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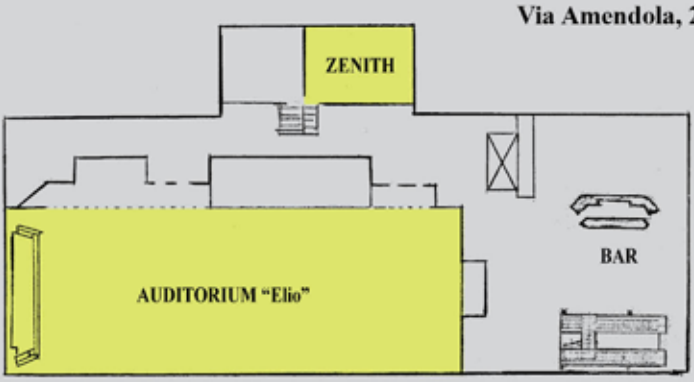
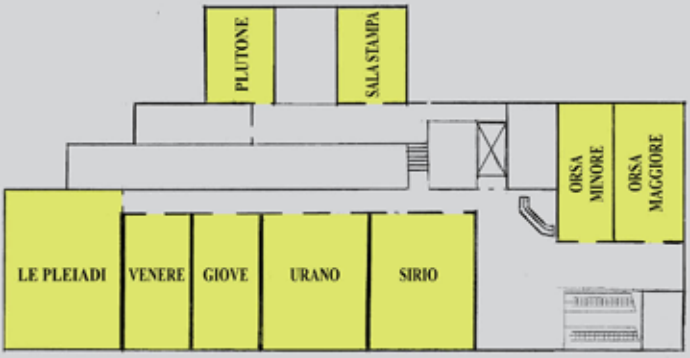
# PALAZZO DEI CONGRESSI

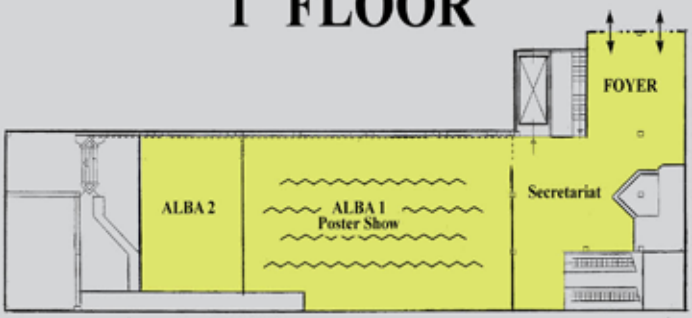
Via Amendola, 2




## 2nd FLOOR




## 1st FLOOR




## GROUND FLOOR

# CROCE DI MALTA

Congress Centre Hotel Croce di Malta

Viale IV Novembre, 18

# Symposia held at
# "PALAZZO DEI CONGRESSI"
Via Amendola 2

**Symposium CA**
**Ceramic Powders: Advances in Synthesis, Processing and Manufacturing**

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

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

**Symposium CC**
**Materials Solutions for Highly Demanding Tribological Applications**

**Symposium CD**
**Joining Inorganic Materials at Different Length Scales**

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

**Symposium CF**
**High and Ultra High Temperature Ceramics for Extreme Environments**

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

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

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

**Symposium CJ**
**Advances in Electroceramics**

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

**Symposium CK**
**Functional Magnetic Oxides**

**Symposium CL**
**Inorganic Materials Systems for Optical and Photonic Applications**

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

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

# Symposia held at
# "HOTEL CROCE DI MALTA"
Viale 4 Novembre 15
**2 min walking distance from the "Palazzo dei Congressi"**

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

**Symposium CN**
**Science and Technology for Silicate Ceramics**

# Congress Outline

## Symposium CA
Ceramic Powders: Advances in Synthesis, Processing and Manufacturing

## Symposium CB
Progress in Non Conventional and Novel Manufacturing Routes to Ceramics

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

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Materials Solutions for Highly Demanding Tribological Applications

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## Symposium CJ
Advances in Electroceramics

*Special Session* ***CJ-6***

*State-of-the-art Development and Application of Thin Film Piezoelectric MEMS/NEMS*

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Functional Magnetic Oxides

## Symposium CL
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## Symposium CM
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## Symposium CN
Science and Technology for Silicate Ceramics

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

## *Serial Conference*

## CP

## *7th International Conference*
Advanced Inorganic Fibre Composites for Structural and Thermal Management Applications

# *Meeting Rooms by Symposia / Conferences*

## PALAZZO DEI CONGRESSI

OPENING SESSION ..... AUDITORIUM

Symposium CA ..... LE PLEIADI

Symposium CB ..... AUDITORIUM

Special Session CB-9 ..... ORSA MINORE

Symposium CC ..... ZENITH

Symposium CD ..... ZENITH

Symposium CE ..... VENERE

Symposium CF ..... LE PLEIADI
..... SIRIO

Symposium CG ..... SIRIO

Symposium CH ..... URANO

Symposium CI ..... GIOVE

Symposium CJ..... ALBA 2
..... URANO
..... VENERE

Special Session CJ-6..... ALBA 2
..... LE PLEIADI

Symposium CK ..... ORSA MAGGIORE

Symposium CL ..... GIOVE
..... VENERE

Symposium CO ..... ORSA MINORE

Symposium CP ..... ORSA MAGGIORE
..... ORSA MINORE

## HOTEL CROCE DI MALTA

Conference CM ..... GUTTUSO

Conference CN ..... GUTTUSO

# *Events by Day*

## Sunday June 8

11.00-13.00 15.00-19.00

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

15.00-19.00
*POSTER MOUNTING*

## Monday June 9

Morning: 9.30-13.00

**Opening Session**
Welcome Addresses

Formal induction of the new Members of the World Academy of Ceramics (15th Election)

Plenary Lectures (C:PL1-PL3)

8.30-13.00
*POSTER MOUNTING*

# Monday June 9

**Afternoon:** 15.00-19.30

| | |
|---|---|
| Symposium CA | (CA-1:IL01-L04)<br>(CA-2:IL01-L05) |
| Symposium CB | (CB-1:IL02-L04)<br>(CB-2:IL01-L05) |
| Symposium CC | (CC-1:IL02-IL05)<br>(CC-2:IL01-IL02) |
| Symposium CE | (CE-1:IL02-L05+IL07)<br>(CE-2:IL01+IL04)<br>(CE-3:L07) |
| Symposium CG | (CG-1:IL01-IL04)<br>(CG-1:IL05-L07) |
| Symposium CI | (CI-1:IL01-L04)<br>(CI-1:IL05-IL07b) |
| Symposium CJ | (CJ-1:IL01-L03)<br>(CJ-1:IL05-L07) |
| Symposium CN | (CN-1:IL01-IL03)<br>(CN-1:IL04-L07) |
| Symposium CO | (CO-1:IL01+L04)<br>(CO-2:IL01-L03) |
| Conference CP | (CP-1:IL01-L04)<br>(CP-1:IL05-IL06) |

8.30-13.00
15.00-19.00
*POSTER MOUNTING*

20.30 - 22.30
*Welcome Party*

# Tuesday June 10

**Morning**: 8.30-13.00

| | |
|---|---|
| Symposium CA | (CA-1:L06-L11)<br>(CA-1:IL12-L16+L19) |
| Symposium CB | (CB-1:IL06-L08)<br>(CB-2:IL06-L10) |
| Symposium CC | (CC-2:IL03-L07)<br>(CC-3:IL01-L04) |
| Symposium CE | (CE-1:IL01+IL06-IL11)<br>(CE-1:IL12-L14)<br>(CE-3:IL02) |
| Symposium CG | (CG-2:IL01-L04)<br>(CG-3:IL01-L04) |
| Symposium CI | (CI-1:IL08-L11)<br>(CI-2:IL02-IL03)<br>(CI-6:IL07) |
| Symposium CJ | (CJ-1:IL11-L14)<br>(CJ-2:IL01-L05) |
| Symposium CN | (CN-2:IL01-L05)<br>(CN-2:IL06-L09) |
| Symposium CO | (CO-2:IL05-L10)<br>(CO-3:IL01-L04) |
| Conference CP | (CP-2:IL01-L03)<br>(CP-3:IL01-L05) |

