechini. Today, after a long and careful restoration, commissioned in 1995 by the Prince Borghese family, the present owners, this extraordinary property has regained its unique majesty and is the ideal location for prestigious national and international events.



*Entrance ticket for non-registered companions:  
60.00 EUR (subjected to place availability)*

## OPTIONAL TOURS

### PISTOIA (Monday June 9 / June 16, afternoon)

Pistoia, characterized by Medieval buildings, is an ideal destination for those who want to know a typical Tuscan town far away from mass tourism. In Pistoia guide tour begins at Piazza S. Francis, from which you will soon reach the Romanesque church of S. Andrea with the beautiful marble pulpit by Giovanni Pisano, one of the most interesting works of art in Pistoia. Moving on to the Hospital of the Log, with its wonderful facade, we reach the Piazza del Duomo with its Romanesque cathedral, baptistery and the well-preserved city's buildings. Then we cross the bustling market town of Piazza della Sala to reach the church of S. John Fuoricivitas with its interesting pulpit of Fra 'William of Pisa and the Visitation of Luca della Robbia.

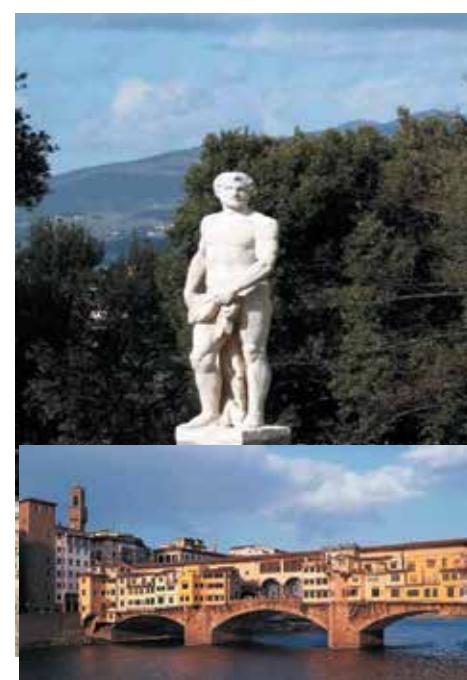
*Meeting point:  
entrance of the  
"Palazzo dei Con-  
gressi" at 14.30.  
Return to Monte-  
catini Terme at  
about 19.00. The  
participation fee  
(25 EUR) includes  
transportation,  
city entrance tax,  
English speaking  
hostess and local  
guide.*



### FIRENZE (FLORENCE) (Tuesday June 10 / June 17, full day)

In the morning visit to the City Center. An unrivalled itinerary of art and culture in the heart of Florence, Cathedral (Santa Maria del Fiore), with its Cupola by Brunelleschi, the Campanile (Bell Tower) by Giotto, and the Baptistry with the famous Gates of Paradise by Ghiberti and Andrea Pisano, Piazza della Signoria dominated by imposing Palazzo della Signoria flanked by the Loggia of Lanzi and the beautiful Neptune Fountain, Ponte Vecchio, the Uffizi Gallery, etc.

In the afternoon, after lunch, visit to Poggio Imperiale, Piazzale Michelangelo and San Miniato Church.



*Meeting point: entrance of "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 19.00.  
The participation fee (60 EUR) includes transportation, city entrance tax, English speaking hostess, local guide and lunch.*

## **AREZZO (Wednesday June 11, morning)**

Arezzo is a beautiful city in Tuscany, where literature, art, architecture and history blend perfectly. Although overshadowed by the fame of Florence, is located about seventy miles to the south-west, Arezzo has nothing to envy to the Tuscan capital. And 'the city that gave birth to Francesco Petrarca, one of the most famous poets of Italy, known for his major work, *Canzoniere*, where he sang his love for Laura.

But it is not only Petrarch to be born in this city: Arezzo are in fact connected a string of famous men, as Cilnio Gaius Maecenas, one of the famous protagonists of Augustan Rome, the politician Henry Head, the painter Margaritone and Spinello Aretino, the poets Cenne from the Guitar and Guittone (1235-1294), painter and architect Margaritone (second half of the thirteenth century.), the official political Leonardo Bruni, Andrea Cesalpino the philosopher, the architect Vasari, who has signed some of the most important works of the city and the musician Marcantonio Baskets.

