Scientific Programme

13th INTERNATIONAL CERAMICS CONGRESS

OPENING SESSION

WELCOME ADDRESSES

Plenary Lectures

C:PL1 **From Metamaterials to Metadevices**
N.I. ZHELUDEV, Optoelectronics Research centre, University of Southampton, Southampton, UK; Centre for Disruptive Photonic Technologies, Nanyang Technological University, Singapore

C:PL2 **Multifunctionality of Liquid-filled Porous Ceramic Coatings: From Encryption to Anti-fouling**
J. AIZENBERG, Harvard University, Cambridge, MA, USA

C:PL3 **From MAX to MXene - From 3D to 2D**
M.W. BARSOUM, Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA

SYMPOSIUM CA

CERAMIC POWDERS: ADVANCES IN SYNTHESIS, PROCESSING AND MANUFACTURING

Oral Presentations

Session CA-1

Advances in Powder Synthesis and Characterisation

CA-1:IL01 **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:IL02 **Synthesis of Nanopowders by Aqueous Precipitation with Continuous Reactors**
A. AIMABLE[1], C. PAGNOUX[1], F. ROSSIGNOL[1], T. CHARTIER[1], N. JONGEN[2], A. TESTINO[3], P. BOWEN[2], [1]SPCTS, CNRS, ENSCI, Université de Limoges, France; [2]EPFL, Switzerland; [3]Paul Scherrer Institute, Switzerland

CA-1:L03 **FAU Membrane for Organic-Template-Free Synthesis of Nanosized Zeolite Crystals**
T. F. MASTROPIETRO[2], E. DRIOLI[1,2], **T. POERIO**[1], [1]National Research Council, Institute for Membrane Technology (ITM-CNR) c/o University of Calabria, Rende, Italy; [2]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 Univeristy 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 β-SiC by a Carbothermal Process from a SiO2-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 TiO2 with Nb to Photo Activity Performance**
M.V. NOGUEIRA, 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[1]*, D. PRUSTY[1], A. PATHAK[1], A. CHINTHA[1], B. MUKHERJEE[2], [1]R&D, Tata Steel Limited, Jamshedpur, India; [2]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-δ (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 ZrO2 - 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:IL12 **Continuous Production of Ceramic Nano Crystals using Supercritical Aqueous Solution**
T. ADSCHIRI, WPI-AIMR, Tohoku University, Sendai, Japan

CA-1:IL13 **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 Y2O3 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-CUASPUD, 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. VIDECOQ, 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. PAWLIKOWSKA, 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. VIDECOQ, M. BIENA, SPCTS, UMR 7315, ENSCI, CNRS, Limoges, France; D. BOCHICCHIO, R. FERRANDO, Dipartimento di Fisica, Genova, Italy; T. ALA-NISSILA, 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[1], M. SALEHI[1,2], B. GROBETY[2], J. KARBAUM[3], M. ZWICK[3], [1]Lab. for High Performance Ceramics, Empa, Swiss Federal Laboratories for Materials Science and Technology, Duebendorf, Switzerlan; [2]The Fribourg Center for Nanomaterials (FriMat) and Dept. of Geosciences, University of Fribourg, Fribourg, Switzerland; [3]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:IL05 **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. ETCHES, 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[1], U. ASCHAUER[3], S. GALMARINI[1], A. TEWARI[1], S.C. PARKER[2], F. NABIEI[4], M. CANTONI[4], C. HEBERT[4], [1]Laboratoire de Technologie des Poudres, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland; [2]Department of Chemistry, University of Bath, Bath, UK; [3]Materials Theory, ETH Zürich, Zurich, Switzerland; [4]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. TKALČEC, **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[1], DAEHEE LEE[1], JOOSUN KIM[2], **JOOHO MOON**[1], [1]Department of Materials Science and Engineering, Yonsei University, Seoul, Republic of Korea; [2]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:L06 **Clathrate Hydrate Structures in Biomimetic Ceramic Freeze Casting**
S.E. NALEWAY[1], M.M. PORTER[1], M.A. MEYERS[1,2], J. McKITTRICK[1,2], [1]Materials Science and Engineering Program, University of California, San Diego, La Jolla, CA, USA; [2]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[1], M. VASILE[2], GRIMALDI[1], **A. NASTRO**[3], [1]Department of Computer Science, Modeling, Electronic and System (DIMES), University of Calabria, Rende (CS), Italy; [2]Medical School, Ovidius University of Constanta, Romania; [3]Chemical Department, University of Calabria, Rende (CS), Italy

CA:P02 **Synthesis of Precursors for Laser Ceramics YAG:Nd**
M.D. MIKHAILOV[1], I.E. KOLESNIKOV[2], D.V. TOLSTIKOVA[1,2] , A.A. DUNAEV[1], E.V. GOLYEVA[1,3], [1]Scientific and Technological Institute of Optical Material Science, VNTs S.I. Vavilov State Optical Institute, St. Petersburg, Russia; [2]Saint Petersburg State University, Saint Petersburg, Russia; [3]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 Pb0.5Sr0.5TiO3 Produced by Chemical Method**
A.P. DE MOURA[1], S.A. ELIZIÁRIO[2], L.H. DE OLIVEIRA[1], G. FERREIRA[1], M.S.LI[3], I.L.V. ROSA[2], E. LONGO[1], J.A. VARELA[1], [1]Universidade Estadual Paulista, Araraquara, Brazil; [2]Universidade Federal de Sao Carlos, Brazil; [3]Universidade de Sao Paulo, Sao 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[1], **D. SIOULAS**[2], A. TSETSEKOU[1], [1]School of Mining and Metallurgical Engineering N.T.U.A, Athens, Greece; [2]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 Chemintry/ FFCLRP, University of Sao Paulo, Ribeirao Preto, Sao 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, Sao Paulo, Brazil

CA:P09 **Synthesis and Characterization of Nanocomposite HA/α-Al2O3 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. LOZOVSKOY, 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 CaZn2(OH)6.2H2O Crystals**
C.S. XAVIER[1], M.S. LI[2], E. LONGO[1], J.A. VARELA[1], M.A. ZAGHETE[1], [1] UNESP-IQ, Araraquara-SP, Brazil; [2]USP, Sao Carlos-SP, Brazil

CA:P13 **Synthesis of Nanocomposite La1.67Sr0.33NiO4-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 YAlO3 and Cr3+-doped YAlO3 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-Al2O3 with Polymer by Self Combustion Method**
A.D. PHULE[1], S. RAM[1], A.K. TYAGI[2], [1]Materials Science Centre, Indian Institute of Technology, Kharagpur, India; [2]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[1], **P.M. PIMENTEL**[2], D.M.A. MELO[1], J.H. ARAÚJO[1], T. ANDRADE Jr.[2], [1]Universidade Federal do Rio Grande do Norte, RN, Brasil; [2]Universidade Federal Rural do Semi-Árido, Campus Angicos, RN, Brasil

CA:P18 **Structural and Electrical Properties of (1-x)Pb (Zry Ti1-y)O3-xSm(Fe3+0.5, Nb5+0.5)O3 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 Ca2+ Substituted Pb[(Zr0.52Ti0.48)0,98(Cr3+0.5, Ta5+0.5)0,02]0,96 P0,04 O 3 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 SiO2-C Hybrid Precursors Containing Various C/Si Mole Ratios**
MI-RAE YOUM, 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-Al2O3/ 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[1], J.J. PIERRI[2], **R. TOMASI**[2], E.M.J.A. PALLONE[3], [1]Departamento de Construção Civil (UNED-Imperatriz-MA); [2]Universidade Federal de São Carlos - DEMa; [3]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:P27 **Study on Processing Conditions of Making RBSC Radiant Tube Using Centrifugal Casting**
YOUNGSEOK KIM, DONG-IL CHUN, Inocera 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, Sao 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 Andre, SP, Brazil; K.P.S. TONELLO, A.H.A. BRESSIANI, Instituto de Pesquisas Energéticas e Nucleares, Sao Paulo, SP, Brazil

CA:P30 **Microstructure, Phase Transition Temperature and Dielectric Studies of Pure and B-Site Modified (Bi0.5 Na0.5)0.94Ba0.06TiO3 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, Reseach Centre for Natural Sciences, Institute of Technical Physics and Materials Science, Budapest, Hungary

CA:P33 **The Investigation on Anisotropy of Hot-pressed Al2O3-Graphene Composites**
P. RUTKOWSKI, L. STOBIERSKI, 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[1], A.L. CHINELATTO[1], C. LAGO[1], A. PEREIRA PINTO[1], M.V. GELFUSO[2], D. THOMAZINI[2], [1]Materials Engineering Departament, State University of Ponta Grossa, UEPG, Brazil; [2]Mechanical Engineering Institute, Federal University of Itajubá, UNIFEI, Brazil

CA:P35 **Numerical Simulation of Solid State Sintering of Alumina**
M.J. KADHIM[1], A.A. ALWAN[2], E.A.M. IBRAHEEM[2], [1]University of Technology, Department of Production Engineering and Metallurgy, Baghdad, Iraq; [2]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[1], DAWEI SONG[1], YUNMAO LIAO[2], XINMIN CHEN[1,2], MIN WANG[1,2], [1]Prosthodontics,West China College of Stomatology Sichuan University, Chengdu, P.R. China; [2]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, Universite De Skikda, Universite De Bejaia, Algerie

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 Tecnologia de Materiales, Universitat Politecnica de Valencia, Camino de Vera, Valencia, Spain; F.L. PENARANDA-FOIX, J.M. CATALA, Instituto de Aplicaciones de las Tecnologias de la Informacion y de las Comunicaciones Avanzadas (ITACA), Universitat Politecnica de Valencia, Valencia, Spain

CA:P39 **Sintering of AlO3-TiO2 Mixtures Obtained by High-energy Ball Milling**
A. SARAIVA RAMOS[1], M. APARECIDA DE SOUZA[1], **R. DE OLIVEIRA MAGNAGO**[3,4], C. DOS SANTOS[3,4], C.A. ARAUJO DA SILVA[3], B. DE ALMEIDA FORTES[3], [1]Universidade Federal de Alfenas, Instituto de Ciência e Tecnologia; [2]Universidade Estadual Paulista, Departamento de Materiais e Tecnologia; [3]Universidade Estadual do Rio de Janeiro, Faculdade de Tecnologia; [4]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[1], H. MATYSIAK[2], P. WISNIEWSKI[2], K.J. KURZYDLOWSKI[1], [1]Faculty of Materials Science and Engineering, Warsaw University of Technology, Warsaw, Poland; [2]Functional Materials Research Centre, Warsaw University of Technology, Warsaw, Poland

CA:P41 **Effect of Particle Size of ZrO2(Y2O3) Powders on the Shrinkage of the Sintered Substrate with Coloring Gradient**
C. DOS SANTOS[1], P. CIPRIANO DA SILVA[2], C.A. ARAÚJO DA SILVA[1], B. DE ALMEIDA FORTES[1], ROBERTO DE OLIVEIRA MAGNAGO[1,2], [1]UERJ-FAT - Universidade do Estado do Rio de Janeiro, Brazil; [2]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 VO2: 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:L03 **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:L04 **Preparation and Visible Light Induced NOx Destruction Activity of C-NaTaO3 and C-NaTaO3/Cl-TiO2**
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[1], M. BRYKALA[1], W. LADA[1], T. OLCZAK[1], A.G. CHMIELEWSKI[1], K.C. GORETTA[2], [1]Institute of Nuclear Chemistry and Technology, Warsaw, Poland; [2]Argonne National Laboratory, Argonne, IL, USA

CB-1:L07 **Innovative Ceramic Nanostructures by Means of Electrospinnig 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:L08 **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:IL09 **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 Si3N4 Poly-hollow Microspheres on the Properties of the Porous Si3N4 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:IL01 **SiOC Composite Structures for Intermediate Service Temperatures with Increased Friction Properties**
R. GADOW, P. WEICHAND, University of Stuttgart - IFKB, Stuttgart, Germany

CB-2:IL02 **Polymer-derived Ceramic Nanocomposites**
V. PROUST[1], A. BALLESTERO[1], J. ALAUZUN[2], **S. BERNARD**[1], P. MIELE[1], [1]Institut Européen des Membranes (IEM-UMR 5635) ENSCM/UM2/CNRS - CC047, Montpellier Cedex, France; [2]Institut C. Gerhardt, CMOS, Université Montpellier 2 - CC1701, Montpellier Cedex, France

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:IL06 **Polymer-Derived Ceramic Nanocomposites: Preparative Concepts towards Tailor-Made Phase Compositions and Properties**
E. IONESCU, Technische Universitaet Darmstadt, Darmstadt, Germany

CB-2:IL07 **High-Temperature-Stable Ceramic Nanocomposites**
R. RIEDEL, E. IONESCU, Technische Universität Darmstadt, Institute for Materials Science, Darmstadt, Germany

CB-2:IL08 **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[1], M.R. GULLO[1], V. BAKUMOV[2], G. BLUGAN[2], K. JAKOB[2], J. BRUGGER[1], [1]Microsystems Laboratory (LMIS1), EPFL, Lausanne, Switzerland; [2]EMPA, Swiss Federal Labs for Materials Science and Technology, Lab. for High Performance Ceramics, Duebendorf, Switzerland