**Afternoon:** 15.00-19.30

| | |
|---|---|
| Symposium CA | (CA-3:IL01-L04)<br>(CA-3:IL05-L08) |
| Symposium CB | (CB-1:IL09-L13)<br>(CB-4:IL01-L04) |
| Symposium CC | (CC-4:IL01-IL02)<br>(CC-5:IL01-IL04) |
| Symposium CE | (CE-2:IL05-L08)<br>(CE-2:IL09-L12)<br>(CE-3:IL01) |
| Symposium CG | (CG-3:IL05-L07)<br>(CG-4:IL01-IL04) |
| Symposium CH | (CH-1:IL01-L05)<br>(CH-1:IL06-L08) |
| Symposium CJ | (CJ-2:IL06-L08)<br>(CJ-2:IL10-L13) |
| Symposium CL | (CL-1:IL01-L04)<br>(CL-1:L05-IL07) |
| Symposium CN | (CN-2:IL10-L12)<br>(CN-3:IL01-L04) |
| Symposium CO | (CO-3:IL05-L08)<br>(CO-4:IL01-L03) |
| Conference CP | (CP-4:IL01-IL05)<br>(CP-5:IL01-L04) |

# Wednesday June 11

**Morning:** 8.30-13.00

| | |
|---|---|
| Symposium CB | (CB-4:IL05-L09)<br>(CB-4:L10-L13) |
| Symposium CC | (CC-6:IL01-L05) |
| Symposium CD | (CD-1:IL02-L03)<br>(CD-2:IL01) |
| Symposium CE | (CE-3:L03-IL06)<br>(CE-3:L08-L13) |
| Symposium CF | (CF-1:IL01-IL04)<br>(CF-1:IL05-IL09) |
| Symposium CG | (CG-4:IL05-L08)<br>(CG-4:IL10-IL13) |
| Symposium CI | (CI-3:IL01-L04)<br>(CI-3:IL05-L07)<br>(CI-5:IL05) |
| Symposium CJ | (CJ-3:IL01-IL03)<br>(CJ-4:IL01-IL05) |
| Symposium CK | (CK-1:IL01-IL04)<br>(CK-1:IL06-IL08) |
| Symposium CN | (CN-3:IL05-L08)<br>(CN-4:IL01-L07) |
| Symposium CO | (CO-4:IL04-IL06)<br>(CO-4:IL07-IL09) |
| Conference CP | (CP-6:IL01-L04) |

**Afternoon:** 15.00-19.30

| | |
|---|---|
| Symposium CA | (CA-4:IL01-IL04)<br>(CA-4:IL07+L14-L16) |
| Symposium CB | (CB-3:IL01-L04)<br>(CB-3:IL05-L08) |
| Symposium CC | (CC-7:IL01-IL05) |
| Symposium CD | (CD-1:IL04-IL05) |
| Symposium CF | (CF-1:IL10-L12) |
| Symposium CG | (CG-5:IL01-L05) |
| Symposium CH | (CH-1:IL10-L14)<br>(CH-2:IL01-L03) |
| Symposium CJ | (CJ-6.1:IL01-L06) |
| Symposium CK | (CK-1:IL09-L13)<br>(CK-3:IL02-L03)<br>(CK-2:IL02) |
| Symposium CL | (CL-1:IL11-L14)<br>(CL-1:L15+IL25-L26) |
| Conference CP | (CP-5:IL05-IL06)<br>(CP-6:IL05-IL08) |

21.30-23.00
*Gala Concert*

# Thursday June 12

**Morning**: 8.30-13.00

| | |
|---|---|
| Symposium CA | (CA-4:IL05-IL08)<br>(CA-4:IL09-L12) |
| Symposium CB | (CB-5:IL01-L04)<br>(CB-5:IL05-L07)<br>(CB-9.1:IL01-L03)<br>(CB-9.1:IL04-IL05) |
| Symposium CD | (CD-1:IL06-L10)<br>(CD-2:IL02-L04) |
| Symposium CF | (CF-2:IL01-L05)<br>(CF-3:IL01-L05) |
| Symposium CH | (CH-2:IL04-L07)<br>(CH-3:IL01-IL04) |
| Symposium CI | (CI-2:IL06-L07)<br>(CI-4:IL01-IL04) |
| Symposium CJ | (CJ-6.3:IL01-L03)<br>(CJ-6.3:IL04-IL07) |
| Symposium CK | (CK-2:L04-L05)<br>(CK-3:IL01+IL05-L07) |
| Symposium CL | (CL-1:IL16-L23)<br>(CL-2:IL01-IL04) |
| Symposium CM | (CM-1:IL01-L05)<br>(CM-1:IL06-L08) |

**Afternoon:** 15.00-19.30

| | |
|---|---|
| Symposium CB | (CB-6:L01-L05)<br>(CB-9.2:IL01-L07)<br>(CB-9.3:IL01-L03) |
| Symposium CD | (CD-3:IL01-IL04) |
| Symposium CF | (CF-2:IL07-L09)<br>(CF-3:IL06-L11)<br>(CF-4:IL03) |
| Symposium CH | (CH-4:IL01-IL03)<br>(CH-4:L04-IL06) |
| Symposium CI | (CI-5:IL01-L04)<br>(CI-5:L06-L07) |
| Symposium CJ | (CJ-3:IL05-IL06)<br>(CJ-4:IL06-L08)<br>(CJ-6.2:IL02-IL04)<br>(CJ-6.2:IL05-IL06) |
| Symposium CK | (CK-4:IL01-L03)<br>(CK-4:IL06-L07) |
| Symposium CM | (CM-1:IL10-L14)<br>(CM-2:L01-L04) |

17.00-19.00

**POSTER DISCUSSION**

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

# Friday June 13

**Morning:** 8.30-13.00

| | |
|---|---|
| Symposium CA | (CA-5:IL01-IL03)<br>(CA-5:IL04-L06) |
| Symposium CB | (CB-7:IL01-L03)<br>(CB-7:IL05-L11)<br>(CB-9.4:IL01-IL03)<br>(CB-9.5:IL01-L03) |
| Symposium CD | (CD-3:IL05-L07)<br>(CD-4:IL01-L05) |
| Symposium CF | (CF-1:IL13-L15)<br>(CF-3:L12) |
| Symposium CH | (CH-5:IL01-L05)<br>(CH-5:IL06-L10) |
| Symposium CI | (CI-6:IL02-IL06) |
| Symposium CJ | (CJ-5:IL01-L05)<br>(CJ-6.3:IL05+IL08-IL09) |
| Symposium CK | (CK-5:IL02-IL04)<br>(CK-5:IL05-IL06) |
| Symposium CL | (CL-3:IL01-L05)<br>(CL-3:IL06-IL09) |
| Symposium CM | (CM-1:IL15-L17)<br>(CM-1:L18-L23) |

**Afternoon:** 14.45-18.30

| | |
|---|---|
| Symposium CB | (CB-9.5:IL04-L07) |
| Symposium CD | (CD-4:IL06-L09) |
| Symposium CF | (CF-4:IL01-L07) |
| Symposium CH | (CH-5:IL11-L16) |
| Symposium CJ | (CJ-5:IL06-L09) |
| Symposium CK | (CK-6:IL01-IL03) |
| Symposium CL | (CL-4:IL01-IL04) |
| Symposium CM | (CM-2:IL05-L08) |