It 'a medieval city, as is expressed by the two most important monuments of the city itself, or the Cathedral and the Medici Fortress. There are many places of historical and artistic interest such as the Cathedral or the Church of San Donato, the fourteenth-century church of San Domenico, passing by the church of Santa Maria and Basilica of San Francesco. Continuing along the buildings lay as one of the fraternity, which mixes Gothic and Renaissance architecture, or the birthplace of Petrarch, and yet the Palazzo dei Priori.

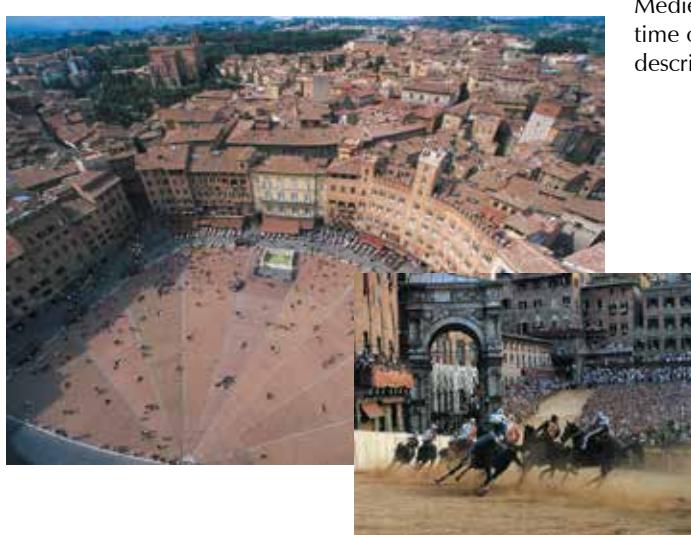


*Meeting point: entrance of "Palazzo dei Congressi" at 8.30. Return to Montecatini Terme at about 13.30.  
The participation fee (30 EUR) includes transportation, city entrance tax, English speaking hostess and local guides.*

## **SIENA - SAN GIMIGNANO (Thursday June 12 / Wednesday June 18, full day)**

Takes you through one of the most attractive landscapes of Central Italy, with wooded hills and valleys and the renowned Chianti area, famous throughout the world for its high-quality wines. Siena is a treasure of history and art with its rich School of Sienese Painting, its marvellous Cathedral, the Palazzo Comunale rising majestically from the lovely fan-shaped Piazza del Campo, the Tower of Mangia, San Domenico, Piazza Salimbeni, Palazzo Ghigi, Piazza del Capitano, etc. It will leave unforgettable memories.

In the afternoon, visit to S. Gimignano, a small town famous for its numerous towers. It is a real gem of Medieval architecture which takes you back to the time of great battles and romantic love stories, as described by minstrels' tales.