Session CB-3
Microwave Processing

CB-3:IL01 **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[1], R. HEUGUET[1], F.-X. LEFEVRE[1], E. SAVARY[1, 2], S. MARINEL[1], [1]Laboratoire de Cristallographie et Sciences des Matériaux, Caen Cedex, France; [2]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[1], S. TAKAYAMA[2], A. KISHIMOTO[3], [1]National Institute of Advanced Industrial Science and Technology, Nagoya-city, Aichi, Japan; [2]National Institute for Fusion Science, Toki-city, Gifu, Japan; [3]Okayama University, Okayama-city, Okayama, Japan

CB-3:IL05 **Metal Chalcogenide Nanoparticles derived from Molecular Precursors: Microwave Synthesis, Characterization and Electronic Performance**
J.J. SCHNEIDER, S. SANCTIS, F. ROTH, M. NOWOTTNY, 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[1], A. THUAULT[1], E. SAVARY[2], F.-X. LEFEVRE[1], S. MARINEL[1], [1]Laboratoire de Cristallographie et Sciences des Matériaux, Caen Cedex, France; [2]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[1, 2], T.D. DRYSDALE[1], D.H. GREGORY[2], [1]Dept of Electrical Engineering, University of Glasgow, Glasgow, UK; [2]Dept. of Chemistry, University of Glasgow, Glasgow, UK

CB-3:L08 **Influence of the Frequency and Applicator Type on Hydroxyapatite Microwave Sintering**
E. SAVARY[1, 2], A. THUAULT[2], J.-C. HORNEZ[1], M. DESCAMPS[1], S. MARINEL[2], A. LERICHE[1], [1]Laboratoire des Matériaux Céramiques et Procédés Associés - Université de Valenciennes et du Hainaut-Cambrésis, Maubeuge, France; [2]Laboratoire de Cristallographie et Sciences des Matériaux, Caen Cedex, France

Session CB-4
Spark Plasma and Flash Sintering

CB-4:IL01 **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:IL02 **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[1], Y. KODERA[1], Z. WANG[1], C. DAMES[2], **J.E. GARAY**[1], [1]University of California, Riverside, CA, USA; [2]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:IL05 **Spark Plasma Sintering of Multilayer Ceramics**
C. ESTOURNES[1], M. BOIDOT[1], S. SELEZNEFF[1], P. AUDIGIÉ[1], D. OQUAB[1], D. MONCEAU[1], M. MAGLIONE[2], C. ELISSALDE[2], [1]Institut Carnot CIRIMAT Toulouse Cedex, France; [2]CNRS, Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France

CB-4:L06 **Ultra-Rapid Spark-Plasma Sintering of SiC powder**
E. OLEVSKY, S. ROLFING, A. ILYINA, San Diego State University, CA, USA; Moscow Engineering Physics University, Russia

CB-4:L08 **Porosity Evolution under Spark Plasma Sinter-Forging**
E.V. ALEKSANDROVA[1], E.A. OLEVSKY[2, 1], A.M. ILYINA[1], E.G GRIGORYEV[1], [1]Engineering Physics University, Moscow, Russia; [2]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 a l'energie atomique et aux energies alternatives-Centre de Marcoule, Bagnols-sur-Ceze, 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 Hétérogenes, 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 MgAl2O4 Spinel during SPS Processing**
K. MORITA[1], B.-N. KIM[1], H. YOSHIDA[1], K. HIRAGA[2], Y. SAKKA[1], [1]Advanced Ceramics Group, National Institute for Materials Science (NIMS), Tsukuba, Ibaraki, Japan; [2]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 ZrO2(1.5Y2O3)-25Al2O3 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 Templated 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:L04 **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:L07 **(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: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. VIDECOQ, 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[1], A. ZOCCA[1], E. BERNARDO[1], C.M. GOMES[2], J. GÜNSTER[2], P. COLOMBO[1, 3], [1]Dipartimento di Ingegneria Industriale, University of Padova, Padova, Italy; [2]Division of Ceramic Processing and Biomaterials, BAM Federal Institute for Materials Research and Testing, Berlin, Germany; [3]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:L03 **Anisotropic Property and Nanostructure of Phosphate Glass**
S. ITO, S. INABA, H. HOSONO, J. ENDO, Tokyo Institute of Technology, Yokohama, Japan

CB-7:L04 **Atomic Layer Deposition of Metal Oxide on Silicon Carbide Nanopowder**
T. JOGIAAS[1], L. KOLLO[2], J. KOZLOVA[1], A. TAMM[1], I. HUSSAINOVA[2], K. KUKLI[1, 3], [1]University of Tartu, Institute of Physics, Department of Materials Science, Tartu, Estonia; [2]Tallinn University of Technology, Department of Materials Engineering, Tallinn, Estonia; [3]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 Perovkite-type Oxides**
M. TOKUDA[1], Y. OGATA[1], K.J. ISRAM[1], A. YOSHIASA[2], T. NISHIYAMA[2], T. MASHIMO[1], [1]Institute of Pulsed Power Science, Kumamoto University, Kumamoto, Japan; [2]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[1], 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:IL09 **Material and Structure Design Across Length Scale using Aerosol 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 Ecofriendly 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 VO2 Particles by Solvothermal 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 Fe2O3 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 HfO2 Sol-gel Material with Embedded Y2O3:Eu3+ Polyol Nanoparticles**
M. VILLANUEVA-IBÁNEZ, 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 Tecnologia de Materiales (ITM), Universitat Politecnica de Valencia, Valencia, Spain; F.L. PENARANDA-FOIX, Instituto de Aplicaciones de las Tecnologias de la Información y de las Comunicaciones Avanzadas (ITACA), Universitat Politecnica 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; S. MORROW, Hadron Technologies, Arvada, CO, USA

CB:P09 **Morphological Control and Characterization of NaYF4 Upconversion 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 **Al2O3 // 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 Tecnologia de Materiales, Universitat Politecnica de Valencia, Valencia, Spain; C.F. GUTIERREZ-GONZALEZ, Centro de Investigacion en Nanomateriales y Nanotecnologia (CINN) (CSIC-UO-PA), Llanera (Asturias), Spain; A. RINCON, R. MORENO, Instituto de Ceramica 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 TaB2 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[1, 2], **HYUN-KUK PARK**[1], IK-HYUN OH[1], KEE-DO WOO[2], [1]Korea Institute of Industrial Technology, Automotive Components Group, Gwangju, Korea; [2]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, Divisao de Materiais do Instituto de Aeronáutica e Espaço, AMR-IAE, Sao José dos Campos, SP, Brazil; A.H.A. BRESSIANI, Instituto de Pesquisas Energéticas e Nucleares, Sao Paulo, SP, Brazil; E.M.J.A. PALLONE, Universidade de Sao Paulo, Pirassununga, SP, Brazil; R. TOMASI, Departamento de Engenahria de Materiais, Universidade Federal de Sao Carlos, Sao Carlos, SP, Brazil

CB:P18 **Phytosynthesis of Nanocrystalline Zinc Oxide by Opuntia Amychlaea Aqueous Extract**
J. FRANCISCO-ESCUDERO, M. VILLANUEVA-IBÁNEZ, 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 Y3Al5O12-Y2Ti2O7- Al2O3-Al2TiO5**
P.A. MÁRQUEZ AGUILAR[1], **M. VLASOVA**[1], M. KAKAZEY[1], A. BYKOV[2], S. LAKIZA[2], V. STETSENKO[2], [1]Center of Investigation in Eng. and Applied Sciences of the Autonomous University of the State of Morelos (CIICAp-UAEMor), Cuernavaca, Mexico; [2]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. PETRUSHA, I.P. FESENKO, B.YU. 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. PATSERA, A.YU. POTANIN, YU.S. POGOZHEV, V.V. KURBATKINA, N.A. KOCHETOV, National University of Science and Technology "MISIS", Moscow, Russia

CB-9.1:L03 **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:L06 **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:L02 **Synthesis and Luminescence Properties of a Red Nitride Phosphor (CaAlSiN3:Eu2+) for White Light LED Applications**
SHYAN-LUNG CHUNG[1, 2], S.C. HUANG[1], [1]Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan, ROC; [2]Advanced Optoelectronic Technology Center, National Cheng Kung University, Tainan, Taiwan, ROC

CB-9.2:L03 **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:L04 **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:L05 **Surfacing of Protective Coatings on Titanium, Steel Substrates by SHS Metallurgy**
D.E. ANDREEV, V.I. YUKHVID, V.N. SANIN, Institute of Structural Microkinetiks and Materials Science, RAS, Chernogolovka, Moscow region, Russia

CB-9.2:L06 **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:L07 **In Situ Consolidation Via Spark Plasma Sintering and Self-Propagating High Temperature Synthesis of SiC**
D.O. MOSKOVSKIKH[1], A.S. ROGACHEV[1, 3], A.S. MUKASYAN[1, 2], [1]National University of Science and Technology «MISIS», Moscow, Russia; [2]Department of Chemical & Biomolecular Eng., University of Notre Dame, Notre Dame, IN, USA; [3]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:L02 **High Purity Titanium Powder via Combustion Method**
H. NERSISYAN, CHANG WHAN WON, HYUNG IL WON, RASOM, Chungnam National University, Daejeon, Korea

CB-9.3:L03 **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[1], G. CORRIAS[1], R. ORRU[1], A. CONCAS[2], M. PISU[2], **G. CAO**[1, 2], [1]DIMCM, UniCA, Italy; [2]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:L05 **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:L03 **Some Specific Features at Rapid Heating of Mechanochemically 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', R. LICHERI, C.MUSA, G. CAO, Dipartimento di Ingegneria Meccanica, Chimica e dei Materiali, Università degli Studi di Cagliari, Cagliari, Italy

CB-9.5:L05 **A Theory of Mechanically Activated SHS**
B.B. KHINA, Physico-Technical Institute, NASB, Minsk, Belarus

CB-9.5:L06 **Combustion Synthesis of Copper - Refractory Metal Composites by Co-reduction Approach**
S.V. AYDINYAN, S.L. KHARATYAN, 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, [1]Institute of Structural Macrokinetics and Materials Science, RAS, Chernogolovka, Russia; [2]Department of Chemical and Biomolecular Engineering, University of Notre Dame, Notre Dame, IN, USA; [3]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

SYMPOSIUM CC

MATERIALS SOLUTIONS FOR HIGHLY DEMANDING TRIBOLOGICAL APPLICATIONS

Oral Presentations

Session CC-1

Fundamentals of Friction, Wear, Adhesion and Lubrication

CC-1:IL01 **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:IL02 **Dissipation in Nanoscale Systems: from Nanotubes to Water**
E. RIEDO, School of Physics, Georgia Institute of Technology, Atlanta, GA, USA

CC-1:IL03 **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:IL04 **Friction Coefficient Dependence on Electrostatic Tribocharging**
T.A.L. BURGO[1], C.A. SILVA[2], L.B.S. BALESTRIN[1], **F. GALEMBECK**[1, 2], [1]Institute of Chemistry, University of Campinas, Campinas SP, Brazil; [2]National Nanotechnology Laboratory and National Center for Energy and Materials Research, Campinas SP, Brazil

CC-1:IL05 **Fundamentals of Elastohydrodynamic Lubrication**
M. KANETA[1], P. YANG[2], I. KRUPKA[1], M. HARTL[1], [1]Brno University of Technology, Brno, Czech Republic; [2]Qingdao Technological University, Qingdao, P.R.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:IL01 **Silicon Diamond-like Coatings**
L.V. SANTOS[1, 2], F.L.C. LUCAS[1], R.S. PESSOA[1, 2], H.S. MACIEL[1, 2], M. MASSI[2, 3], F. GALEMBECK[4, 5], [1]University of Paraiba Valley IP&D/UNIVAP, Sao Jose dos Campos - SP, Brazil; [2]Technologic Institute of Aeronautics, ITA/CTA, Sao Jose dos Campos - SP, Brazil; [3]Institute of Science and Technology, ICT/UNIFESP, Sao Jose dos Campos - SP, Brazil; [4]Institute of Chemistry, University of Campinas - UNICAMP, Campinas SP, Brazil; [5]National Nanotechnology Laboratory at the National Center for Energy and Materials Research, Campinas SP, Brazil

CC-2:IL02 **Tribological Properties of Carbon Layers Derived from Different Polytypes of Silicon Carbide**
DAE-SOON LIM, MIN-GUN JEONG, EUNGSUK LEE, Department of Materials Science and Engineering, Korea University, Seoul, Korea

CC-2:IL03 **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:IL04 **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:IL05 **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[1], M. GASIK[2], L. KOLLO[1], I. HUSSAINOVA[1], M. RODRÍGUEZ[3], [1]Tallinn University of Technology, Department of Materials Engineering, Tallinn, Estonia; [2]Aalto University Foundation, School of Chemistry, Material Science and Engineering, Aalto, Finland; [3]Instituto de Cerámica y Vídrio (CSIC), Campus Cantoblanco, Madrid, Spain