16.30-18.30
**POSTER DISCUSSION**
All Posters

20.00-23.30
*Conference Dinner*

# SESSIONS FLOWSHEET

## June 9-13

## 13th International Ceramics Congress

**Chair**

**Pietro Vincenzini**
World Academy of Ceramics
National Research Council, Italy

**Co-Chair**

**Gary Messing**
International Ceramic Federation

*Programme Chairs*

Symposium CA: **Masahiro Yoshimura**, Japan

Symposium CB: **Ralf Riedel**, Germany

Special Session CB-9: **Alexander S. Rogachev**, Russia

Symposium CC: **Ali Erdemir**, USA

Symposium CD: **Jolanta Janczak-Rusch**, Switzerland

Symposium CE: **Sanjay Mathur**, Germany

Symposium CF: **William G. Fahrenholtz**, USA

Symposium CG: **Michel W. Barsoum**, USA

Symposium CH: **Paolo Colombo**, Italy

Symposium CI: **Christopher C. Berndt**, Australia

Symposium CJ: **José A. Varela**, Brazil

Special Session CJ-6: **Massimo De Vittorio**, Italy

Symposium CK: **Daniele Marré**, Italy / **Silvia Picozzi**, Italy

Symposium CL: **Maurizio Ferrari**, Italy

Symposium CM: **Kenneth J.D. MacKenzie**, New Zealand

Symposium CN: **Michele Dondi**, Italy

Symposium CO: **James P. Bennett**, USA

Conference CP: **Mrityunjay Singh**, USA

# OPENING SESSION

## AUDITORIUM

*Chair:*
José Arana VARELA, Brazil

9.30 - 10.00

Welcome Addresses

Pietro VINCENZINI
General Chair CIMTEC Conferences

Masahiro YOSHIMURA
World Academy of Ceramics

Gary MESSING
International Ceramic Federation

10.00 - 10.45

Formal induction of the New Members of the World Academy of Ceramics (15th Election)

*Plenary Lectures*

10.50 - 11.35

*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

11.35 - 12.20

*C:PL2*

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

12.20 - 13.05

*C:PL3*

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

## Session CA-1 - Advances in Powder Synthesis and Characterisation

*Room:* **LE PLEIADI**

*Chair:* M. YOSHIMURA, Japan *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.10 *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

16.30 *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

16.50 *Break*

## Session CA-2 - Colloidal Processing

*Room:* **LE PLEIADI**

*Chair:* S. BANERJEE, USA

17.20 *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

17.50 *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

18.20 *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

18.40 *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

19.00 *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 CB-1 - Solution-based Processing

*Room:* **AUDITORIUM**

*Chair:* R. RIEDEL, Germany *(Programme Chair)*

15.00 *Welcome*

15.10 *CB-1:IL02* **Multi-porous Advanced Ceramics for Biomedical, Biotechnological and Environmental Applications**
**K. REZWAN**, Advanced Ceramics, University of Bremen, Bremen, Germany

15.40 *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

16.00 *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

16.20 *Break*

## Session CB-2 - Polymer Derived Ceramics

*Chair:* G.D. SORARU, Italy

16.50 CB-2:IL01 **SiOC Composite Structures for Intermediate Service Temperatures with Increased Friction Properties**
**R. GADOW**, P. WEICHAND, University of Stuttgart - IFKB, Stuttgart, Germany

17.20 *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

17.50 *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

18.10 *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

## Session CC-1 - Fundamentals of Friction, Wear, Adhesion and Lubrication

*Room:* **ZENITH**

*Chair:* A. ERDEMIR, USA *(Programme Chair)*

15.00 *Welcome*

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

15.40 *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

16.10 *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

16.40 *Break*

## Session CC-2 - Coatings, Surface Engineering and Nanostructuring

*Chair:* M. URGEN, Turkey

17.10 *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

17.40 *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

## Session CE-1 - Innovative Processing of Nano- and Heterostructures and Films of Functional Materials

*Room:* **VENERE**

*Chair:* S. MATHUR, Germany *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.00 *CE-1:L05* **Pseudocapacitive Properties of ZnO/MnOx Core-Shell Nanostructure**
**CHIN-YI CHEN**, HSIANG-CHUN CHEN, Dept. of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan, ROC

16.20 *CE-1:IL07* **Silicon Nanowires: From Energy Production to (Bio)-Photonics**
**V. SIVAKOV**, Institute of Photonic Technology, Jena, Germany

16.50 *Break*

*Chair:* K. TESHIMA, Japan

## Session CE-2 - Functional Metal Oxide Nano- and Heterostructures

17.20 CE-2:IL01 **Surface Tuning of Technologically Important Metal Oxides**
**G. THORNTON**, London Centre for Nanotechnology, University College London, London, UK

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

## Session CE-3 - Functional Materials and Sustainability

18.20 *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 Inst. for Biologically Inspired Engineering, Harvard University, Cambridge, MA, USA; [3]Dept. of Chemical and Petroleum Engineering, University of Pittsburgh, Pittsburgh, PA, USA; [4]Dept. of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, USA

## Session CG-1 - Transport and Electronic Properties, Ab Initio Calculations and Structural Characterization of MAX and MXene Phases

*Room:* **SIRIO**

*Chair:* M.W. BARSOUM, USA *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.10 *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

16.40 *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

17.10 *Break*

*Chair:* S. DUBOIS, France

17.40 *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

18.10 *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

18.40 *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 CI-1 - Advances in Deposition, Surface Modification and Characterisation Techniques

*Room:* **GIOVE**

*Chair:* C. BERNDT, Australia *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.10 *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

16.30 *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

16.50 *Break*

## Session CI-1 - Advances in Deposition, Surface Modification and Characterisation Techniques

*Room:* **GIOVE**

*Chair:* T. TSUCHIYA, Japan

17.20 *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

17.50 *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

18.10 *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

18.30 *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

## Session CJ-1 - Dielectrics and Microwave Materials

*Room:* **URANO**

*Chair:* J.A. VARELA, Brazil *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.10 *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

16.30 *Break*

*Chair:* D. SUVOROV, Slovenia

17.00 *CJ-1:IL05* **Synthesis and Characterization of KNbO3 Nanomaterials**
**WOONG KIM**, Department of Materials Science and Engineering, Korea University, Seoul, Republic of Korea

17.30 *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

17.50 *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

## Session CN-1 - Functionalized Surfaces of Silicate Ceramics

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* M. DONDI, Italy *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.10 *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

16.40 *Break*

*Chair:* J.J. REINOSA, Spain

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

17.40 *CN-1:IL05* **EasyDep - Photocatalytic Surfaces for Silicate Ceramics**
D. TOBALDI, M.P. SEABRA, **J.A. LABRINCHA**, University of Aveiro & CICECO, Aveiro, Portugal

18.10 *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

18.30 *CN-1:L07* **Photocatalytic Activity of External Self-cleaning Ceramic Tiles**
**A. SEVER SKAPIN**[1], V. DUCMAN[1], L. ŠKRLEP[1], U. LAVRENČIČ ŠTANGAR[2], J. RANOGAJEC[3], [1]Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia; [2]Laboratory for Environmental Research, University of Nova Gorica, Slovenia; [3]University of Novi Sad, Faculty of Technology, Novi Sad, Serbia

## Session CO-1 - Raw Materials

*Room:* **ORSA MINORE**

*Chair:* J.P. BENNETT, USA *(Programme Chair)*

15.30 *Welcome*

15.40 *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

16.10 *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

16.30 *Break*

## Session CO-2 - Testing

17.00 *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

17.30 *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

18.00 *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

## Session CP-1 - Production and Properties of Reinforcements, Preforms, and Matrix Materials

*Room:* **ORSA MAGGIORE**

*Chair:* M. SINGH, USA *(Programme Chair)*

15.00 *Welcome*

15.10 *CP-1:IL01* **Heat-resistant Inorganic Fibers**
**T. ISHIKAWA**, Ube Industries, Ltd., Ube, Yamaguchi, Japan

15.40 *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

16.10 *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

16.40 *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

17.00 *Break*

*Chair:* T. ISHIKAWA, Japan

17.30 *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

18.00 *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

## Session CA-1 - Advances in Powder Synthesis and Characterisation

*Room:* **LE PLEIADI**

*Chair:* E. BERGSTROM, Sweden

9.00 *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

9.20 *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

9.40 *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: Indian Institute of Technology, Patna