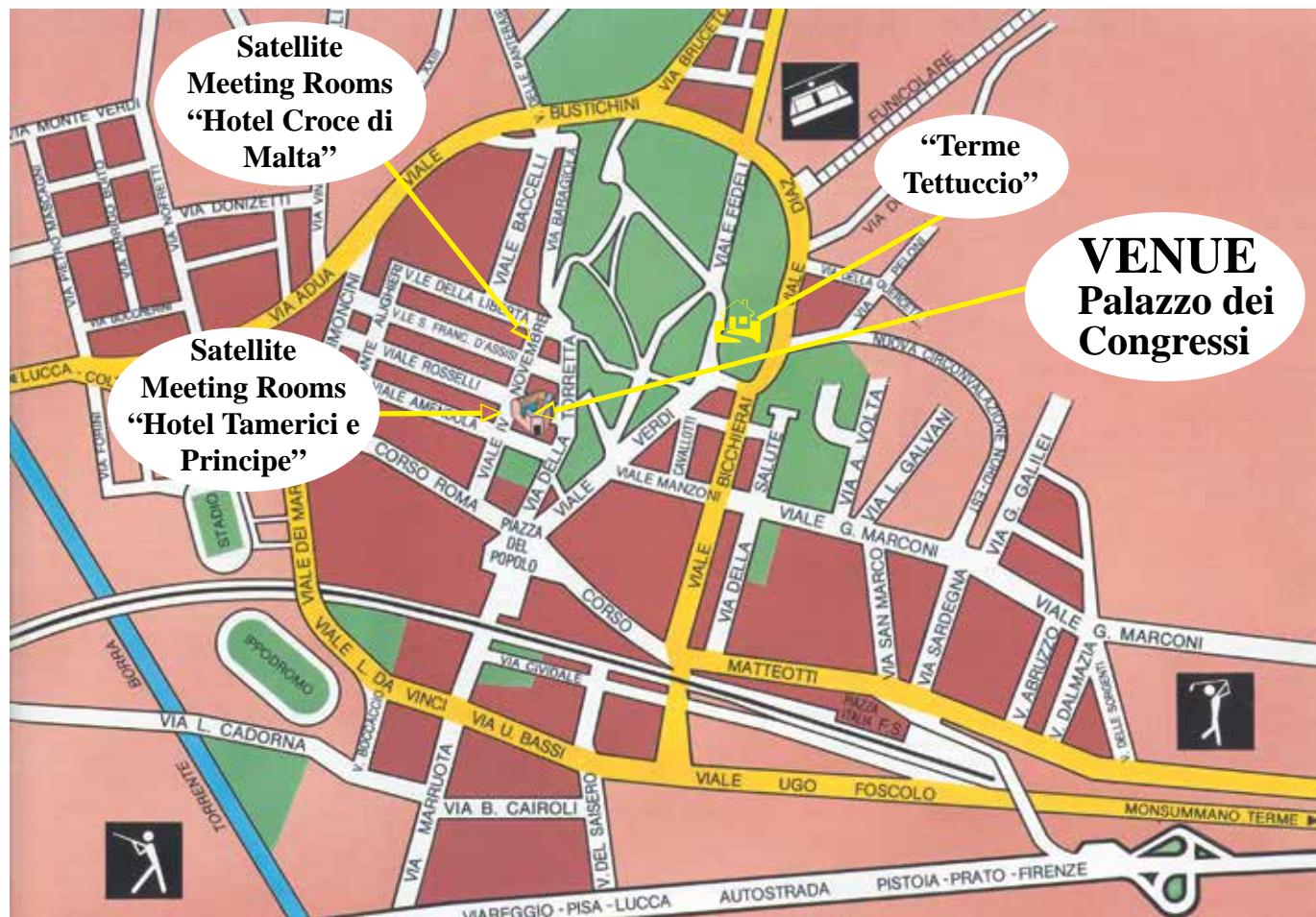
*Meeting point: entrance of "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 19.30.  
The participation fee (65 EUR) includes transportation, cities entrance taxes, English speaking hostess, local guides and lunch.*

## **PISA (Friday June 13 / Thursday June 19, morning)**

Shown is one of the loveliest architectural complexes in the world. On a large smooth lawn stands the Cathedral, the Baptistry and the famous Leaning Tower, a unique group of buildings in an unrivaled setting, the legacy of a past age which now belongs to all mankind. Along the southern side of the piazza lie the buildings of the old University, center of research and thought and famous for scientific disciplines.



*Meeting point: entrance of the "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 13.30. The participation fee (30 EUR) includes transportation, city entrance tax, English speaking hostess and local guide.*



# REGISTRATION FORM

Return by April 20, 2014 to:

CIMTEC Corso Mazzini, 52 48018 FAENZA ITALY

Fax +39 0546 664138 - E-mail: congress@technagroup.it

**PARTICIPANT** for on-line registration and/or Hot Poster submission, please go to:  
[www.cimtec-congress.org/onlinereg](http://www.cimtec-congress.org/onlinereg)

Family Name ..... First Name .....