Session CC-3

Friction and Wear at Micro/Nanoscale

CC-3:IL01 **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:IL02 **Nano/Micro-Tribology of MEMS**
M.T. DUGGER, Sandia National Laboratories, Albuquerque, NM, USA

CC-3:IL03 **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[1], J. MYALSKI[1], D. MICHALIK[1], N. VALLE[2], G. LIPPMANN[2], A. BOTOR-PROBIERZ[2], T. PAWLIK[1], [1]Silesian University of Technology, Gliwice, Poland; [2]Centre de Recherche Public (CRP-GL), Luxembourg

Session CC-4

Biotribology

CC-4:IL01 **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:IL02 **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:IL03 **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 **Tribochemical 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 Technolog and Fraunhofer IWM, Plinztal, 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:L05 **Frictional Property and Crystal Structure of ZnO Coatings Analyzed by a Combinatorial Technique**
M. GOTO[1], M. SASAKI[2], A. KASAHARA[2], M. TOSA[2], [1]International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Ibaraki, Japan, [2]High Temperature Materials Unit, National Institute for Materials Science, Tsukuba, Ibaraki, Japan

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[1], J.H. SUN[2], C.H. LEE[2], S.Y. SHIN[2], [1]Plasma Enhanced Technology Development Team, Korea Institute of Industrial Technology, Incheon, Republic of Korea; [2]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 Uberlandia, Universidade Federal de Santa Catarina, Florianopolis, 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[1], F.M. SOUZA[1], E.D. SANTOS[1], H.S. MACIEL[1,2], R.S. PESSOA[1,2], P.M.S.C.M. LEITE[1], P.A. RADI[1,2], L.V. SANTOS[1,2], [1]University of Paraiba Valley IP&D/UNIVAP, Sao Jose dos Campos - SP, Brazil; [2]Technologic Institute of Aeronautics, ITA/CTA, Sao Jose dos Campos - SP, Brazil

CC:P03 **A Study of Friction Coefficient of Ti3SiC2 and TiC Influence on its Behaviour**
S. BENDAOUDI[1], M. BOUNAZEF[2], E.A. ADDA BEDIA[3], [1]Department of Mechanical Engineering, University of Sidi Belabbes, Algeria; [2]Laboratory LM&H, University of Sidi Belabbes, Algeria; [3]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

SYMPOSIUM CD
JOINING INORGANIC MATERIALS AT DIFFERENT LENGTH SCALES

Oral Presentations

Session CD-1
Basic Issues

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:L03 **Microstructural Evolution of Active Metal Brazed Ag-Cu-Ti/Alumina Interfaces**
M. ALI, K.M. KNOWLES, Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK; J.A. FERNIE, P.M. 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 Brazed 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[1], P.M. MALLINSON[1], M. ALI[2], T.R. BARNES[1], K.M. KNOWLES[2], [1]AWE, Reading, UK; [2]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. AIZENSHTEIN[1], N. FROUMIN[2], N. FRAGE[2], [1]Department of Material Engineering, Ben-Gurion University, Beer-Sheva, Israel; [2]NRC-Negev, Beer-Sheva, Israel

CD-1:L10 **Sealing of Glass-ceramics to Ti-6Al-4V**
M.T. STAFF[1], P.M. MALLINSON[2], F.H. MCCARTHY[2], M.J. WHITING[1], J.A. YEOMANS[1], J.A. FERNIE[2], [1]University of Surrey, Guildford, UK; [2]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:L04 **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-/Nanojoining Concepts using Ceramic Materials**
J. JANCZAK-RUSCH, G. PIGOZZI, F. LA MATTINA, G. KAPTAY*, 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. KAPTAY, 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 Ag2O**
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:L07 **A Study on the Interfacial Reactions of Ti-6Al-4V and Boroaluminate Glasses / Glass-ceramics used in Glass to Metal Seals**
P.M. YATES[1], M. STAFF[1, 2], M.J. WHITING[1], J.A. FERNIE[2], J.A. YEOMANS[1], [1]University of Surrey, Guildford, UK; [2]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:L05 **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:L09 **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[1], **E.A. LEBEDEV**[1], D.I. SMIRNOV[1, 2], A.S. SHULIATYEV[1], V.A. GALPERIN[3], E.P. KITSYUK[3], Y.P. SHAMAN[3], [1]National Research University of Electronic Technology, Moscow, Zelenograd, Russia; [2]P.N. Lebedev Physical Institute of the Russian Academy of Sciences; [3]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 **Brazing Vacuum Ceramic Tubes for Magnets Applications**
O. BAGNATO[1], R.F. FRANCISCO[1], A.L. GOBBI[2], T. FALVO[3], [1]Brazilian Synchrotron Light Laboratory-LNLS, Campinas, SP, Brazil; [2]Brazilian Nanotechnology National Laboratory - LNNano; [3]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. SCHNELLER, 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[1, 2], N. ZETTSU[1, 2], H. WAGATA[1, 2], S. OISHI[1], [1]Shinshu University, Nagano, Japan; [2]CREST, Japan Society and Technological Agency

CE-1:L03 **Chemical Processing and Microstructures of Thin Films for Li Battery Application**
Y.H. IKUHARA[1], XIANG GAO[1], C.A.J. FISHER[1], A. KUWABARA [1], H. MORIWAKE[1], R. HUANG[1,2], Y. IKUHARA[1,3], H. OKI[4], K. KOHAMA[4], [1]Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, Japan; [2]Ministry of Education, East China Normal University, Shanghai, China; [3]Institute of Engineering Innovation, The University of Tokyo, Tokyo, Japan; [4]Toyota Motor Corporation, Susono, Japan

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:IL06 **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:IL07 **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 LaTiO2N 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:IL11 **Hybrid Nanomaterials for Electrochemical Devices in Energy Management**
POOI SEE LEE, School of Materials Science and Engineering, Nanyang Technological University, Singapore

CE-1:IL12 **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 Electrospinning**
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:IL01 **Surface Tuning of Technologically Important Metal Oxides**
G. THORNTON, London Centre for Nanotechnology, University College London, London, UK

CE-2:IL04 **Zinc oxide: Morphology and Growth**
Z. CRNJAK OREL, National Institute of Chemistry, Ljubljana, Slovenia

CE-2:IL05 **Nanostructured Metal Oxides and Organic-inorganic Hybrid Materials with up-conversion Properties**
F. GONELL[1], S. GIMÉNEZ[2], **B. JULIÁN-LÓPEZ**[1], [1]Group of Multifunctional Materials, Dep. Inorganic and Organic Chemistry (ESTCE); [2]Group of Photovoltaic and Optoelectronic Devices, Dep. Physics (ESTCE), Universitat Jaume I, Castellón, Spain

CE-2:IL06 **Metal Oxides as Protein Mimics**
W. TREMEL, Johannes Gutenberg-Universität Mainz, Mainz, Germany

CE-2:IL07 **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:IL09 **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:IL10 **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:IL11 **Metal Oxide Nanopowders for Photocatalytical Applications**
T. GRAULE[1], K.A. MICHALOW-MAUKE[1, 2], [1]Empa Swiss Federal Laboratories for Materials Science and Technology, Laboratory for High Performance Ceramics, Duebendorf, Switzerland; [2]Paul Scherrer Institute, Villigen PSI, Switzerland

CE-2:L12 **Synthesis and Aggregation of In2O3 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:IL01 **Engineering New Properties at Intrinsic and Artificial Oxide Interfaces**
P. PARUCH, DPMC-MaNEP, University of Geneva, Geneva, Switzerland

CE-3:IL02 **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 Fe2O3 Nanomaterials for Solar-Activated H2 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[1], M. BIRSANU[1, 2], K. OKADA[3], H. GARCIA[2], [1]Department of Chemical Engineering, Faculty of Chemical Engineering and Environmental Protection, Technical University "Gh. Asachi" of Iasi, Iasi, Romania; [2]Instituto de Tecnología Química, Univ. Politecnica de Valencia, Valencia, Spain; [3]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:IL06 **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, Société DIOPTIK, Ester Technopole, Limoges, France; C. BOISSIÈRE, 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[1,2], **M. AIZENBERG**[2], O. KUKSENOK[3], L.D. ZARZAR[4], A. SHASTRI[4], A.C. BALAZS[3], J. AIZENBERG[1, 2, 4], [1]School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA; [2]Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, USA; [3]Department of Chemical and Petroleum Engineering, University of Pittsburgh, Pittsburgh, PA, USA; [4]Department of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, USA

CE-3:L08 **Bifunctional TiO2/Ag3PO4/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:IL10 **Controlled Functionalization of Surfaces towards Molecularly-defined Surface Sites**
C. COPERET, Department of Chemistry and Applied Biosciences, ETH Zürich, Switzerland

CE-3:IL11 **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[1], J.Y. CHOI[2], K.I. MOON[2], C.H. LEE[1], S.Y. SHIN[1], [1]Advanced Fusion Process R&D Group, Korea Institute of Industrial Technology, Incheon, Republic of Korea; [2]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 Fe2O3 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. FRESNO, D. KORTE, U. LAVRENCIC 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[1], V.V. ALESHIN[1], A.M. KOLESNIKOVA[1], **D.YU. KOVALEV**[2], V.I. PONOMAREV[2]; [1]Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia; [2]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. CEPENKO, 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. d-r Assen Zlatarov", Department of Inorganic Substances and Silicates, Bougas, Bulgaria

CE:P07 **The Consolidated Nanocomposite Materials with the Defined Properties**
G. SEMCHENKO[1], E.S. GEVORKYAN[2], [1]National Technical University "Kharkov Polytechnic Institute"; [2]Ukrainian State Academy of Railway Transport, Kharkov, Ukraine

CE:P08 **Preparation of TiN/Ti02 Double Layer Nanostructured Coating**
F. DABIR, **R. SARRAF-MAMOORY**, V. AHMADI, N. RIAHI-NOORI, Department of Materials Engineering, Tarbiat Modares Universitv, 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, Diyarbakır, Turkey; Laboratory of Thin Films and Plasma, Mentouri University, Constantine, Algeria

CE:P10 **Nanostructured Perovskite-like Oxides ANdM2O7 (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 TiO2 Nanotube Arrays**
BONGSOO KIM[1], SEUNGBUM HONG[1, 2], KWANGSOO NO[1], [1]Department of Materials Science and Engineering, KAIST, Daejeon, South Korea; [2]Nanoscience and Technology Division, Argonne National Laboratory, Lemont, IL, USA

CE:P15 **Effects of Particle Size and Solid Solution of Al2O3(A) / CexZr1-xO2(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:P19 **Bioreactor Intensification using Modified Sugarcane Bagasse as Inert Support**
J.G.C. PRADELLA[1], R. RULLER[1], J.L. IENCZAK[1], S.C. RABELO[1], P. MAZZIERO[1], F.S. MIRANDA[1], L.V. SANTOS[2, 3], [1]Brazilian Laboratory of Science and Technology of Bioethanol, Campinas SP, Brazil; [2]Technologic Institute of Aeronautics, ITA/CTA, Sao Jose dos Campos - SP, Brazil; [3]University of Paraiba Valley IP&D/UNIVAP, Sao Jose dos Campos - SP, Brazil

CE:P20 **Using of Plasma Reactor with Discharge in Liquid as Pretreatment of Bagasse Sugar Cane Aiming Production of Second Generation Ethanol**
F.S. MIRANDA[1], F.L.C. LUCAS[1], E.D. SANTOS[1], R.J. SILVA[3], C.M. CARLY[2], S.C. RABELO[2], C.E.V. ROSSEL[2], J.G.C. PRADELLA[2], H.S. MACIEL[1, 3], R.S. PESSOA[1, 3], L.V. SANTOS[1, 3]; [1]Nanotechplasma laboratory, University of Paraiba Valley, São José dos Campos, SP, Brazil; [2]Brazilian Bioethanol Science and Technology Laboratory, Campinas - SP, Brazil; [3]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, S. MURPHY, T. DAVEY, 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[1], A. PAUL[1], S. VENUGOPAL[1], PENXIANG ZHENG[2], B. VAIDHYANATHAN[2], P. BROWN[3], [1]University of Birmingham, UK; [2]Loughborough University, UK; [3] 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:L07 **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-GARCÍA, A. DOMÍNGUEZ-RODRÍGUEZ, Dpt. Condensed Matter Physics, University of Seville, Seville, Spain; R.I. TODD, Dpt. Materials, University of Oxford, Oxford, UK

CF-1:L08 **Dual Composite Architectures for Toughening of ZrB2-MoSi2 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:L09 **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:L11 **Electro Discharge Machinable Alumina-based Nanocomposites**
L.A. DÍAZ[1], S. RIVERA[2], A.A. OKUNKOV[3], YU.G. VLADIMIROV[3], F.J. GOTOR[4], **R. TORRECILLAS**[1, 3], [1]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; [2]Nanoker Research, S.L., Polígono de Olloniego, Oviedo, Asturias, Spain; [3]Moscow State University of Technology "STANKIN", Moscow, Moscow Oblast, Russian Federation; [4]Instituto de Ciencia de Materiales de Sevilla (CSIC-US), Sevilla, Spain