10.00 *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

10.20 *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

10.40 *Break*

*Chair:* A. AIMABLE, Switzerland

11.10 *CA-1:IL12* **Continuous Production of Ceramic Nano Crystals using Supercritical Aqueous Solution**
**T. ADSCHIRI**, WPI-AIMR, Tohoku University, Sendai, Japan

11.40 *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

12.00 *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

12.20 *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

## Session CB-2 - Polymer Derived Ceramics

*Room:* **AUDITORIUM**

*Chair:* R. GADOW, Germany

9.00 *CB-2:IL06* **Polymer-Derived Ceramic Nanocomposites: Preparative Concepts towards Tailor-Made Phase Compositions and Properties**
**E. IONESCU**, Technische Universitaet Darmstadt, Darmstadt, Germany

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

10.00 *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

10.30 *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

10.50 *Break*

## Session CB-1 - Solution-based Processing

*Chair:* T. TROCZYNSKI, Canada

11.20 *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

11.50 *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

## Session CC-2 - Coatings, Surface Engineering and Nanostructuring

*Room:* **ZENITH**

*Chair:* L.V. SANTOS, Brazil

8.30 *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

9.00 *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

9.30 *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

10.00 *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

10.20 *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, Dept. 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

10.40 *Break*

## Session CC-3 - Friction and Wear at Micro/Nanoscale

*Chair:* TIANMIN SHAO, China

11.10 *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

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

12.10 *CC-3:IL03* **Micro-wear Characteristics of Thin Coatings for Tribological Applications**
**DAE-EUN KIM**, School of Mechanical Engineering, Yonsei University, Seoul, Korea

12.40 *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 CE-1 - Innovative Processing of Nano- and Heterostructures and Films of Functional Materials

*Room:* **VENERE**

*Chair:* M.T. MIYAHARA, Japan

8.30 *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

9.00 *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

9.30 *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

9.50 *CE-1:IL11* **Hybrid Nanomaterials for Electrochemical Devices in Energy Management**
**POOI SEE LEE**, School of Materials Science and Engineering, Nanyang Technological University, Singapore

10.20 *Break*

*Chair:* T. SCHNELLER, Germany

10.50 *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

11.20 *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

11.40 *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

## Session CE-3 - Functional Materials and Sustainability

12.00 *CE-3:IL02* **Self-cleaning and Anti-fogging Surfaces Based on Nanostructured Metal Oxides**
**U. LAVRENCIC STANGAR**, F. FRESNO, M. KETE, M. TASBIHI, Lab. for Environmental Research, University of Nova Gorica, Slovenia; A. GASPAROTTO, C. MACCATO, Dept. of Chemistry, Padova University and INSTM, Italy; D. BARRECA, IENI-CNR and INSTM, Dept. of Chemistry, Padova University, Italy

## Session CG-2 - Room Temperature Mechanical Properties of the MAX Phases

*Room:* **SIRIO**

*Chair:* I.M. LOW, Australia

8.30 *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

9.00 *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

9.30 *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], M.W. BARSOUM[4], [1]National Institute for Materials Science, Japan; [2]Ningbo Institute of Material Technology and Engineering, CAS, China; [3]Queen Mary University of London, UK; [4]Drexel University, USA

10.00 *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

10.20 *Break*

## Session CG-3 - High Temperature Mechanical, Oxidation and Thermal Properties of the MAX Phases

*Room:* **SIRIO**

*Chair:* SHIBO LI, China

10.50 *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

11.20 *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

11.50 *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

12.20 *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

## Session CI-1 - Advances in Deposition, Surface Modification and Characterisation Techniques

*Room:* **GIOVE**

*Chair:* H. PEDERSEN, Sweden

8.30 *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

9.00 *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

9.30 *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

9.50 *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

10.10 *Break*

*Chair:* T. GOTO, Japan

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

10.40 *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

11.10 *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

## Session CI-6 - Modelling and Simulation of Coatings and Films

11.40 *CI-6:IL07* **Theory for Accelerated Materials Design: New Tool for the 3d Millennium Materials Science**
**I.A. ABRIKOSOV**, IFM, Linköping University, Linköping, Sweden

## Session CJ-1 - Dieletrics and Microwave Materials

*Room:* **ALBA 2**

*Chair:* WOONG KIM, Korea

8.30 *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

9.00 *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

9.30 *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

9.50 *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

10.10 *Break*

## Session CJ-2 - Ferroelectrics, Piezoelectrics, Pyroelectrics

*Room:* **ALBA 2**

*Chair:* M. MAGLIONE, France

10.40 *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

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

11.40 *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

12.00 *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

12.20 *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

## Session CN-2 - Sustainability of Silicate Ceramics Manufacturing

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* J.L. AMOROS, Spain

9.00 *CN-2:IL01* **Sustainability and Competitiveness in the Ceramic Tile Sector: an Overview**
**G. TIMELLINI**, R. RESCA, Centro Ceramico Bologna, Bologna, Italy

9.30 *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

10.00 *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

10.20 *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

10.40 *Break*

*Chair:* G. TIMELLINI, Italy

11.10 *CN-2:IL06* **Functional Glasses and Glass-ceramics Derived from Wastes**
**F. BERNARDO**, Dipartimento di Ingegneria Industriale, Università degli Studi di Padova, Padova, Italy

11.40 *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

12.00 *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

12.20 *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

## Session CO-2 - Testing

*Room:* **ORSA MINORE**

*Chair:* C.G. ANEZIRIS, Germany

8.30 *CO-2:IL05* **Simulation of Refractory Fracture as a Tool for Advanced Material Testing**
**D. GRUBER**, S. JIN, H. HARMUTH, Montanuniversität Leoben, Leoben, Austria

9.00 *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

9.20 *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

9.40 *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

10.00 *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

10.20 *CO-2:L10* **Corrosion Mechanism Analysis of Al2O3-SiC-C Castables**
**CHIEN-NAN PAN**, Ceramic Materials Section (T62), New Materials R & D Dept., China Steel Corporation, Kaohsiung, Taiwan, R.O.C.

10.40 *Break*

## Session CO-3 - Products Development, Selection, Design and Use

*Chair:* A. GASSER, France

11.10 *CO-3:IL01* **Refractory Castable Engineering**
**V.C. PANDOLFELLI**, A.P. DA LUZ, Federal University of Sao Carlos, Materials Engineering Department, Sao Carlos, Brazil

11.40 *CO-3:IL02* **A New Generation of Carbon Bonded Filters for Advanced Metal Melt Filtration**
**C.G. ANEZIRIS**, M. EMMEL, S. DUDCZIG, Inst. of Ceramic, Glass and Construction Materials, Technical University of Freiberg, Germany

12.10 *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

## Session CP-3 - Processing and Fabrication of MMCS, CMCS, and C/C Composites

*Room:* **ORSA MAGGIORE**

*Chair:* R. ASTHANA, USA

9.00 CP-3:IL01 **Advanced CMCs Design for Lightweight and High Temperature Applications**
**W. KRENKEL**, Ceramic Materials Engineering, University of Bayreuth, Bayreuth, Germany

9.30 *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

10.00 *CP-3:IL04* **Ultra High Temperature Metal Matrix Composites**
**S.T. MILEIKO**, Institute of Solid State Physics of RAS, Chernogolovka, Russia

10.30 *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 Florianopolis, Brazil

10.50 *Break*

## Session CP-2 - Interfaces and Interphases

*Chair:* W. KRENKEL, Germany

11.20 *CP-2:IL01* **Mechanics of Interfaces/Interphases in CMCs**
**J. LAMON**, CNRS/LMT/ENS Cachan, Cachan, France

11.50 *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

12.20 *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 CA-3 - Shape Forming and Consolidation Mechanisms

*Room:* **LE PLEIADI**

*Chair:* M.M. BUCKO, Poland

15.00 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

15.30 *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

16.00 *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

16.20 *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

16.40 *Break*

*Chair:* J.M.F. FERREIRA, Portugal

17.10 *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

17.40 *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

18.00 *CA-3:L07* **Photopolymerization of Thin Ceramic Layers**
**P. FALKOWSKI**, M. SZAFRAN, Faculty of Chemistry, Warsaw University of Technology, Warsaw, Poland