**INVOICING DETAILS:**

Institute / Company .....

Full Address .....

.....

Postal Code ..... City ..... Country .....

Phone ..... Fax ..... E-mail .....

VAT Number .....

Tax Code / Tax Identification Number .....

<b>REGISTRATION FEES* (EUR)</b>	<b>Early (by April 20)</b>	<b>Late and On Site</b>
<b>CERAMICS CONGRESS (June 8-13)</b>		
Full Member**	<input type="checkbox"/> 690.00 EUR	<input type="checkbox"/> 740.00 EUR
Student under 27***	<input type="checkbox"/> 420.00 EUR	<input type="checkbox"/> 470.00 EUR
Invited Lecturer (IL)****	<input type="checkbox"/> 345.00 EUR	<input type="checkbox"/> 395.00 EUR
<b>FORUM ON NEW MATERIALS (June 15-19)</b>		
Full Member**	<input type="checkbox"/> 670.00 EUR	<input type="checkbox"/> 720.00 EUR
Student under 27***	<input type="checkbox"/> 400.00 EUR	<input type="checkbox"/> 450.00 EUR
Invited Lecturer (IL)****	<input type="checkbox"/> 335.00 EUR	<input type="checkbox"/> 385.00 EUR
<b>WHOLE CIMTEC 2014 (June 8-19)</b>		
Full Member**	<input type="checkbox"/> 1,190.00 EUR	<input type="checkbox"/> 1,240.00 EUR
Student under 27***	<input type="checkbox"/> 720.00 EUR	<input type="checkbox"/> 770.00 EUR
Invited Lecturer (IL)****	<input type="checkbox"/> 845.00 EUR	<input type="checkbox"/> 895.00 EUR

\* Payment can also be made in US\$ at the exchange rate of the day in which the payment is made

\*\* Authors of Contributed Lectures (L) and Posters (P), other participants

\*\*\* Evidence of student status and xerocopy of passport or other document showing the student age must accompany the registration

\*\*\*\* and/or Member of Conference Committees

**I confirm attendance in the following complimentary socials (check please)**

Welcome Party ( June 9     June 16)

Gala Concert ( June 11     June 18)

Conference Dinner ( June 13     June 19)

This section is to be filled-out ONLY if you are a **Presenting Author**

Please indicate below the code number of your presentation as assigned by the Conference Secretariat  
and reported in the Final Announcement

**Code Number** .....

## **COMPANION/S**

Family Name ..... First Name .....

Family Name ..... First Name .....

Family Name ..... First Name .....

## **Companions Programme**

Early

(by April 20)

Ceramics Congress

Persons No. .... x 290.00 EUR ..... EUR No. .... x 310.00 EUR ..... EUR

## *Forum on New Materials*

Persons No. .... x 265.00 EUR ..... EUR No. .... x 285.00 EUR ..... EUR

\* On site registration is subject to availability of places

## **SUMMARY OF FEES**

Registration Fee (Full Member) EUR .....

Registration Fee (Student) EUR .....

### **Registration Fee Invited Lecturer or/and**

CIMTEC 2014 Committees Member

#### Registration Fee (Accompanying Persons)

- CERAMICS CONGRESS EUR .....  
.....

- FORUM EUB

TOTAL EUB

**PAYMENT** (to be made ***net of all charges*** in EUR or equivalent in US\$)

**Payment of ..... EUR / US\$ is being made:**

- By bank transfer made payable to:  
**Techna Group Srl**, Cassa di Risparmio di Cesena SpA, 505 Filiale Faenza 1  
SWIFT: CECRIT2C  
IBAN: IT58 Q061 2023 705C C505 0002 852  
DESCRIPTION: CIMTEC 2014 and Participant Name  
(please enclose copy of the bank transfer)

I will pay on-site (on-site payment to be made by cash only)

NOTE: USE A SEPARATE FORM FOR EACH INDIVIDUAL REGISTRATION

## **HOTEL ACCOMMODATION FORM      Return by April 20, 2014 to:**

PAM-Hotel Booking Center Via Palestro 2/A 51016 Montecatini Terme (PT) Italy  
Tel. +39 0572 75365 Fax +39 0572 771546

[pam@montecatinipromozione.com](mailto:pam@montecatinipromozione.com)

**PARTICIPANT** (please use block letters or type)

Family Name ..... First Name .....