CF-1:L12 **BMT - An Ultra High Temperature Oxide Ceramic for Hypersonic 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:L14 **Reaction Bonded Si3N4 (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[1], T. LAOUI[2], F. PATEL[2], A.I. BAKARE[1], S. ALI[2], [1]Center of Excellence in Nanotechnology, King Fahd University of Petroleum & Minerals Dhahran, Saudi Arabia; [2]Mechanical Engineering Department, King Fahd University of Petroleum & Minerals Dhahran, Saudi Arabia

CF-1:L16 **Hexagonal BN Encapsulated ZrB2-particles by Nitride Boronizing**
JI ZOU[1, 2, 3], JINGJING LIU[3], GUO-JUN ZHANG[2], SHUIGEN HUANG[3], J. VLEUGELS[3], O. VAN DER BIEST[3], J. ZHIJIAN SHEN[1], [1]Dept. of Materials and Environmental Chemistry, Arrhenius Laboratory, Stockholm University, Stockholm, Sweden; [2]State Key Laboratory of High Performance Ceramics and Superfine Microstructures, Shanghai Institute of Ceramics, Shanghai, China; [3]Dept. of Metallurgy and Materials Engineering (MTM), KU Leuven, Heverlee, Belgium

Session CF-2
Oxidation, Corrosion, and Testing

CF-2:IL01 **Oxidation Mechanisms of ZrB2 - 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[1], A.-S. ANDRÉANI[1], A. POULON-QUINTIN[2, 3], [1]Univ. Bordeaux, LCTS, Pessac, France; [2]CNRS, ICMCB, UPR 9048, Pessac, France; [3]Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France

CF-2:L03 **Synthesis, Oxidation Resistance, Emittance, and Thermal Conductivity of ZrB2-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-LaB6 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:IL02 **High-temperature Mechanical Behaviour of Super-hard Carbides: The Special Case of Boron Carbide**
D. GOMEZ-GARCIA[1], B.M. MOSHTAGHIOUN[1], M. CASTILLO-RODRIGUEZ[2], A. DOMINGUEZ-RODRIGUEZ, [1]Department of Condensed Matter Physics, University of Seville, Spain; [2]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[1], E. ZAPATA-SOLVAS[2], D. GOMEZ-GARCIA[1], A. DOMINGUEZ-RODRIGUEZ[1], [1]Department of Condensed Matter Physics, University of Seville, Spain; [2]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:IL06 **Ultra High Temperature Mechanical Testing of ZrB2 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:IL07 **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', 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[1], **B.M. MOSHTAGHIOUN**[2], D. GOMEZ-GARCIA[2], A. DOMINGUEZ-RODRIGUEZ[2], [1]Department of Mechanical, Energy and Materials Engineering, University of Extremadura, Badajoz, Spain; [2]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 ZrB2 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:IL01 **Nanoanalytical Characterisation of Ternary Carbides**
D.D. JAYASEELAN[1], O. CEDILLOS BARRAZA[1], S. GRASSO[2], W.E. LEE[1], [1]Dept of Materials, Imperial College, London, UK; [2]Nanoforce, Dept of Materials, Queen Mary University of London, UK

CF-4:IL02 **Characterization of UHTCs Containing Various Kinds of Fibers**
L. SILVESTRONI, D. SCITI, CNR-ISTEC, Faenza, Italy

CF-4:IL03 **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[1], M. PETTINA[1], F. ABDI[2], **K. NIKBIN**[1], [1]Imperial College London, London, UK; [2]Alphastar Corp, Longbeach CA, USA

CF-4:L05 **Micro-structural Approach of the Mechanisms of the Carbothermal Reduction of Hafnia by TEM and XRD**
F. REJASSE, O. RAPAUD, A. MAITRE, G. TROLLIARD, Laboratoire SPCTS, Limoges Cedex, France

CF-4:L06 **Si3N4-SiC Nanocomposites Sintered with Various Rare-earth Oxide Additives for High Temperature Applications**
P. TATARKO[1], M. KASIAROVÁ[1], **J. DUSZA**[1], P. SAJGALÍK[2], [1]Institute of Materials Research, SAS, Kosice, Slovak Republic; [2]Institute of Inorganic Chemistry, SAS, Bratislava, Slovak Republic

CF-4.1:L07 **Modelling and Experimental Thermodynamic Approach of High Temperature IVB-metal Carbides and Oxycarbides**
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. ANDRIEVSKAYA, 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[1], F. AHMAD KHALID[1], A.S. HAKEEM[2], [1]Faculty of Materials Science and Engineering, GIK Institute of Engineering Sciences and Technology, Topi, Swabi, KPK, Pakistan; [2]Centre of Excellence in Nanotechnology, King Fahd University of Petroleum and Minerals, Dhahran, Kingdom of Saudi Arabia

CF:P04 **Effect of TiO2 and TiB2 on Pressureless Sintering of ZrB2**
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 Y2O3 Ceramics at High Temperatures**
M. BONIECKI, Z. LIBRANT, W. WESOLOWSKI, 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, Çannakkale, 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 ZrW2O8 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-RE2O3 (RE= Y, Nd, Er, Lu)**
KWANG-YOUNG LIM, YOUNG-WOOK KIM, JUNG-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. CABIOC'H, Institut PPRIME, CNRS/Université de Poitiers/ENSMA, UPR 3346, Bât. SP2MI, Futuroscope-Chasseneuil Cedex, France; L. GENCE, L. PIRAUX, 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), Linkoping University, Linkoping, Sweden

CG-1:IL05 **MAX Phases and MXene Valence Electron Excitations with Nanometre Scale Resolution**
V. MAUCHAMP, D. MAGNE, T. CABIOC'H, 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 **Itinerant-electron Magnetism of Cr-based MAX Phases**
Z. LIU, T. WAKI, Y. TABATA, **H. NAKAMURA**, Department of Materials Science and Engineering, Kyoto University, Kyoto, Japan

CG-1:L07 **Temperature Dependent Phase Stability of Tin+1AlCn 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 Ti2AlC**
E.N. CASPI, O. YEHESKEL, 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[1,2], DONG QU[2], K. SATO[1], M. ESTILI[1], S. GRASSO[3], H. YOSHIDA[1], K. MORITA[1], T. NISHIMURA[1], T. SUZUKI[1], B. KIM[1], Y. SAKKA[1], [1]National Institute for Materials Science, Japan; [2]Ningbo Institute of Material Technology and Engineering, CAS, China; [3]Queen Mary University of London, UK

CG-2:L04 **Mechanical Properties of Ti3AlC2 and Ti3AlC2/TiC Composites**
T.A. PRIKHNA[1], STAROSTINA A.V.[1], BASYUK T.V.[1], DUB S.N.[1], OSADCHIY A.A.[1], LOSHAK M.G.[1], CABIOC'H T.[2], CHARTIER P.[2], SVERDUN V.B.[1], KARPETS M.V.[1,3], DEVIN L.N.[1], [1]Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Kiev, Ukraine; [2]Universite de Poitiers, CNRS/ Laboratoire PHYMAT, UMR 6630 CNRS-Universite de Poitiers SP2MI, Chasseneuil Futuroscope Cedex, France; [3]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[1], D. TALLMAN[1], B. ANASORI[1], M. RADOVIC[2], [1]Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA; [2]Department of Mechanical Engineering, Texas A&M University, College Station, TX, USA

CG-3:IL02 **Critical Review of the Oxidation of Cr2AlC**
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 Ti2Al(1-x)SnxC/Al2O3 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 Ti2Al(C1-xNx) Solid Solutions**
T.A. PRIKHNA[1], D. LITZKENDORF[2], T. CABIOCH[3], T.V. BASYUK[1], **A.V. STAROSTINA**[1], P. CHARTIER[3], D.V. TURKEVICH[1], M.V. KARPETS[1,4], V.V. KOVYLAEV[1], [1]Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Kiev, Ukraine; [2]Institut für Photonische Technologien, Jena, Germany; [3]Universite de Poitiers, CNRS/ Laboratoire PHYMAT, UMR 6630 CNRS Universite de Poitiers SP2MI, Chasseneuil Futuroscope Cedex, France; [4]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 MYKHALENKOV, 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:L07 **Synthesis and Characterization of (CrxV1-x)n+1AlCn Solid Solutions**
T.V. BASYUK, T.O. PRIKHNA, Institute for Superhard Materials, Kyiv, Ukraine; P. CHARTIER, T. CABIOC'H, Institut P' UPR 3346 CNRS, Universite de Poitiers, ENSMA, SP2MI, Futuroscope, France

CG-4:L08 **Towards Understanding the Formation Mechanism of MAX-phase - In Situ TEM Studies on the Crystallization of V2AlC Thin Film**
JIE ZHANG[1*], M. BORNHOEFFT[2], M. BABEN[1], L. SHANG[1], J. MAYER[2], J.M. SCHNEIDER[1], [1]Materials Chemistry, RWTH Aachen University, Aachen, Germany; [2]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:L09 **Effects of Spatial Distribution of Reactants on Formation of Ti3SiC2-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:L11 **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:L12 **Fabrication of Dense TiC-Ti3SiC2 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:L05 **Effect of Neutron Irradiation on Select MAX Phases**
D.J. TALLMAN[1], E. HOFFMAN[2], E.N. CASPI[1*], B. GARCIA-DIAZ[2], G. KOHSE[3], R.L. SINDELAR[2], M.W. BARSOUM[1], [1]Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA; [2]Savannah River National Lab, Savannah River Site, Aiken, SC, USA; [3]MIT Nuclear Reactor Laboratory, Massachusetts's Institute of Technology, Cambridge, MA, USA; *On sabbatical leave from the Nuclear Research Centre - Negev, Israel

CG-4:L06 **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 Ti3SiC2-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:L03 **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:L04 **Applications and Character of Porous Structures Produced Via Robocasting**
J. CESARANO, J. STUECKER, M. NIEHAUS, Robocasting Enterprises LLC, Albuquerque, NM, USA

CH-1:L05 **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[1,2], JANG-HOON HA[2], IN-HYUCK SONG[1,2], [1]University of Science & Technology (UST), Daejeon, Republic of Korea, [2]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[1, 2], YINSHENG LIA[2], YONGJIE YANA, ZHENGREN HUANGA, XUEJIAN LIU[1], [1]State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; [2]University of the Chinese Academy of Sciences, Beijing, China

CH-1:IL10 **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:IL11 **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**
M. STROZI CILLA[1, 2], M.R. MORELLI[1], P. COLOMBO[2], [1]Federal University of São Carlos (UFSCar) - Graduate Program on Materials Science and Engineering (PPG-CEM), São Carlos-SP-Brazil; [2]Università degli Studi di Padova (UNIPD) - Dipartimento di Ingegneria Industriale, Padova, Italy

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[1], **U.E. ANIL**[1], K. KAYACI[1], F. KARA[2], [1]Kaleseramik Canakkale Kalebodur Seramik San. A.S., Can-Canakkale, Turkey; [2]Department of Materials Science and Engineering, Anadolu University, Eskisehir, Turkey

Session CH-2
Physics, Chemistry Structure and Properties of Porous Systems

CH-2:IL01 **Surface Chemistry of Cellular Glasses**
B. REINHARDT, N. ANDERS, C. KUESTER, **D. ENKE**, Universität Leipzig, Institute of Chemical Technology, Leipzig, Germany

CH-2:IL02 **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[1], M. LOMBARDI[1], P. PALMERO[1], M. FORNABAIO[1], L.J. GIBSON[2], [1]Politecnico di Torino, Department of Applied Science and Technology, Torino, Italy; [2]Department of Materials Science and Engineering, MIT, Cambridge, MA, USA

CH-2:IL04 **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:IL05 **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 Sao Paulo, Sao Carlos School of Engineering, Department of Materials Engineering, EESC-USP, Sao Carlos, SP, Brazil; V.C. PANDOLFELLI, Federal University of Sao Carlos, Department of Materials Engineering, Materials Microstructure Engineering Group, UFSCar, DEMa-GEMM Sao 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:L05 **Evaluating Porosity in Cordierite Diesel Particulate Filter Materials: Advanced X-ray Techniques and New Statistical Analysis Methods**
A. KUPSCH, A. LANGE, M.P. HENTSCHEL, Y. ONEL, T. WOLK, A. STAUDE, 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. EICHHORN, 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:L04 **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[1], R.J. AHERN[1], J.P. HANRAHAN[2], J.M. TOBIN[2], K.B. RYAN[1], [1]School of Pharmacy, University College Cork, Ireland; [2]Glantreo Ltd, Cork, Ireland

CH-5:L03 **CeO2-based Ceramic Foams for Syngas Production by a Solar Driven RedOx Cycle**
A. BONK[1,2], M. GORBAR[1], A. ZUETTEL[1], A. STEINFELD[3], U.F. VOGT[1,2], [1]Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Hydrogen & Energy, Dübendorf, Switzerland; [2]University of Freiburg, Department of Crystallography, Freiburg i. Brsg.; [3]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:IL06 **Ceramic Foams for Energy Related Applications**
U.F. VOGT[1,2], A. BONK[1,2], M. GORBAR[1], A. STEINFELD[3], A. ZUETTEL[1], [1]Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Hydrogen & Energy, Dübendorf, Switzerland; [2]University of Freiburg, Institute of Earth and Environmental, Department of Crystallography; [3]Department of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland

CH-5:IL07 **Aerogel Materials for Energy**
A. RIGACCI, MINES ParisTech, PERSEE - Centre Procédés, Energies Renouvelables et Systèmes Energétiques CS 10207, Sophia Antipolis Cedex, France

CH-5:L09 **Preparation of Catalyst with Architectures Dedicated to Heat and Mass Transfer Limited Processes**
L. MOLINA-JOTEL[1, 2], F. ROSSIGNOL[1], R. FAURE[2], C. BERTAIL[2], T. CHARTIER[1], P. DEL-GALLO[2], [1]SPCTS Laboratory, UMR CNRS 7315, CEC, Limoges, France; [2]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:IL11 **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:IL12 **Ceramics for Filtration**
J. ADLER, R. KRIEGEL, U. PETASCH, H. RICHTER, I. VOIGT, M. WEYDT, Fraunhofer IKTS, Dresden/Hermsdorf, Germany

CH-5:IL13 **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, Univeristy 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., Wroclaw, Poland

Poster Presentations

CH:P01 **Fabrication of Meso-Macro Porous β-SiC Body by a Direct Reaction between Carbon Black Powders and Metallic Si**
SANG WHAN PARK, GYOUNG-SUN CHO, YUNG-CHUL JO, MI-RAE YOUM, 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[1], HAIBO WU[1, 2], YINSHENG LI[1, 2], ZHENGREN HUANG[1], XUEJIAN LIU[1], [1]State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; [2]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. MYLOSLAVSKYY**, 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, Duebendorf, Switzerland

CH:P05 **Study of Photocatalytic Degradation of Methyl Orange over CaTixBi1-xO3 (x=0.0~0.2) Catalysts**
Z.J. WU, X.J. HUANG, X. YAN, Hunan University, Changsha, P.R. China

CH:P06 **Al2O3 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

SYMPOSIUM 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:IL01 **Use of Raman Spectroscopy and Synchrotron Micro-Diffraction to Investigate Stress In Thermal Oxide Films: A Multiscale Approach**
J.L. GROSSEAU-POUSSARD[1], M. GUERAIN[1], **P. GOUDEAU**[2], G. GEANDIER[3], B. PANICAUD[4], N. TAMURA[5], M. KUNZ[5], C. DEJOIE[5], J.S. MICHA[6], [1]LEMMA, Université de La Rochelle, France; [2]PPRIME CNRS-ENSMA Université de Poitiers, France; [3]IJL CNRS-Université de Loraine, France; [4]LASMIS CNRS Université Technologique de Troyes, France; [5]ALS Lawrence Berkeley National Laboratory, USA; [6]DSM, INAC/SP2M/NRS-ESRF, France

CI-1:IL02 **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[1], R. DANIEL[2], A. RIEDL[1], M. BURGHAMMER[3], C. MITTERER[2], J. TODT[4], J. KECKES[4], [1]Materials Center Leoben Forschung GmbH, Leoben, Austria; [2]Department of Physical Metallurgy and Materials Testing, Montanuniversität Leoben, Leoben, Austria; [3]European Synchrotron Radiation Facility, Grenoble, France; [4]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences and Department of Materials Physics, Montanuniversität Leoben, Leoben, Austria

CI-1:IL05 **High Power Pulsed Plasma Enhanced Chemical Vapor Deposition**
H. PEDERSEN[1], D. LUNDIN[2, 3], [1]Department of Physics, Chemistry and Biology, Linköping University, Linköping, Sweden; [2]Laboratoire de Physique des Gaz et Plasmas, UMR 8578 CNRS, Université Paris Sud-XI, Orsay Cedex, France; [3]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[1], H. VERGNES[2], D. SAMÉLOR[1], C. BRASME[3], B. CAUSSAT[2], C. VAHLAS[1], 1Centre Interuniversitaire de Recherche et d'Ingénierie des Matériaux, ENSIACET/INPT, Université de Toulouse, France; [2]Laboratoire de Génie Chimique, ENSIACET/INPT, Université de Toulouse, France; [3]SGD, Mers-les-Bains, France

CI-1:IL07b **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-1:IL08 **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:IL09 **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[1], S.A.KOZYUKHIN[2], A.V. BABICH[1], P.I. LAZARENKO[1], HUY PHUC NGUYEN[2], E.N. REDICHEV[1], V.G. LITVINOV[3], A.V. ERMACHIKHIN[3], [1]National Research University MIET, Moscow, Russia; [2]Kurnakov Institute of General and Inorganic Chemistry, Moscow, Russia; [3]Ryazan State Radioengineering University, Ryazan, Russia

Session CI-2
High Temperature Protective Coatings in Oxidising and Harsh Environments

CI-2:IL01 **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:IL02 **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:IL03 **Novel Approaches to Erosion-resistant Ceramic Coatings**
C. LEYENS, Technische Universität Dresden, Institute of Materials Science, Chair of Materials Engineering, Dresden, Germany

CI-2:IL05 **Ultra-thick, Superhard, Nanocomposite Coatings for Severe Environments**
RONGHUA WEI, Southwest Research Institute, San Antonio, TX, USA

CI-2:IL06 **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:IL01 **Fundamental Challenges in Designing Next Generation Thermal Barrier Coating Systems**
C.G. LEVI, Materials Department, University of California, Santa Barbara, CA, USA

CI-3:IL02 **Design of Thermal Barrier Coatings for Gas Turbine Applications**
P. NYLEN, M. GUPTA, N. CURRY, N. MARKOCSAN, University West, Trollhattan, Sweden

CI-3:IL03 **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[1], CHAN-YOUNG PARK[1,2], YOUNG-HWAN YANG[1], SEONG-WON KIM[1], SUNG-MIN LEE[1], HYUNG-TAE KIM[1], DAE-SOON LIM[2], BYUNG-KOOG JANG[3], [1]KICET, Icheon, Gyeonggi-do, Korea; [2]Korea University, Korea; [3]NIMS, Korea

CI-3:IL05 **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[1, 2], C.C. BERNDT[1, 2, 3], S.Y. KIM[1], A.S.M. ANG[1], [1]Industrial Research Institute Swinburne (IRIS), Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, Australia; [2]Defence Materials and Technology Centre, Melbourne, Australia; [3]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[1], CHANG-SUP KWON[1], YOON-SUK OH[1], SUNG-MIN LEE[1], HYUNG-TAE KIM[1], BYUNG-KOOG JANG[2], [1]Engineering Ceramic Center, Korea Institute of Ceramic Engineering and Technology, Icheon, Korea; [2]High Temperature Materials Unit, National Institute of Materials Science, Tsukuba, Japan

Session CI-4
Tribological Thin Films and Coatings

CI-4:IL01 **State of the Art and Recent Advancements of Thermally Spray Hardmetal Coatings**
L.-M. BERGER, Fraunhofer IWS, Dresden, Germany

CI-4:IL02 **Nanoindentation Cartography and Tomography for the Determination of Local Mechanical Properties**
C. TROMAS, X. MILHET, J.C. STINVILLE, C. TEMPLIER, P. VILLECHAISE, Institut Pprime, Département de Physique et Mécanique des Matériaux, UPR 3346 CNRS - Université de Poitiers - ENSMA, SP2MI, Chasseneuil Futuroscope Cedex, France

CI-4:IL03 **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:IL04 **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-Al2O3(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:IL01 **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:L03 **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:L04 **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:L06 **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:L07 **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

Session CI-6
Modelling and Simulation of Coatings and Films

CI-6:IL02 **Modeling and Measurement of Thermal Resistance at Interfaces**
YIBIN XU, National Institute for Materials Science, Tsukuba, Ibaraki, Japan

CI-6:L04 **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 TiO2+Al2O3 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. KOLISNICHENKO, Paton Electric Welding Institute NANU, Kyiv, Ukraine

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 Al2O3-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[1], G. CABALA[2], [1]Physics Department, Federal University of Rio Grande do Norte, Natal, Brazil; [2]Federal Institut of Education, Science and Technology, Bahia, Brazil

CI:P08 **Mechanical Properties and Oxidation Resistance of Co-sputtering Deposited Zr-Y-N Coatings**
ZHOUCHENG WANG, ZHENGTAO WU, ZHENGBING 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 TixTa1-xN Thin Films**
A. SKARMOUTSOU[1], L.E. KOUTSOKERAS[2, 3], **P. PSYLLAKI**[4], C. CHARITIDES[1], G. ABADIAS[3], P.PATSALAS[5], [1]School of Chemical Engineering, National Technical University of Athens, Athens, Greece; [2]Research Unit for Nanostructured Materials Systems, Department of Mechanical Engineering and Materials Science and Engineering, University of Technology, Limassol, Cyprus; [3]Université de Poitiers, Laboratoire de Métallurgie Physique, UMR CNRS 6630, SP2MI, Futuroscope-Chasseneuil, France; [4]Department of Mechanical Engineering, Technological Education Institute of Piraeus, Egaleo, Greece; [5]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. SZCZYPINSKI, TERMEX Ltd., Koszalin, Poland

SYMPOSIUM CJ
ADVANCES IN ELECTROCERAMICS

Oral Presentations

Session CJ-1
Dielectrics and Microwave Materials

CJ-1:IL01 **Ferroelectricity in Ag(Nb,Ta)O3 Ceramic System**
D. SUVOROV, M. SPREITZER, L. LI, D. KLEMENT, Advanced Materials, Jozef Stefan Institute, Ljubljana, Slovenia

CJ-1:IL02 **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 CeO2 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:IL05 **Synthesis and Characterization of KNbO3 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)O3 Films prepared by Reactive Magnetron Sputtering using Metal Targets**
JINWOONG KIM[1], H. FUNAKUBO[2], H. SHIMA[1], K. NISHIDA[1], T. YAMAMOTO[1], [1]National Defense Academy, Yokosuka, Kanagawa, Japan; [2]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**
M. ASIF IQBAL[1, 3], M.U. ISLAM[1], IRSHAD ALI[1], M. AZHAR KHAN[2], I. SADIQ[1], IHSAN ALI[1], [1]Department of Physics, BahauddinZakariya University Multan, Pakistan;[2]Department of Physics, Islamia University Bahawalpur, Pakistan; [3]National University of Science and Technology, Islamabad

CJ-1:L10 **Synthesis and Characterization of Li-modified AgTaO3**
H. KHAN, Institute of Physics & Electronics, University of Peshawar, Pakistan

CJ-1:IL11 **SrLn2Al2O7 (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:IL12 **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[1, 2], MIN-GYU KANG[1, 3], SAHN NAHM[2, 3], SEOK-JIN YOON[1], [1]Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, Korea; [2]KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, Korea; [3]Department of Materials Science and Engineering, Korea University, Seoul, Korea

CJ-1:L14 **BaTiO3 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:IL01 **Interplay between Flexoelectricity and Nanodomains**
G. CATALAN[1, 2], J. NARVAEZ[2], N. DOMINGO[2], S. SAREMINAEINI[2], J. OÈENÁSEK[3], J. ALCALA[4], B. NOHEDA[5], HAIDONG LU[6], A. GRUVERMAN[6], [1]Institut Catala de Recerca i Estudis Avançats (ICREA), Catalunya; [2]Institut Catala de Nanociència i Nanotecnologia (ICN2), CSIC-ICN, Campus de Bellaterra, Barcelona, Spain; [3]New Technologies Research Centre, University of West Bohemia in Pilsen, Plzeò, Czech Republic; [4]Department of Materials Science and Metallurgical Engineering, GRICCA, Universitat Politecnica de Catalunya, Barcelona, Spain; [5]Zernike Institute for Advanced Materials, University of Groningen, The Netherlands; [6]Department of Physics and Astronomy, University of Nebraska-Lincoln, NE, USA

CJ-2:IL02 **Pyroelectric and Piezoelectric Properties of Nano-crystals grown inside Alumina Pores**
S. BERGER, Faculty of Materials Science and Engineering, Technion, Haifa, Israel

CJ-2:L03 **Characterization of Nanostructured Phases and Peculiar Phase Transitions in BNBT Lead-free Piezoceramics**
L. PARDO, A. GARCÍA, 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 K0.5Na0.5NbO3 Ceramics and KNbO3-NaNbO3 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, Villetaneuse, France; E. LE CLEZIO, Université de Montpellier 2, IES, UMR 5214, Montpellier, France

CJ-2:IL06 **Tuning the Chemistry and Architecture of Ferroelectric Thin Films and Multilayers for On-silicon Integration**
D. LEVASSEUR[1, 2], E. BOUYSSOU[2], R. DE PAOLIS[3], A. ROUSSEAU[1], F. COCCETTI[3], G. GUEGAN[2], S. PAYAN[1], **M. MAGLIONE**[1], [1]CNRS, Univ. Bordeaux, ICMCB, UPR 9048, Pessac, France; [2]ST Microelectronics, Tours, France; [3]CNRS, Univ. Toulouse, LAAS, Toulouse, France