18.20 *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 CB-1 - Solution-based Processing

*Room:* **AUDITORIUM**

*Chair:* K. REZWAN, Germany

15.00 *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

15.30 *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

15.50 *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

16.10 *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

16.30 *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

16.50 *Break*

## Session CB-4 - Spark Plasma and Flash Sintering

*Chair:* E. OLEVSKY, USA

17.20 *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

17.50 *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

18.20 *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

## Session CC-4 - Biotribology

*Room:* **ZENITH**

*Chair:* N. SASAKI, Japan

15.00 *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

15.30 *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

16.00 *Break*

## Session CC-5 - New Theory and Computer Simulations

*Chair:* M. KANETA, Czech Republic

16.30 *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

17.00 *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

17.30 *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

18.00 *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 CE-2 - Functional Metal Oxide Nano- and Heterostructures

*Room:* **VENERE**

*Chair:* T. GRAULE, Switzerland

15.00 *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]Dep. Inorganic and Organic Chemistry (ESTCE); [2]Dep. Physics (ESTCE), Universitat Jaume I, Castellón, Spain

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

16.00 *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

16.30 *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

16.50 *Break*

*Chair:* B. JULIAN-LOPEZ, Spain

17.20 *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

17.50 *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

18.20 *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, Switzerland; [2]Paul Scherrer Institute, Villigen PSI, Switzerland

18.50 *CE-2:L12* **Synthesis and Aggregation of In2O3 Nanoparticles: Impact of Process Parameters on Stoichiometry Changes and Optical Properties**
N. SIEDL, P. GÜGEL, Inst. of Particle Technology, Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany; **O. DIWALD**, Dept. of Materials Science and Physics, University of Salzburg, Salzburg, Austria

## Session CE-3 - Functional Materials and Sustainability

19.10 *CE-3:IL01* **Engineering New Properties at Intrinsic and Artificial Oxide Interfaces**
**P. PARUCH**, DPMC-MaNEP, University of Geneva, Geneva, Switzerland

## Session CG-4 - Synthesis and Fabrication of MAX and MXene Phases and Composites

*Room:* **SIRIO**

*Chair:* M. RADOVIC, USA

15.00 *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

15.30 *CG-4:IL02* **MAX Phase Single Crystal Synthesis**
**T. OUISSE**, E. SARIGIANNIDOU, O. CHAIX, H. ROUSSEL, B. DOISNEAU, D. CHAUSSENDE, LMGP, INPGrenoble, Grenoble, France

16.00 *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

16.30 *CG-4:IL04* **Structure Evolution during Low Temperature Growth of MAX Phase Thin Films**
**J.M. SCHNEIDER**, Materials Chemistry, RWTH Aachen University, Aachen, Germany

17.00 *Break*

## Session CG-3 - High Temperature Mechanical, Oxidation and Thermal Properties of the MAX Phases

*Chair:* A.S. INGASON, Sweden

17.30 *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

18.00 *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

18.30 *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

## Session CH-1 - Novel Processing and Synthesis of Porous Ceramics (Nano to Macro)

*Room:* **URANO**

*Chair:* P. COLOMBO, Italy *(Programme Chair)*

15.00 *Welcome*

15.10 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

15.40 *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

16.10 *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

16.30 *CH-1:L04* **Applications and Character of Porous Structures Produced Via Robocasting**
**J. CESARANO**, J. STUECKER, M. NIEHAUS, Robocasting Enterprises LLC, Albuquerque, NM, USA

16.50 *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

17.10 *Break*

*Chair:* A. PYZIK, USA

17.40 *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

18.10 *CH-1:IL07* **Highly Transparent Glass Foams**
**M. SCHEFFLER**, University of Magdeburg, Institute for Materials and Joining Technology, Magdeburg, Germany

18.40 *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

## Session CJ-2 - Ferroelectrics, Piezoelectrics, Pyroelectrics

*Room:* **ALBA 2**

*Chair:* G. CATALAN, Spain

15.00 *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

15.30 *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

16.00 *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

16.20 *Break*

*Chair:* KUI YAO, Singapore

16.50 *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

17.20 *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

17.40 *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

## Session CL-1 - Optical Materials and Photonic Structures

*Room:* **GIOVE**

*Chair:* M. FERRARI, Italy *(Programme Chair)*

15.00 *Welcome*

15.10 *CL-1:IL01* **Multifunctional Materials for Electronics and Photonics**
**F. ROSEI**, Centre for Energy, Materials and Telecommunications, INRS, Varennes (QC), Canada

15.40 *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

16.10 *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

16.30 *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

16.50 *Break*

*Chair:* J. BALLATO, USA

17.20 *CL-1:L05* **Structures and Properties of a Novel MgAlON Transparent Ceramics**
**HAO WANG**, XIAO LIU, BINGTIAN TU, WEIMIN WANG, ZHENGYI FU, State Key Lab. of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan, China

17.40 *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, 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, Rennes cedex, France; [4]Dept. of Graphic Arts and Photophysics, University of Pardubice, Pardubice, Czech Republic; [5]Institut Fresnel, CNRS UMR 7249, Université d'Aix Marseille, 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

18.10 *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

## Session CN-3 - New Products and Challenges for Silicate Ceramics

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* F. ANDREOLA, Italy

15.00 *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

15.30 *CN-3: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

15.50 *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

16.20 *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

16.40 *Break*

## Session CN-2 - Sustainability of Silicate Ceramics Manufacturing

*Chair:* M. LLUSAR, Spain

17.10 *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

17.40 *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

18.00 *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 CO-3 - Products Development, Selection, Design and Use

*Room:* **ORSA MINORE**

*Chair:* V.C. PANDOLFELLI, Brazil

15.00 *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

15.30 *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

16.00 *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

16.20 *Break*

## Session CO-4 - System Modeling and Simulation; Failure Analysis

*Chair:* C. PARR, USA

16.50 *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

17.20 *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

17.50 *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.

## Session CP-4 - Ultrahigh Temperature Ceramic Composites (UHTCCs) and Laminated Composite Structures

*Room:* **ORSA MAGGIORE**

*Chair:* S. RISBUD, USA

15.00 *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 Lab. of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, CAS, Shanghai, China

15.30 *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

16.00 *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 Institute of Ceramics, Chinese Academy of Sciences, Shanghai, P.R. China

16.20 *CP-4:IL05* **Mechanistic Aspects of the Strength and the Fracture Toughness of Laminated Polymer-ceramic Composites**
**K. TUSHTEV**, University of Bremen, Bremen, Germany

16.50 *Break*

## Session CP-5 - Property, Modeling and Characterization

*Chair:* SHAOMING DONG, China

17.20 *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 Lab., Northwestern Polytechnical University, Xi'an, Shaanxi, China

17.50 *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; [2]Institute of Rock Structure and Mechanics; [3]Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, v.v.i., Prague, Czech Republic

18.10 *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

18.30 *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

## Session CB-4 - Spark Plasma and Flash Sintering

*Room:* **AUDITORIUM**

*Chair:* R. FURUSHIMA, Japan

9.00 *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

9.30 *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

9.50 *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

10.10 *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

10.30 *Break*

*Chair:* C. ESTOURNES, France

11.00 *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

11.20 *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

11.40 *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

## Session CC-6 - Testing and Characterization

*Room:* **ZENITH**

*Chair:* M. MOSELER, Germany

8.30 *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

9.00 *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

9.30 *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

10.00 *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

10.30 *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

10.50 *Break*

## Session CD-1 - Basic Issues

*Chair:* J. JANCZAK-RUSCH, Switzerland *(Programme Chair)*

11.20 *Welcome*

11.30 *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

12.00 *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

## Session CD-2 - Macro-joining

12.20 *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

## Session CE-3 - Functional Materials and Sustainability

*Room:* **VENERE**

*Chair:* C. COPERET, Switzerland

9.30 *CE-3:L03* **Advanced Fe2O3 Nanomaterials for Solar-Activated H2 Generation**
**G. CARRARO**, C. MACCATO, A. GASPAROTTO, Dept. of Chemistry, Padova University and INSTM, Italy; D. BARRECA, IENI-CNR and INSTM, Dept. of Chemistry, Padova University, Italy; P. FORNASIERO, V. GOMBAC, T. MONTINI, Dept. 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