#### **INVOICING DETAILS:**

Institute / University .....

Full Address .....

Post Code                      City                      Country

**Phone** \_\_\_\_\_ **Fax** \_\_\_\_\_ **E-mail** \_\_\_\_\_

VAT Number (for invoicing)

### Prices per Day per Person (EUR)

HOTEL CATEGORY	BB-Bed & Breakfast		HB-Half Board*		FB-Full Board**	
	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)
5 star (Luxury)	135.00	92.00	150.00	107.00	165.00	122.00
4 star super	130.00	87.00	140.00	97.00	155.00	112.00
4 star	100.00	70.00	110.00	80.00	122.00	92.00
3 star super	89.00	56.00	98.00	65.00	108.00	75.00
3 star	65.00	44.00	72.00	49.00	80.00	57.00
2 star	55.00	38.00	60.00	43.00	65.00	48.00

*FB in Montecatini Terme is the most recommended option, being restaurants limited in number and expensive*

All rooms are with private bath or shower. Third occupancy with additional bed in double room: 30% discount on third occupancy. Children 0-2 years old: no charge with no additional bed.

Prices include 1/4 wine and 1/2 mineral water at each meal, service and government taxes. Prices do not include the city tax to be paid directly to the hotel (5 stars EUR 1.70 - 4 stars EUR 1.40 - 3 stars EUR 1.00 - 2 stars EUR 0,80 per day per person (children up to 10 years do not pay this tax).

\*Prices for Half Board include breakfast and served lunch.

\*\*Prices for Full Board include breakfast, served dinner and lunch. Full board starts from the dinner of the arrival day of the participant.

Please book No. .... Pus  Full Board  Half Board  Bed & Breakfast for No. .... nights

Please book No. .... Double  Full Board  Half Board  Bed & Breakfast for No. .... nights

in a  5 star  4 star super  4 star  3 star super  3 star  2 star hotel

at the prices reported above

Arrival on ..... Departure on .....

Arrival by:  car  train  plane at  Florence Airport  Pisa Airport

<b>Rooms Booked</b>	<b>Deposit per Room**</b>	<b>Total</b>
No. .... DUS Full Board	.....EUR	.....EUR
No. .... DUS Half Board	.....EUR	.....EUR
No. .... DUS B&B	.....EUR	.....EUR
No. .... Double Full Board	.....EUR	.....EUR
No. .... Double Half Board	.....EUR	.....EUR
No. .... Double B&B	.....EUR	.....EUR
<b>GRAND TOTAL</b>		<b>.....EUR</b>

**\*\* First night deposit has to be forwarded for each booked room. The full amount of deposit received will be detracted from the final hotel bill.**

The payment has been effected by **bank transfer free of charge** to:  
**P.A.M./Tettuccio Tour - IBAN:** IT 26 F 05034 70460 000000180383  
**BIC/SWIFT** BAPPIT21S43  
**DESCRIPTION:** CIMTEC 2014 and Participant Name

Enclosed please find a cheque No..... Bank.....of Euro.....  
 drawn on: **PAM Soc.coop**

The payment has been effected by telegraphic money-order to:  
**Promozione Albergatori, Via Palestro 2, 51016 Montecatini Terme, Italy**  
**DESCRIPTION:** CIMTEC 2014 and Participant Name

**PAYMENT BY CREDIT CARD**

**I authorise PAM to charge the indicated GRAND TOTAL amount for hotel reservation**

Please charge my credit card       VISA       MASTERCARD

Credit card number.....      Expiration date.....

Credit card holder.....

for the total payment (subject to verification) of EUR .....

.....  
**Signature (binding)**

**REMARKS**

- You will be informed by PAM about available accommodation giving the name of the hotel, the price and confirming receipt of the first night deposit. Balance will be made to hotel by each individual participant.
- In case of no-show of the first night, room(s) availability or refund of the deposit cannot be guaranteed.