CJ-2:IL07 **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 (Ba0.99Ca0.01)(Ti0.98Zr0.02)O3 Lead Free Ceramics**
JINGHAN GAO, Q. LI, Tsinghua University, Beijing, China

CJ-2:IL10 **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. URSIC, 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 BiFeO3**
J.A. GÓMEZ-CUASPUD, **A.M. MORALES-RIVERA**, D.L. SANCHEZ-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; T. LUMMEN, EPFL, Lausanne, Switzerland

CJ-3:IL03 **Polarization Fatigue and Non-destructive Readout of Ferroelectric Memory**
XI ZOU, RUI GUO, LU YOU, **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 BiFeO3 based Multiferroics: Nanocomposites and Solid Solutions**
G. MALANDRINO, Dipartimento di Scienze Chimiche, Università di Catania, and INSTM UdR Catania, Catania, Italy

Session CJ-4
Semiconducting Ceramics

CJ-4:IL01 **Thermoelectric Properties of TiO2 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. MAKSYMOVYCH, 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 CeO2 and its Gas Sensor Application**
N. IZU, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Aichi, Japan

CJ-4:L07 **Nano-derived Tungstate and Molybdate Oxides for the Sensing of H2, H2S and SO2 at High Temperatures**
E.M. SABOLSKY, E. CIFTYUREK, K. SABOLSKY, Department of Mechanical and Aerospace Engineering, West Virginia University, Morgantown, WV, USA

CJ-4:L08 **High Crystalline Cu2O 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, Nagoya, 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:L03 **Gd(Al,Co)O3 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:L04 **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, T. CHARTIER, SPCTS, UMR CNRS 7315, Limoges, France; N. RICHET, Air Liquide CRCD, Jouy En Josas, France

CJ-5:L05 **Thermal Residual Stress and Biaxial Strength of (Y2O3)0.08(ZrO2)0.92 / (Sc2O3)0.1(CeO2)0.01(ZrO2)0.89 Multi-layered Electrolytes for Intermediate Temperature Solid Oxide Fuel Cells**
YAN CHEN[1,2], A. AMAN[1], M. LUGOVY[1,3], **N. ORLOVSKAYA**[1], XINYU HUANG[4], T. GRAULE[5], J. KUEBLER[5], [1]Department of Mechanical and Aerospace Engineering, University of Central Florida, Orlando, FL, USA, [2]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA; [3]Institute for Problems of Materials Science, Kyiv, Ukraine; [4]University of South Carolina, Columbia, SC, USA; [5]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[1-3], R. JALEM[2], [1]Department of Materials Science & Engineerings, Nagoya Institute of Technology, Japan; [2]JST-PRESTO program, Japan; [3]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:L09 **Evaluating Oxygen Diffusion and Surface Exchange Coefficients in La0.5A0.5Fe0.7Co0.3O3-d (with A= Ca, Sr and Ba) Perovskite Membranes by Oxygen Semi-permeation Measurements**
M. REICHMANN, French Environment and Energy Management Agency, Angers, France; P.M. 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:L10 **Mechanical Properties of Pr1-xDyxCoO3 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 (K0.5Na0.5)NbO3-CaZrO3 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 BaTiO3 Doped with MgO and Y2O3**
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. GAMBARYAN, 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 MgNb2O6 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.THOMAZINI, Universidade Federal de Itajubá-UNIFEI, Itajubá, Brazil

CJ:P06 **CaCu3Ti4O12 Ceramics with Deficiency and Excess of Cu2+**
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)O3 Relaxor Perovskite**
A. BOOTCHANONT[1], S. RUJIRAWAT[1], R. YIMNIRUN[1], RUYAN GUO[2], A. BHALLA[2]; [1]School of Physics, Institute of Science, Suranaree University of Technology, and COE-NANOTEC-SUT on Advanced Functional Nanomaterials, Nakhon Ratchasima, Thailand; [2]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)NbO3 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 LiCoO2 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 Sr3RENb3O12 (RE = La,Nd)**
A.L. CHINELATTO[1,2], C. TABACARU[1], G.C. MATHER[1], [1]Instituto de Cerámica y Vidrio, CSIC, Cantoblanco, Madrid, Spain; [2]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 BaCeO3**
H.E. ARAUJO, D.P.F. DE SOUZA, PPGCEM - DEMA/UFSCar, Sao 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[1,2], J. PARK[3], D.M. KIM[2], V.A. AKSYUK[4], R.R. DAS[2], S.D. BU[2], D.A. FELKER[5], J. LETTIERI[6], V. VAITHYANATHAN[6], S.S.N. BHARADWAJA[6], N. BASSIRI-GHARB[6], Y.B. CHEN[7], H.P. SUN[7], C.M. FOLKMAN[2], H.W. JANG[2], D.J. KREFT[3], S.K. STREIFFER[8], R. RAMESH[9], X.Q. PAN[7], S. TROLIER-MCKINSTRY[6], D.G. SCHLOM[6,10], M.S. RZCHOWSKI[4], R.H. BLICK[3], C.B. EOM[2], [1]Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, Rep.of Korea; [2]Dept. of Materials Science and Engineering, University of Wisconsin, Madison, WI, USA; [3]Dept. of Electrical and Computer Engineering, University of Wisconsin, Madison, WI, USA; [4]Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD, USA; [5]Dept. of Physics, University of Wisconsin, Madison, WI, USA; [6]Dept. of Materials Science and Engineering, Penn State University, University Park, PA, USA; [7]Dept. of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, USA; [8]Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL, USA; [9]Dept. of Materials Science and Engineering, University of California, Berkeley, CA, USA; [10]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:L03 **Enhancement of Piezoelectric Property Using 90° Domain Switching for Tetragonal Pb(Zr, Ti)O3 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-6.1: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 Multilayer on Si Substrate**
GENSHUI WANG[1], YING CHEN[1], LIHUI YANG[1], XIANLIN DONG[1], D. REMIENS[2], [1]Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; [2]IEMN-DOAE-MIMM, University of Valenciennes, France

CJ-6.1:L06 **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 of 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., Radiant Technologies, Inc., Albuquerque, NM, USA

CJ-6.2:IL04 **Nanoscale Domains in Ferroelectric PbTiO3 Films and PbTiO3/SrTiO3 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 T.J. 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:L07 **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. BORREGAARD, 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:L03 **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:L06 **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[1], S. SHETTY[1], **S. TROLIER-McKINSTRY**[1], D. NEWNS[2], GLENN MARTYNA[2], T. SHAW[2], B. BRYCE[2], M. COPEL[2], [1]Department of Material Science and Engineering, Pennsylvania State University University Park, PA, USA; [2]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

SYMPOSIUM CK
FUNCTIONAL MAGNETIC OXIDES

Oral Presentations

Session CK-1
Magnetic Oxide Thin Films Interfaces and Heterostructures

CK-1:IL01 **Multiferroic Tunel Junctions: Revitalizing Half-doped Manganites**
G. RADAELLI[1, 2], D. GUTIERREZ[1], F. SANCHEZ[1], R. BERTACCO[2], **J. FONTCUBERTA**[1], [1]Institut de Ciencia de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra, Catalonia, Spain; [2]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[1], F.A. CUELLAR[1], Y.H. LIU[2], J. SALAFRANCA[1, 3], E. IBORRA[4], G. SANCHEZ-SANTOLINO[1], M. VARELA[3, 1], J.W. FREELAND[5], M. ZHERNENKOV[6], M.R. FITZSIMMONS[6], S. OKAMOTO[3], S.J. PENNYCOOK[3], M. BIBES[7], A. BARTHÉLÉMY[7], S.G.E. TE VELTHUIS[2], Z. SEFRIOUI[1], C. LEON[1], [1]GFMC, Depto. Física Aplicada III, Universidad Complutense de Madrid, Madrid, Spain; [2]Materials Science Division, Argonne National Laboratory, Argonne, IL, USA, [3] Materials Sci. & Technology Div., Oak Ridge National Laboratory, Oak Ridge, TN, USA; [4]GMME Departamento de Tecnologia Electronica. ETSIT. Univ. Politecnica de Madrid, Spain; [5]Instituto de Ciencia de Materiales de Madrid, Cantoblanco, Spain; [6]Advanced Photon Source, Argonne National Laboratory, Argonne, IL, USA; [7]Los Alamos National Laboratory Los Alamos, NM, USA; [8]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[1, 2], M. FÖRST[1], R. SCHERWITZL[3], V. KHANNA[1, 4, 11], H. BROMBERGER[1], R. MANKOWSKY[1], R. SINGLA[1], Y.-D. CHUANG[6], W.S. LEE[7], O. KRUPIN[9], W.F. SCHLOTTER[8], J.J. TURNER[8], G.L. DAKOVSKI[8], M.P. MINITTI[8], J. ROBINSON[8], V. SCAGNOLI[10], S.B. WILKINS[5], S.A. CAVILL[11], M. GIBERT[3], S. GARIGLIO[3], P. ZUBKO[3], J.-M. TRISCONE[3], J.P. HILL[5], S.S. DHESI[11], A. CAVALLERI[1,4], [1]Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; [2]Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands; [3]DPMC, University of Geneva, Switzerland; [4]Department of Physics, Clarendon Laboratory, University of Oxford, UK; [5]Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY, USA; [6]Advanced Light Source, Lawrence Berkeley Laboratory, Berkeley, CA, USA; [7]The Stanford Institute for Materials and Energy Sciences (SIMES), Stanford Linear Accelerator Center (SLAC) National Accelerator Laboratory and Stanford University, Menlo Park, CA, USA; [8]Linac Coherent Light Source, Stanford Linear Accelerator Center (SLAC) National Accelerator Laboratory, Menlo Park, CA, USA; [9]European XFEL GmbH, Hamburg, Germany; [10]Swiss Light Source, Paul Scherrer Institute, Villigen PSI, Switzerland; [11]Diamond Light Source, Chilton, Didcot, Oxfordshire, UK

CK-1:IL07 **Relationship between Composition, Structure and Magnetic Properties in MBE-grown La2MnNiO6 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:L11 **Ferromagnetism in the 2DEG Formed at the Polar and Nonpolar LaAlO3/SrTiO3 Interfaces**
J.I. BELTRÁN, **M.C. MUNOZ**, Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Cantoblanco, Madrid, Spain

CK-1:L12 **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:L13 **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 Catala de Nanociencia 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:L04 **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, P.W. MA, EUROATOM/UKAEA Fusion Association, Culham Science Centre, Abingdon, UK

CK-2:L05 **Competing Charge Orders in Magnetite Ultrathin Films**
I. BERNAL, **S. GALLEGO**, 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. SAITOH, WPI-AIMR,Tohoku University, Sendai, Japan, and Institute for Materials Research, Tohoku University, Sendai, Japan

CK-3:IL02 **Towards Efficient Spin Injection at the LaAlO3/SrTiO3 Interface**
E. LESNE[1], N. REYREN[1], D. DOENNIG[2], R. MATTANA[1], F. CHOUEIKANI[3], V. CROS[1], F. PETROFF[1], J.-M. GEORGE[1], S. COLLIN[1], C. DERANLOT[1], P. OHRESSER[3], R. PENTCHEVA[2], M. BIBES[1], H. JAFFRÈS[1], A. BARTHÉLÉMY[1], [1]Unité Mixte de Physique CNRS/Thales, Palaiseau, France and Université Paris-Sud, Orsay, France; [2]Department of Earth and Environmental Sciences, Section Crystallography and Center of Nanoscience, University of Munich, Munich, Germany; [3]Synchrotron SOLEIL, L'Orme des Merisiers, Saint-Aubin, Gif sur Yvette, France

CK-3:IL03 **Growth and Properties of Low Dimensional Magneto-electric Ba2CuGe2O7 Single Crystals**
R. FITTIPALDI[1], V. GRANATA[1], M. CIOMAGA HATNEAN[2], G. BALAKRISHNAN[2], **A. VECCHIONE**[1], [1]CNR - SPIN U.O.S. Salerno and Dipartimento di Fisica - Università di Salerno, Fisciano (SA), Italy; [2]University of Warwick, Coventry, UK

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:L07 **Control of the Magnetic Properties of LaMnO3 Epitaxial Thin Films Grown by Pulsed Laser Deposition**
J. ROQUETA, J. SANTISO, ICN2, Institut Catala de Nanociencia 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[1], A. BOMBARDI[2], G. GHIRINGHELLI[1], [1]Politecnico di Milano, Italy; [2]Diamond Light Source, UK

CK-4:L03 **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:L04 **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. Fisica Aplicada III, Universidad Complutense de Madrid, Madrid, Spain

CK-4:L05 **Ex-situ Solid-phase Epitaxy of MOCVD-deposited MeFe2O4 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:L07 **Novel LiNbO3-Type ScFeO3 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:L08 **Magneto-electric and Ferroelectric Characterization of Multiferroic BiMn7O12 Polymorphs**
C. PERNECHELE[1], F. MEZZADRI[2, 3], M. BUZZI[4], D. DELMONTE[1], M. SOLZI[1], G. CALESTANI[3], R. CABASSI[2], F. BOLZONI[2], [1]Dipartimento di Fisica e Scienze della Terra, Università di Parma, Parma, Italy; [2]IMEM-CNR, Parma, Italy; [3]Dipartimento di Chimica e GIAF, Università di Parma, Parma, Italy; [4]Paul Scherrer Institute, Villigen, Switzerland