9.50 *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, SPCTS, UMR-CNRS 7315, CEC, Limoges, France; F. LALLOUE, H. AKIL, Homeostasie Cellulaire et Pathologies, EA 3842, Limoges, France; C. CARRION, CIM, UMR-CNRS 6101, Limoges, France; P. FAUGERAS, Société DIOPTIK, Ester Technopole, Limoges, France; C. BOISSIÈRE, C. SANCHEZ, Lab. de Chimie de la Matiere Condensee de Paris, UMR CNRS 7574, Universite Paris VI, College de France, Paris, France; X. CATTOEN, M. WONG CHI MAN, J.-O. DURAND, Institut Charles Gerhardt Montpellier (ICGM), UMR-CNRS 5253 (UM2-ENSCM-UM1), Montpellier, France

10.20 *Break*

*Chair:* S. MATHUR, Germany

10.50 *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

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

11.40 *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; [2]Plasma Enhanced Technology Development Team, Korea Institute of Industrial Technology, Incheon, Republic of Korea

12.00 *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

## Session CF-1 - Synthesis and Processing

*Room:* **LE PLEIADI**

*Chair:* W.G. FAHRENHOLTZ, USA *(Programme Chair)*

8.30 *Welcome*

8.40 *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

9.10 *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

9.40 *CF-1:IL03* **Bringing Modelling to UHTCs**
**A.I. DUFF**, T. DAVIES, B. LEE, M. FINNIS, Imperial College London, UK; A. GLENSK, B. GRABOWSKI, Max Planck Institut fuer Eisenforschung, Germany

10.10 *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

10.40 *Break*

*Chair:* H. KIMURA, Japan

11.10 *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

11.40 *CF-1:IL06* **Processing and Sintering of Fiber-containing UHTCs**
**D. SCITI**, L. SILVESTRONI, L. ZOLI, V. MEDRI, CNR-ISTEC, Faenza, Italy

12.10 *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

12.30 *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

12.50 *CF-1:IL09* **Design of Grain Growth Resistant Nanograined YSZ**
**R.H.R. CASTRO**, D.V. QUACH, CHI-HSIU CHANG, S. DEY, University of California, Davis, CA, USA

## Session CG-4 - Synthesis and Fabrication of MAX and MXene Phases and Composites

*Room:* **SIRIO**

*Chair:* J.M. SCHNEIDER, Germany

9.00 *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

9.30 *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

10.00 *CG-4:L08* **Towards Understanding the Formation Mechanism of MAX-phase - In Situ TEM Studies on the Crystallization of V2AIC 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

10.20 *Break*

*Chair:* D.P. RILEY, Australia

10.50 *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

11.20 *CG-4:IL13* **In-situ Fabrication of Ti3SiC2-strengthened Composite by SPS**
**LIANJUN WANG**, Donghua University, Shanghai, China

## Session CI-3 - Thermal Barrier Coatings

*Room:* **GIOVE**

*Chair:* F. CERNUSCHI, Italy

9.00 *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

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

10.00 *CI-3:IL03* **Advanced Processing Methods for TBCs**
**R. VASSEN**, Forschungszentrum Jülich GmbH, IEK-1, Jülich, Germany

10.30 *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], SEONGWON 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

10.50 *Break*

*Chair:* R. VASSEN, Germany

11.20 *CI-3:IL05* **Advanced Characterisation of Thermal Barrier Coatings**
**F. CERNUSCHI**, RSE Spa Ricerca sul Sistema Energetico, Milano, Italy

11.50 *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-5 - Smart and Multifunctional Thin Films and Coatings

12.10 *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

## Session CJ-3 - Multiferroics

*Room:* **ALBA 2**

*Chair:* CHAN-HO YANG, Korea

9.00 *CJ-3:IL01* **Hybrid Multiferroic Heterostructures**
**N.A. PERTSEV**, A.F. Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia

9.30 *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

10.00 *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

10.30 *Break*

## Session CJ-4 - Semiconducting Ceramics

*Chair:* N. IZU, Japan

11.00 *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

11.30 *CJ-4:IL03* **Spatially Resolved Photo-detection in Leaky Ferroelectric Oxides**
**MOON-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

12.00 *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

## Session CK-1 - Magnetic Oxide Thin Films Interfaces and Heterostructures

*Room:* **ORSA MAGGIORE**

*Chair:* S. PICOZZI, Italy *(Programme Chair)*

8.30 *Welcome*

8.40 *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

9.10 *CK-1:IL02* **Spin and Charge Elusive Order in Cuprate Superconductors**
**G. GHIRINGHELLI**, Dipartimento di Fisica, Politecnico di Milano, Italy

9.40 *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

10.10 *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

10.40 *Break*

## Session CK-1 - Magnetic Oxide Thin Films Interfaces and Heterostructures

*Room:* **ORSA MAGGIORE**

*Chair:* J. FONTCUBERTA, Spain

11.10 *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

11.40 *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

12.10 *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

## Session CN-3 - New Products and Challenges for Silicate Ceramics

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* R. BOWMAN, Australia

8.30 *CN-3:IL05* **Ink Technology for Digital Decoration: An Overview**
**D. GARDINI**, M. BLOSI, C. ZANELLI, M. DONDI, CNR-ISTEC, Faenza, Italy

9.00 *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

9.30 *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

9.50 *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

10.10 *Break*

## Session CN-4 - Managing the Complexity of Silicate Ceramics

*Chair:* M. DONDI, Italy

10.40 *CN-4:IL01* **The Complexities of Sustainable Slip Resistant Ceramic Surfaces**
**R. BOWMAN**, Intertile Research, Brighton East, VIC, Australia

11.10 *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

11.40 *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

12.10 *CN-4:L07* **Microstucture of Ceramic Brick Contaminated by Sulfate Salts**
**T. STRYSZEWSKA**, S. KANKA, Cracow University of Technology, Cracow, Poland

## Session CO-4 - System Modeling and Simulation; Failure Analysis

*Room:* **ORSA MINORE**

*Chair:* J. POIRIER, France

9.00 *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

9.30 *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

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

10.30 *Break*

*Chair:* J.P. BENNETT, USA

11.00 *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

11.30 *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

12.00 *CO-4:IL09* **Corrosion of Refractories in Incineration Processes: Changes in Microstructure, Properties and Performance**
**Th. TONNESEN**, R. TELLE, RWTH Aachen University, Aachen, Germany

## Session CP-6 - Composites for Thermal Management. Applications of Inorganic Fiber Composites

*Room:* **URANO**

*Chair:* M. FERRARIS, Italy

9.00 *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

9.30 *CP-6:L02* **Novel High Conductivity Carbon and SiC based Composites**
**W. KOWBEL**, FMC, Tucson, AZ, USA

9.50 *CP-6:IL03* **Metastable Phases and Microstructures in Alumina-silica Glasses and Mullite Ceramics**
**S. RISBUD**, University of California, Davis, CA, USA

10.20 *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

## Session CA-4 - Sintering, Grain Growth and Property/ Microstructure Evolution and Characterization

*Room:* **LE PLEIADI**

*Chair:* P. BOWEN, Switzerland

15.00 *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

15.30 *CA-4:IL02* **Fabrication of Translucent Silicon Nitride Ceramics by SPS**
**J. HOJO**, W. YANG, M. INADA, N. ENOMOTO, Dept. of Applied Chemistry, Faculty of Engineering, Kyushu University, Fukuoka, Japan

16.00 *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

16.30 *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

17.00 *Break*

*Chair:* O.A. GRAEVE, USA

17.30 *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

18.00 *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

18.20 *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

18.40 *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

## Session CB-3 - Microwave Processing

*Room:* **AUDITORIUM**

*Chair:* J.J. SCHNEIDER, Germany

15.00 *CB-3:IL01* **Microwave Energy Application for Materials' Processing and Environmental Technology**
**N. YOSHIKAWA**, Graduate School of Environmental Studies, Tohoku University, Sendai, Japan