Cancellation policy: i. Cancellations received **by May 25**, refund of first night deposit less Bank charges.  
 ii. Cancellations received **after May 25**, no refund. However delegate substitution is admitted.

**Please send this form to PAM:**

**by mail:** PAM-Hotel Booking Center Via Palestro 2/A 51016 Montecatini Terme (PT) Italy  
**or by fax:** +39 0572 771546  
**or scanned copy by e-mail:** pam@montecatinipromozone.com

**NO RESERVATION WILL BE MADE WITHOUT PAYMENT OF THE HOTEL DEPOSIT**

# CIMTEC 2014

## 6<sup>th</sup> FORUM ON NEW MATERIALS

Flowsheet			JUNE 15		JUNE 16		JUNE 17		JUNE 18		JUNE 19	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
REGISTRATION												
SYMPORIUM FA					FA		FA		FA		FA	
SYMPORIUM FB					FB		FB		FB		FB	
SYMPORIUM FC					FC		FC		FC		FC	
SYMPORIUM FD					FD		FD		FD		FD	
SYMPORIUM FE					FE		FE		FE		FE	
SYMPORIUM FF					FF		FF		FF		FF	
SYMPORIUM FG					FG		FG		FG			
SYMPORIUM FH					FH		FH		FH		FH	
SYMPORIUM FI									FI		FI	
SYMPORIUM FJ									FJ		FJ	
Special Session FJ-10										FJ-10		FJ-10
CONFERENCE FK					FK		FK		FK		FK	
CONFERENCE FL					FL		FL		FL		FL	
CONFERENCE FM					FM		FM		FM		FM	
CONFERENCE FN					FN		FN		FN		FN	
CONFERENCE FO					FO		FO		FO		FO	
Special Session FO-8							FO-8		FO-8		FO-8	
Special Session FO-9									FO-9		FO-9	
POSTER MOUNTING												
POSTER DISCUSSION												
SOCIALS												

## PLENARY SESSION



WELCOME RECEPTION



GALA CONCERT



CONFERENCE DINNER

## A selection of endorsing and cooperating bodies of CIMTEC Conferences

Commission of the European Communities • National Research Council, Italy  
• Italian National Agency for New Technology, Energy and the Environment  
• Academy of Sciences of Romania • Academy of Sciences of Russia •  
Academy of Sciences of Ukraine • World Academy of Ceramics • International  
Union of Materials Research Societies • International Ceramic Federation •  
International Institute of Welding • ASM International • International Union  
of Pure and Applied Chemistry • International Union of Pure and Applied  
Physics • International Standards Organization • International Thermoelectric  
Society • The International Society for Optical Engineering • International  
Association for Structural Control and Monitoring • Versailles Project for  
Advanced Materials and Standards • European Association of Composite  
Materials • European Committee for Standardization • European Optical  
Society • European Society for Biomaterials • European Thermoelectric  
Society • EURO-CVD • Federation of European Materials Societies • Royal  
Institute of British Architects • American Carbon Society • Brick Institute of  
America • The American Institute of Architects • American Powder Metallurgy  
Institute • American Society for Composites Institute of Electric and Electronic  
Engineers • Italian Center for Composites • Italian Institute for the Physics of  
Materials • Italian Physical Society • Italian Society for Optics and Photonics  
• Japanese Orthopaedic Ceramic Implant Society • Optical Society of  
America • Society for Biomaterials, USA • The Electrochemical Society, USA  
• The Japan Society for Applied Physics • The Japan Society for Biomaterials  
• The Japan Society of Mechanical Engineers • The Japan Society for  
Composite Materials • The Society for Fiber Science and Technology of Japan



Consiglio  
Nazionale delle  
Ricerche



ITALIAN NATIONAL AGENCY  
FOR NEW TECHNOLOGIES  
ENERGY AND THE ENVIRONMENT



WORLD  
ACADEMY OF  
CERAMICS