CK-4:L09 **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: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-FUNGUEIRIÑO, 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. MARTI, J. GARCES, IGS Reserach, La Pobla de Mafumet (Tarragona), Spain

Poster Presentations

CK:P01 **Resistance Noise in Ultra-thin Films of LaNiO3**
J. SCOLA, A. SENEGAS, B. BERINI, Y. DUMONT, Groupe d'Étude de la Matiere Condensée (GEMaC), UMR 8635 du CNRS, UVSQ, Versailles Cedex, France

CK:P02 **Elastic and Mechanical Properties of SrCo1-xRuxO3-δ**
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[1], C. JOVALEKIC[2], D. SEKULIC[3], M. ROMCEVIC[1], N.Z. ROMCEVIC[1], [1]Institute of Physics, University of Belgrade, Zemun, Belgrade, Serbia; [2]The Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia; [3]Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia

CK:P04 **Heteroepitaxial Growth of Pr0.7Ca0.3MnO3 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

SYMPOSIUM 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:L03 **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:L04 **Sintering Yb-doped Lu2O3 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:L05 **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[1], M. CATHELINAUD[1], B. BUREAU[1], J. CHARRIER[2], H. LHERMITE[3], P. NEMEC[4], G. RENVERSEZ[5], M. CHAUVET[6], E. RINNERT[7], F. COLAS[7], M. EICH[8], M. SCHMIDT[9], J-L. ADAM[1], [1]Chemistry Sciences Institute of Rennes, Glass & Ceramics team, UMR-CNRS 6226, University of Rennes 1, Rennes cedex, France; [2]FOTON, UMR CNRS 6082, Enssat, Lannion, France; [3]IETR-Microélectronique, Université de Rennes 1, Campus de Beaulieu, Rennes cedex, France; [4]Department of Graphic Arts and Photophysics, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic; [5]Institut Fresnel, CNRS UMR 7249, Université d'Aix Marseille, Campus de Saint Jérôme, Marseille, France; [6]FEMTO-ST, UMR 6174, Université de Franche Comté, Besançon, France; 7IFREMER, Service Interfaces et Capteurs, Dpt. Recherches et Développements Tech., Plouzané, France; [8]Institute of Optical and Electronic Materials, Hamburg University of Technology, Germany; [9]Institute of Photonic Technology, Jena, Germany

CL-1:IL07 **Optical Applications of Artifical Magnetic Lattices**
M. INOUE, H. TAKAGI, Y. NAKAMURA, PANG BOEY LIM, T. GOTO, Toyohashi University of Technology, Tohohashi, Japan

CL-1:L08 **Preparation of Fluoride Laser Ceramics**
M.E. DOROSHENKO[1], **P.P. FEDOROV**[1], E.A. GARIBIN[2], S.V. KUZNETSOV[1], V.V. OSIKO[1], [1]Prokhorov General Physics Institute, Moscow, Russia; [2]INCROM Ltd, S.-Peterburg, Russia

CL-1:L09 **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), Dolgoprudniy, Moscow region, Russia; YU.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:L10 **Precipitation of QDs in Ag+-containing Glasses Induced by Laser Irradiation and Er3+ Upconversion**
BYOUNGJIN SO[1], C. LIU[2], J. HEO[1], [1]Pohang University of Science and Technology(POSTECH), Pohang, Republic of Korea; [2]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[2], M.J. PASCUAL[1], **A. DURÁN**[1], [1]Instituto de Cerámica y Vidrio (CSIC), Madrid, Spain; [2]Fraunhofer Institute for Mechanics of Materials IWM, Halle, Germany

CL-1:IL12 **Nearfiled 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 Re3+-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[1], A. CHIASERA[1], C. ARMELLINI[1, 2], A. CARPENTIERO[1], A. LUKOVIAK[1, 3], M. MAZZOLA[1], S. NORMANI[1,4], D. RISTIC[1], S. VALLIGATLA[1, 5], I. VASILCHENKO[1, 4], S. VARAS[1], G.C. RIGHINI[6, 7], M. FERRARI[1, 7], [1]IFN - CNR CSMFO Lab., Povo, Trento, Italy; [2]FBK Center for Materials & Microsystems, Povo, Trento, Italy; [3]Institute of Low Temperature and Structure Research, PAS, Wroclaw, Poland; [4]Dipartimento di Fisica, Università di Trento, Trento, Italy; [5]School of Physics, University of Hyderabad, Hyderabad, India; [6]IFAC - CNR, MiPLa.b, Sesto Fiorentino, Italy; [7]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:IL16 **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 **Upconversion Energy Transfer in Antimony - Germanate Glass Co-doped with Yb^{3+}/Tm^{3+}/Ho^{3+} Ions**
D. DOROSZ, M. KOCHANOWICZA, J. ZMOJDAA, Bialystok University of Technology, Department of Power Engineering, Photonics and Lighting Technology, Bialystok, Poland

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:IL20 **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[1], JINKAI LI[2], XUDONG SUN[2], YOSHIO SAKKA[1], [1]National Institute for Materials Science, Tsukuba, Ibaraki, Japan; [2]Northeastern University

CL-1:L22 **The Luminescent Property of Ca2+ Co-doped Y2O3:Eu3+ under UVU Excitation**
WENJING LIU, Lanzhou University, Lanzhou, China

CL-1:L23 **Role of Cu+ 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:IL25 **Bulk Single Crystal Growth of Oxides and Fluorides for Optical Applications**
K. SHIMAMURA, E.G. VÍLLORA, National Institute for Materials Science, Tsukuba, Japan

CL-1:L26 **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

Session CL-2
Advances in Characterization Techniques

CL-2:IL01 **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:IL02 **Fabrication and Optical Near-field Imaging of Ultrasmooth Silver Nanolayers**
T. SZOPLIK, P. WRÓBEL, T. STEFANIUK, University of Warsaw, Faculty of Physics, Warszawa, Poland

CL-2:L03 **Near- and Mid-infrared Spectroscopic Ellipsometry for Accurate Determination of Optical Parameters of Ge-Sb-Se Glasses**
P. NEMEC[1], M. OLIVIER[1], E. BAUDET[2], P. BENDA[3], A. KALENDOVA[3], V. NAZABAL[1, 2], [1]Department of Graphic Arts and Photophysics, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic; [2]Institut des Sciences Chimiques de Rennes, UMR CNRS 6226, Equipe Verres et Céramiques, Université de Rennes 1, Rennes, France; [3]Institute of Chemistry and Technology of Macromolecular Materials, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic

CL-2:IL04 **Advances in Atomic Scale Characterization of Semiconductor Quantum Dots**
H. EISELE, Technische Universität Berlin, Institut für Festkörperphysik, Berlin, Germany

CL-2:IL05 **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:IL01 **Persistent Luminescence in ZnGa2O4:Cr, a Biomarker for Long-term in Vivo Bioimaging**
B. VIANA[1], A. BESSIERE[1], S.K. SHARMA[1], D. GOURIER[1], N. BASAVARAJU[2], K.R. PRIOLKAR[2], L. BINET[1], A.J. BOS[3], P. DORENBOS[3], T. MALDINEY[4], C. RICHARD[4], D. SCHERMAN[4], [1]Chimie-ParisTech, LCMCP, UMR - CNRS 7574, Paris Cedex, France; [2]Department of Physics, Goa University, Goa, India; [3]Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands; [4]UPCGI; U 1022 Inserm; Université Paris Descartes, Chimie-ParisTech, Paris cedex, France

CL-3:IL02 **Transformation Optics and Invisibility Cloaks**
B. ZHANG, Nanyang Technological University, Singapore, Singapore

CL-3:L03 **Thermo-Chromo-Luminescent Compounds: Mn(II) doped ZnAl2O4 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[1], Y.A. NEKRASOVA[1], N.V. NIKONOROV[1], E.V. KOLOBKOVA[1], O.A. USOV[2], [1]NRU ITMO, St. Petersburg, Russia; [2]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. PECHEV, O. TOULEMONDE, M. JOSSE, R. DECOURT, **V. JUBERA**, ICMCB-CNRS, Pessac Cedex, France

CL-3:IL06 **Development of Efficient Solar-pumped Laser for Renewable Energy Source**
S. WADA[1], T. OGAWA[1], M. HIGUCHI[2], [1]RIKEN, Saitama, Japan; [2]Hokkaido University, Japan

CL-3:IL07 **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:IL08 **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:IL09 **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, Gd2Si2O7: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-4*f* Luminescence of Pr3+ in Li6Y(BO3)3**
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:P04 **Synthesis and Optical Characterization of M-α-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-α-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 Yb3+doped K2Y(WO4)(PO4) for Efficient Photovoltaic Generation**
LILI HAN, Department of Material Science, School of Physical Science and Technology, Lanzhou University, Lanzhou, China

CL:P08 **Synthesis of Gd6WO12: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. KOLOBKOVA, 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 Nd3+-doped Y3Al5O12 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 CaMoO4 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[1], M. BETTINELLI[2], M. FERRARI[3], E. PASQUINI[4, 5], S. PELLI[4], A. SPEGHINI[2, 4], **G.C. RIGHINI**[4, 6], [1]Departamento de Física, Universidad Autónoma Metropolitana-Iztapalapa, México, D.F., México; [2]Dipartimento di Biotecnologie, Università di Verona, and INSTM, UdR Verona, Verona, Italy; [3]IFN - CNR CSMFO Lab., Povo, Trento, Italy; [4]Istituto di Fisica Applicata Nello Carrara, C.N.R., Sesto Fiorentino (Firenze), Italy; [5]Dipartimento di Fisica e Astronomia, Università di Firenze, Sesto Fiorentino (Firenze), Italy; [6]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. PECHEV, 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[1], P.A. RADI[1], A.S. DA SILVA SOBRINHO[1], L.V. SANTOS[2], **M. MASSI**[1, 3], [1]Instituto Tecnológico de Aeronáutica, ITA/CTA, São Jose dos Campos - SP, Brazil; [2]Universidade do Vale do Paraíba, IP&D/UNIVAP, São Jose dos Campos - SP, Brazil; [3]Instituto de Ciência e Tecnologia, ICT/UNIFESP, São Jose dos Campos - SP, Brazil

SYMPOSIUM 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[1], P. HLAVÁÈEK[1], F. SKVÁRA[2], R. SULC[1], L. KOPECKÝ[1], [1]Czech Technical University in Prague, Faculty of Civil Engineering, Prague, Czech Republic; [2]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 Géopolymèrisation Mechanism**
A. GARZHOUNI, F. GOUNY, E. JOUSSEIN, S. ROSSIGNOL, GEMH-ENSCI, Limoges Cedex, France

CM-1:IL06 **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:IL07 **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:IL10 **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:IL11 **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[1], Y. DE GROOT[1], A. KEULEN[2], G.M.H. MEESTERS[1], [1]Delft University of Technology, Faculty of Applied Sciences, Department of Chemical Engineering, Delft, The Netherlands; [2]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[1, 2], B. BLANPAIN[1], P.T. JONES[1], Y. PONTIKES[1, 2], [1]High Temperature Processes and Industrial Ecology Research Group, Department of Metallurgy and Materials Engineering, KU Leuven, Leuven, Belgium; [2]Secondary Resources for Building Materials, Consortium in Sustainable Inorganic Materials Management, SIM2, KU Leuven, Leuven, Belgium

CM-1:IL15 **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:IL16 **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:IL20 **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[1, 2], W.D.A RICKARD[2], A. VAN RIESSEN[2], M.C. BIGNOZZI[1], [1]Department of Civil, Environmental and Materials Engineering, University of Bologna, Bologna, Italy; [2]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[1], J. SANJAYAN[1], FAIZ UDDIN AHMED SHAIKH[2], [1]Center for Sustainable Infrastructure (CSI), Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, Melbourne, Victoria, Australia; [2]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:IL02 **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:L04 **Shape Forming a Meta-kaolin Based Geopolymers Containing PLA Fibers for Membrane Application**
H.R. RASOULI[1], **F. GOLESTANI FARD**[1], A. MIRHABIBI[1], G. MOUSAVI NASAB[1], K. MACKENZIE[2], [1]School of Metallurgy and Materials Engineering, Iran University of Science and Technology, Tehran, Iran; [2]MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

CM-2:IL05 **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:IL06 **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[1], **Y. YILDIRIM**[2], A. KARA[1, 3], F. KARA[3], [1]Ceramic Research Center, Anadolu University, Eskisehir, Turkey; [2]Kaleseramik Research and Development Centre, Can, Canakkale; [3]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:P03 **Obtaining of Lightweight Geopolymer using Ash from Thermal Power Plants**
B.I. BOGDANOV, P. S. PASHEV, Y. H. HRISTOV, University "Prof. d-r 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[1], R.J. KALBASI[2], M. GHAFFARI[2], K.J.D. MACKENZIE[3], [1]Department of Ceramics, Shahreza Branch, Islamic Azad University, Isfahan, Iran; [2]Department of Chemistry, Shahreza Branch, Islamic Azad University, Shahreza, Isfahan, Iran; [3]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:IL01 **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:IL02 **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:IL03 **Nanocomposite Photrocatalyst Based on Layered Double Hydroxides (LDHs) Associated with TiO2**
J. RANOGAJEC, O. RUDIC, S. VUCETIC, University of Novi Sad, Faculty of Technology, Novi Sad, Serbia