15.30 *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

15.50 *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

16.10 *Break*

*Chair:* N. YOSHIKAWA, Japan

16.40 *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

17.10 *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

17.30 *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

17.50 *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 CC-7 - Tribology Applications

*Room:* **ZENITH**

*Chair:* A. ERDEMIR, USA

15.00 *CC-7:IL01* **Development of Multi-component Single Alloying Targets for the Easy Preparation of the Low Friction Nano-composite 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

15.30 *CC-7:IL02* **Tribology of Machine Elements in Hydrogen Energy Systems**
**J. SUGIMURA**, Kyushu University, Fukuoka, Japan

16.00 *CC-7:IL03* **Novel Super-elastic Materials for Advanced Bearing Applications**
**C. DELLACORTE**, NASA, Glenn Research Center, Cleveland, OH, USA

16.30 *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

17.00 *CC-7:IL05* **Tribology of Functional Coatings for High Temperature Applications**
**B. PRAKASH**, C. COURBON, J. HARDELL, Luleå University of Technology, Luleå, Sweden

17.30 *Break*

## Session CD-1 - Basic Issues

*Chair:* A. PASSERONE, Italy

18.00 *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

18.30 *CD-1:IL05* **Residual Stress Tensor Distribution around Interface of Brazed Ceramics**

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

## Session CF-1 - Synthesis and Processing

*Room:* **SIRIO**

*Chair:* E. CORRAL, USA

17.40 *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

18.10 *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

18.30 *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

## Session CG-5 - Functional Properties and Applications of the MAX and MXene Phases

*Room:* **SIRIO**

*Chair:* M.W. BARSOUM, USA

15.00 *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

15.30 *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

16.00 *CG-5: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

16.30 *CG-5: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

17.00 *CG-5: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

## Session CH-1 - Novel Processing and Synthesis of Porous Ceramics (Nano to Macro)

*Room:* **URANO**

*Chair:* C.S. PEYRATOUT, France

15.00 *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

15.30 *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

16.00 *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

16.20 *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

16.40 *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

17.00 *Break*

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

*Chair:* M. FUKUSHIMA, Japan

17.30 *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

18.00 *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

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

## Session CJ-6.1 - New Piezomaterials Systems, Film Growth, Multilayers, Heterostructures, Characterisation

*Room:* **ALBA 2**

*Chair:* M. DE VITTORIO, Italy *(Programme Chair)*

15.00 *Welcome*

15.10 *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

15.40 *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

16.10 *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

16.40 *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 CK-1 - Magnetic Oxide Thin Films Interfaces and Heterostructures

*Room:* **ORSA MAGGIORE**

*Chair:* S.A. CHAMBERS, USA

15.00 *CK-1:IL09* **Magnetic Effects in Spin-triplet Superconductors - Ferromagnets Heterostructures**
**M. CUOCO**, CNR-SPIN, Fisciano (Salerno), Italy and Dip.di Fisica "E.R. Caianiello'', Università di Salerno, Fisciano (Salerno), Italy

15.30 *CK-1:IL10* **Emergent Phenomena in Two-dimensional Electron Gases at Oxide Interfaces**
**S. STEMMER**, University of California, Santa Barbara, CA, USA

16.00 *CK-1:L11* **Ferromagnetism in the 2DEG Formed at the Polar and Non-polar LaAlO3/SrTiO3 Interfaces**
J.I. BELTRÁN, **M.C. MUNOZ**, Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco, Madrid, Spain

16.20 *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

16.40 *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 Catalan de Nanociencia I Nanotecnologia, Campus UAB, Bellaterra, Spain

17.00 *Break*

## Session CK-3 - Spin Transport and Interplay between Spin, Charge and Lattice Degree of Freedom

*Room:* **ORSA MAGGIORE**

*Chair:* J. VAN WEZEL, UK

17.30 *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

18.00 *CK-3:L03* **Growth and Properties of Low Dimensional Magnetoelectric 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

## Session CK-2 - Electronic Structure and Correlation Effects

18.20 *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

## Session CL-1 - Optical Materials and Photonic Structures

*Room:* **GIOVE**

*Chair:* F. ROSEI, Canada

15.00 *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

15.30 *CL-1:IL12* **Nearfiled Characterization of Plasmonic Materials**
**R. VOGELGESANG**, Carl von Ossietzky Universität Oldenburg, Oldenburg, Germany

16.00 *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

16.20 *Break*

*Chair:* A. DURAN, Spain

16.50 *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

17.10 *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

17.40 *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 CP-5 - Property, Modeling and Characterization

*Room:* **ORSA MINORE**

*Chair:* T. OHJI, Japan

15.00 *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

15.30 *CP-5:IL06* **SiC/SiC Composites for Nuclear Applications**
**T. HINOKI**, Kyoto University, Uji, Kyoto, Japan

16.00 *Break*

## Session CP-6 - Composites for Thermal Management. Applications of Inorganic Fiber Composites

*Chair:* M. SINGH, USA

16.30 *CP-6:IL05* **C/C and CMC-composites for Industrial Applications**
**R. WEISS**, Schunk Kohlenstofftechnik GmbH, Heuchelheim, Germany

17.00 *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

17.30 *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

18.00 *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. GYEKE-NYESI[2], M. SINGH[2], [1]Argonne National Laboratory, Argonne, IL, USA; [2]Ohio Aerospace Institute, Cleveland, OH, USA

## Session CA-4 - Sintering, Grain Growth and Property/ Microstructure Evolution and Characterization

*Room:* **LE PLEIADI**

*Chair:* R.K. BORDIA, USA

9.00 *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

9.30 *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

10.00 *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

10.30 *Break*

*Chair:* Y. IKUHARA, Japan

11.00 *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

11.30 *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

11.50 *CA-4:L12* **Sol-gel Derived Mullite-gahnite Composite**
S. KURAJICA, E. TKALÈEC, **V. MANDIC**, I. LOZIC, University of Zagreb, Faculty of Chemical Engineering and Technology, Zagreb, Croatia; J. SCHMAUCH, University of Saarland, Saarbrücken, Germany

## Session CB-5 - Bio-inspired Processing

*Room:* **AUDITORIUM**

*Chair:* K.H. SANDHAGE, USA

9.00 *CB-5:IL01* **Generation of Inorganic Functional Materials by Molecular Bionics**
**J. BILL**, Institute for Materials Science, University of Stuttgart, Stuttgart, Germany

9.30 *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

10.00 *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

10.30 *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

10.50 *Break*

*Chair:* N. NASSIF, France

11.20 *CB-5:IL05* **Sustainable Biotemplated Porous Ceramics for Biomedical and Environmental Remediation**
**L. TRECCANI**, Advanced Ceramics, University of Bremen, Bremen, Germany

11.50 *CB-5:IL06* **Novel Functional Hierarchical Materials Bioinspired from Nature Microstructures**
**DI ZHANG**, WANG ZHANG, JIAJUN GU, SHENMING ZHU, HUI-LAN SU, QINGLEI LIU, State Key Lab of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai, China

12.20 *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-9.1 - Analysis and Modeling of SHS Processes and Structure Formation

*Room:* **ORSA MINORE**

*Chair:* A.S. ROGACHEV, Russia *(Programme Chair)*

9.00 *Welcome*

> *"Life in Science:*
> *in Memoriam of Prof. Alexander G. Merzhanov"*

9.20 *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

9.50 *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

10.20 *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

10.40 *Break*

*Chair:* N. THADHANI, USA

11.10 *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

11.40 *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

## Session CD-1 - Basic Issues

*Room:* **ZENITH**

*Chair:* W.D. KAPLAN, Israel

8.30 *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

9.00 *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

9.30 *CD-1:IL08* **Role of the Interfaces in Metal-ceramic Joints**
**A. PASSERONE**, F. VALENZA, C. ARTINI, M.L. MUOLO, IENI-CNR, Genova, Italy