CN-1:IL04 **Superhydrophobic and Superhydrophilic Surfaces: the Way for Self-cleaning Ceramics**
M. RAIMONDO, CNR ISTEC, Faenza, Italy

CN-1:IL05 **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:IL01 **Sustainability and Competitiveness in the Ceramic Tile Sector: an Overview**
G. TIMELLINI, R. RESCA, Centro Ceramico Bologna, Bologna, Italy

CN-2:IL02 **Preparation of Flame Retardant Layered Silicate / Polyamide 66 Nanocomposite**
K. TAMURA[1], S. OHYAMA[1,2], K. UMEYAMA[3], [1]National Institute for Materials Science, Tsukuba, Ibaraki, Japan; [2]Department of Chemistry, Toho University, Funabashi, Chiba, Japan; [3]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:L05 **Energy and Material Efficiency during Firing of Silicate Ceramics**
M. HERRERA, H. BRENDEL, F. RAETHER, Fraunhofer Institute for Silicate Research ISC - Center for High Temperature Materials and Design, Bayreuth, Bayern, Germany

CN-2:IL06 **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, Universita' 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:IL10 **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[1], A.TAYCU[1], A. EKER[1], K. KAYACI[1], M. GULA[1], A. KARA[2], [1]Kaleseramik Canakkale Kalebodur Seramik San. A.S, Can-Canakkale, Turkey; [2]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:IL01 **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:IL02 **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 **Cr2O3 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:L07 **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:L08 **Development of an Alternative Whitening System for Zirconium Silicate Substition 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:L03 **Ceramic Pigments: Prospects and Challenges**
M. DONDI, CNR-ISTEC, Faenza, Italy; G. CRUCIANI, M. ARDIT, Dept. Physicas 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:L06 **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:L07 **Microstucture 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 Sâo José dos Pinhais, Paraná, Brazil; U. PAWLOWSKY, UFPR, Curitiba, Paraná, Brazil; V. Mymrine, UTFPR, Curitiba, Paraná, Brazil

CN:P03 **Reuse of Traditional Ceramic Industry Residue for Manufacturing of Alternative Products**
M.D. CABRELON[1, 2], G.R. SANTOS[2], M.R. MORELLI[1], [1]Federal University of San Carlos, San Carlos, Brazil; [2]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[1, 2], K. TAMURA[1], T. KITAZAWA[2], A. YAMAGISHI[2], [1]National Institute for Materials Science, Tsukuba, Japan; [2]Toho University, Japan

CN:P08 **Formulation of Ceramics Mass by Combined Method of Additivity and Design of Experiments**
N.M. PEREZ[1], G.R. SANTOS[2], M.D. CABRELON[2, 3], [1]PG Química, Cordeirópolis, San Paulo, Brazil; [2]INNOVARE Intelligence in Ceramic, San Carlos, Brazil; [3]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 Sao Carlos, Sao Paulo, Brazil

CN:P10 **Synthesis and Properties of Inorganic Pigments in Y2O3 - TiO2 - Mn3O4 and Y2O3 - SiO2 - Mn3O4 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[1], A. KARA[2], [1]Kirikkale University, Faculty of Engineering, Department of Metallurgy and Materials Engineering, Kirikkale, Turkey; [2]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[1], A. ZANARDO[2], L, LUIS DA SILVA[3], L. HIRATA GODOY[2], M.M. TORRES MORENO[2], F. CABANAS NAVARRO[1], **S. CARVALHO MAESTRELLI**[1], [1]UNIFAL - MG, Campus Avançado de Poços de Caldas, ICT, Brazil; [2]UNESP - DPM; [3]Endeka Ceramics

CN:P13 **The Use of Cobaltoxide in Olivine Based Pigments**
E. TASCI, Dumlupinar University, Materials Science and Engineering Department, Kutahya, Turkey

CN:P14 **Identification of Heat Flux of Active and Passive Components in Buildings**
L. OUHSAINE, A. MIMET, M. EL GANAOUI, Faculté des Sciences, Tetouan, Morocco

CN:P15 **Composition and Ceramic Characteristics of Cretaceous Clays from Morocco**
C. SADIK[1], A. ALBIZANE[1], IZ-EDDINE EL AMRANI[2], [1]Department of Chemistry, Faculty of Science and Technology, University Hassan II, Mohammedia, Morocco; [2]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 Cefractory Castables**
C. PARR, F. SIMONIN, C. WÖHRMEYER, C. ZETTERSTROM, Kernos SA, Neuilly sur Seine, France

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 Dialuminate (CaO.2Al2O3) Refractory Cement**
A.B. TCHAMBA[1, 3, 4], U.C. MELO[1, 4], G. LECOMTE[3], E. KAMSEU[4], C. GAULT[3], R.YONGUE[2, 3], D. NJOPWOUO[1], [1]Department of Inorganic Chemistry, mineral materials laboratory, Yaoundé, University of Yaoundé 1, Cameroon; [2]Department of Earth Science, University of Yaoundé 1, Yaoundé, Cameroon; [3]Groupe d'Etude des Matériaux Hétérogènes, Centre Européen de la Céramique, Limoges Cedex, France; [4]Laboratory of Materials, Local Materials Promotion Authority, Yaoundé, Cameroon

Session CO-2
Testing

CO-2:IL01 **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:IL02 **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 Al2O3-C Nozzle**
E. BRANDALEZE[1], M. ÁVALOS[2], [1]Metallurgical Department-DEYTEMA, Universidad Tecnológica Nacional-FRSN, Argentina; [2]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[1, 2], G. BERNHART[2], **T. CUTARD**[2], G. PERAUDEAU[3], M. BALAT-PICHELIN[3], [1]CNES - Direction des Lanceurs, Paris Cedex, France; [2]Université de Toulouse; Mines Albi, INSA, UPS, ISAE, ICA; Campus Jarlard, Albi cedex, France; [3]PROMES-CNRS, Font-Romeu Odeillo, France

CO-2:IL05 **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[1], C.G. ANEZIRIS[2], **J. MALZBENDER**[1], [1]Forschungszentrum Jülich GmbH, IEK-2, Jülich, Germany; [2]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, Sao Carlos-SP, Brasil; LMT-Cachan, ENS de Cachan/CNRS/UPMC, Cachan, France

CO-2:L08 **Phosphate-based Anti-hydration Additive for Al2O3-MgO Refractory Castables**
A.P. DA LUZ, T.M. SOUZA, V.C. PANDOLFELLI, Federal University of Sao Carlos (UFSCar), Sao Carlos, SP, Brazil; M.A.M. BRITO, Magnesita Refratarios 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 Al2O3-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:IL01 **Refractory Castable Engineering**
V.C. PANDOLFELLI, A.P. DA LUZ, Federal University of Sao Carlos, Materials Engineering Department, Sao Carlos, Brazil

CO-3:IL02 **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 MgO-Al2O3-SiO2-H2O**
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:IL05 **Impact of Temperature and Oxygen Partial Pressure on Aluminum Phosphate in High Chrome Oxide Refractories**
J.P. BENNETT[1], K.S. KWONG[1], J. NAKANO[1, 2], H. THOMAS[1], A. NAKANO[1], [1]National Energy Technology Laboratory, Albany, OR, USA; [2]URS Corporation, Albany, OR, USA

CO-3:IL06 **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:IL07 **Use of Nano-Materials in Refractories for Better Performance**
S. ADAK, P.B. 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:IL01 **Multiphysics Modelling Applied to Refractory behaviour in Severe Environments**
E. BLOND[1], T. MERZOUKI[2], N. SCHMITT[3], M.-L. BOUCHETOU[4], T. CUTARD[5], A. GASSER[1], E. DE BILBAO[4], J. POIRIER[4], [1]Univ. Orléans, PRISME (EA4229), Polytech Orléans, Orléans; [2]Univ. of Versailles Saint-Quentin, LISV (EA4048), Vélisy; [3]ENS Cachan, LMT-Cachan (UMR 8535), Cachan; [4]Univ. Orléans, CEMHTI (UPR3079), Orléans; [5]Ecoles des Mines d'Albi Carmaux, ICA-Albi, Campus Jarlard, Albi CT Cédex, France

CO-4:IL02 **Thermo-mechanical Modelling of Refractory Masonries**
A. GASSER, 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:IL04 **Recent Development of the FactSage Thermodynamic Database for Ceramic Refractories**
IN-HO JUNG, Mining and Materials Engineering, McGill University, Montreal, Quebec, Canada

CO-4:IL05 **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:IL06 **Fine Element Modelling of the Blast Furnace Hearth Lining**
P. PUT, **S. SINNEMA**, J. LIEFHEBBER, Tata Steel Europe, IJmuiden, The Netherlands

CO-4:IL07 **Study of Reactive Impregnation and Phase Transformations during the Corrosion of High Alumina Refractories by Al2O3-CaO Slag**
E. DE BILBAO[1], M. DOMBROWSKI[1], K. COFFIGNIER[2], N. TRAON[3], T. TONNESEN[3], J. POIRIER[1], E. BLOND[4], [1]CNRS, CEMHTI UPR3079, Univ. Orléans, France; [2]Polytech'Orléans, Univ. Orléans, France; [3]RWTH Aachen University, Germany; [4]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[1], P. PRIGENT[2], M.L. BOUCHETOU[1], E. DE BILBAO[1], E. BLOND[3], J.M. BROSSARD[4], [1]CEMHTI, CNRS / University of Orléans, France; [2]TRB, Nesles; [3]PRISME, University of Orléans, France; [4]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 ZrO2 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:L04 **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**
DOHHYUNG RIU, JUNSUNG HONG, YOUNGJIN KO, KWANG-YEON CHO, DONG-GEUN SHIN, JEONG-IL KIM, Seoul National University of Science and Technology, Seoul, Korea

CP-1:L07 **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[1], N. SOBCZAK[2], M. SINGH[3], [1]Department of Engineering and Technology, University of Wisconsin-Stout, Menomonie, WI, USA; [2]Center for High-Temperature Studies, Foundry Research Institute, Krakow, Poland; [3]Ohio Aerospace Institute, Cleveland, OH, USA

CP-2:L03 **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: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:L05 **Multilayered Fiber-reinforced Oxide Composites Produced by Lamination of Thermoplastic Prepregs**
R. JANSSEN, 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 Florianoplois, 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 Ti3SiC2**
XIAOWEI YIN, LITONG ZHANG, LAIFEI CHENG, Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University, Xi'an, China

CP-4:L03 **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 Institue of Ceramics, Chinese Academy of Sciences, Shanghai, P.R. 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:IL01 **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[1], Z. CHLUP[1], M. CERNY[2], A. STRACHOTA[3], Z. SUCHARDA[2], I. DLOUHY[1], [1]Institute of Physics of Materials, Academy of Sciences of the Czech Republic, v.v.i., Brno, Czech Republic; [2]Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, v.v.i., Prague, Czech Republic; [3]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, P.L 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:IL05 **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:IL06 **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:IL01 **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:IL03 **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:IL05 **C/C and CMC-composites for Industrial Applications**
R. WEISS, Schunk Kohlenstofftechnik GmbH, Heuchelheim, Germany

CP-6:IL06 **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:IL07 **SiTE-SiCf/SiC Composite for Application in Future Fusion Reactors**
S. NOVAK[1, 2, 3], A. IVEKOVIC[1, 2, 3], [1]Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia; [2]Jozef Stefan International Postgraduate School, Ljubljana, Slovenia; [3]Slovenian Fusion Association (SFA) Euratom MESCS

CP-6:IL08 **Development of a High-temperature High-efficiency Thermal Energy Storage System for Concentrated Solar Power**
D. SINGH[1], T. KIM[1], W. ZHAO[1], D. FRANCE[1], W. YU[1], A. GYEKENYESI[2], M. SINGH[2], [1]Argonne National Laboratory, Argonne, IL, USA; [2]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[1, 2], Y. YOSHIMURA[2, 3], Y. KUROKI[2], T. OKAMOTO[2], M. TAKATA[2, 4], [1]MAG-ISOVER K.K., Kasumigaura, Ibaraki, Japan; [2]Nagaoka University of Technology, Nagaoka, Niigata, Japan; [3]Yoshimura Co., Ltd., Kuki, Saitama, Japan; [4]Japan Fine Ceramics Center, Atsuta-ku, Nagoya, Japan

CP:P03 **Microstructural Characterization of Stone Wool Materials**
L. CHAPELLE[1], P. BROENDSTED[2], Y. KUSANO[2], M. ROSENDAHL FOLDSCHACK[1], D. LYBYE[1], [1]ROCKWOOL International A/S, Frederiskberg, Denmark; [2]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