10.00 *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

10.30 *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

10.50 *Break*

## Session CD-2 - Macro-joining

*Chair:* J.A. FERNIE, UK

11.20 *CD-2:IL02* **Joining of Ceramic-metal Composite Materials**
**K. PIETRZAK**, ITME and IPPT PAN, Warsaw, Poland

11.50 *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

12.20 *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 CF-2 - Oxidation, Corrosion and Testing

*Room:* **SIRIO**

*Chair:* V.S. URBANOVICH, Belarus

8.30 *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

9.00 *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

9.30 *CF-2:L03* **Synthesis, Oxidation Resistance, Emittance, and Thermal Conductivity of ZrB2-SiC Multiphase Ceramics**
**R.F. SPEYER**, School of Materials Science and Eng., Georgia Inst. of Technology, Atlanta, GA, USA; FEI PENG, Clemson University, USA

9.50 *CF-2:L04* **High-temperature Passive Oxidation Mechanism of CVD Silicon Carbide**
T. GOTO, **H. KATSUI**, Institute for Materials Research, Tohoku University, Sendai, Japan

10.10 *CF-2:L05* **Corrosion Properties of Hafnia Based Silicon Carbonitride Ceramics**
**S. JOTHI**, R. SUJITH, R. KUMAR, Dept. of Metallurgical & Materials Engineering, Indian Institute of Technology Madras, Chennai, India

10.30 *Break*

## Session CF-3 - Mechanical and Thermal Properties

*Chair:* P. REYNAUD, France

11.00 *CF-3:IL01* **Nanoceramics for Extreme Environments**
**R.A. ANDRIEVSKI**, Institute of Problems of Chemical Physics, RAS, Chernogolovka, Moscow Region, Russia

11.30 *CF-3:IL02* **High-temperature Mechanical Behaviour of Superhard Carbides: The Special Case of Boron Carbide**
**D. GOMEZ-GARCIA**[1], B.M. MOSHTAGHIOUN[1], M. CASTILLO-RODRIGUEZ[2], A. DOMINGUEZ-RODRIGUEZ, [1]Dept. of Condensed Matter Physics, University of Seville, Spain; [2] Institute for Materials Science, CSIC-USE, Spain

12.00 *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**, Dept. of Condensed Matter Physics, University of Seville, Seville, Spain

12.20 *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]Dept.of Condensed Matter Physics, University of Seville, Spain; [2]Inst. of Materials Science, CSIC-USE, Seville, Spain

12.40 *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 and School of Energy Science and Technology, Harbin Institute of Technology, Harbin, China

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

*Room:* **URANO**

*Chair:* Y. IWAMOTO, Japan

8.30 *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

9.00 *CH-2:IL05* **Thermal Properties of Ceramics**
**D.S. SMITH**, GEMH-ENSCI Centre Européen de la Céramique, Limoges, France

9.30 *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

9.50 *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

10.10 *Break*

## Session CH-3 - Advances in the Characterization of the Porous Structure

*Chair:* J. HOETZER, Germany

10.40 *CH-3:IL01* **Recent Advances in the Structural Characterization of Porous Ceramics**
**M. THOMMES**, Quantachrome Corporation, Boynton Beach, FL, USA

11.10 *CH-3:IL02* **Characterization of Aerogels - Challenges and Prospects**
**G. REICHENAUER**, Bavarian Center for Applied Energy Research, Würzburg, Germany

11.40 *CH-3:IL03* **Characterization of Porous Materials using High Resolution SEM**
**A. ENDO**, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

12.10 *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

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

*Room:* **GIOVE**

*Chair:* R. FRANZ, Austria

9.00 *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

9.30 *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

9.50 *Break*

## Session CI-4 - Tribological Thin Films and Coatings

*Chair:* C.G. LEVI, USA

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

10.50 *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

11.20 *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

11.50 *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

## Session CJ-6.3 - Thin Film Piezoelectric MEMS/NEMS Applications

*Room:* **ALBA 2**

*Chair:* S. TROLIER-McKINSTRY, USA

9.00 *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

9.30 *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

10.00 *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

10.20 *Break*

*Chair:* E. RINGGAARD, Denmark

10.50 *CJ-6.3:IL04* **Performances of Ferroelectric Printed Films in Sensors and Energy Harvesting**
**V. FERRARI**, Department of Information Engineering, University of Brescia, Italy

11.20 *CJ-6.3:L06* **2013-2018 Market Analysis of Thin Film Piezo MEMS**
**C. TROADEC**, E. MOUNIER, Yole Développement, Lyon-Villeurbanne, France

11.40 *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

## Session CK-2 - Electronic Structure and Correlation Effects

*Room:* **ORSA MAGGIORE**

*Chair:* B. BUECHNER, Germany

9.00 *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

9.20 *CK-2:L05* **Competing Charge Orders in Magnetite Ultrathin Films**
I. BERNAL, **S. GALLEGO**, Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

9.40 *Break*

## Session CK-3 - Spin Transport and Interplay between Spin, Charge and Lattice Degree of Freedom

10.10 *CK-3:IL01* **Spin Pumping from Insulators**
**E. SAITOH**, WPI-AIMR,Tohoku University, Sendai, Japan, and Institute for Materials Research, Tohoku University, Sendai, Japan

10.40 *CK-3:IL05* **Chirality in Charge and Orbital Ordered Materials**
**J. VAN WEZEL**, University of Bristol, Bristol, UK

11.10 *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

11.40 *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 CL-1 - Optical Materials and Photonic Structures

*Room:* **ORSA MAGGIORE**

*Chair:* H. EISELE, Germany

9.00 *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

9.30 *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

9.50 *CL-1:IL20* **Development of Novel LED Phosphor Materials using New Synthesis Techniques**
**K. TODA**, Niigata University, Niigata, Japan

10.20 *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

10.40 *Break*

## Session CL-2 - Advances in Characterization Techniques

*Chair:* W. STREK, Poland

11.10 *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

11.40 *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

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

## Session CM-1 - Preparation and Characterization

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* K.J.D. MACKENZIE, New Zealand *(Programme Chair)*

9.00 *Welcome*

9.10 *CM-1:IL01* **Exploring the Limits of Possible Geopolymer Precursors**
**A. VAN RIESSEN**, W. RICKARD, Geopolymer Research Group, Curtin University, Perth, Western Australia

9.40 *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

10.10 *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

10.30 *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

10.50 *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

11.10 *Break*

*Chair:* A. VAN RIESSEN, Australia

11.40 *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

12.10 *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

12.40 *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

## Session CB-6 - Solid Freeform Fabrication

*Room:* **AUDITORIUM**

*Chair:* J.S. ANDREW, USA

15.00 *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

15.20 *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

15.40 *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

16.00 *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-9.2 - SHS Materials and Compounds

*Room:* **ORSA MINORE**

*Chair:* E. LEVASHOV, Russia

15.00 *CB-9.2:IL01* **Carbonaceous Refractory Materials on SHS-technology**
**Z. MANSUROV**, Institute of Combustion Problems, Almaty, Kazakhstan

15.30 *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

15.50 *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

16.10 *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

16.30 *CB-9.2:L05* **Surfacing of Protective Coatings on Titanium, Steel Substrates by SHS Metallurgy**
**D.E. ANDREEV**, V.I. YUKHVID, V.N. SANIN, ISMAN, RAS, Chernogolovka, Moscow region, Russia

16.50 *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

17.10 *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]Dept. of Chemical & Biomolecular Eng., University of Notre Dame, Notre Dame, IN, USA; [3]ISMAN, RAS, Chernogolovka, Moscow Region, Russia

17.30 *Break*

## Session CB-9.3 - SHS as Alternative Technology

*Chair:* Z. MANSUROV, Kazakhstan

18.00 *CB-9.3:IL01* **SHS and Casting**
**V.I. YUKHVID**, ISMAN, RAS, Chernogolovka, Moscow Region, Russia

18.30 *CB-9.3:L03* **Ultra-fast Densification of Nano- and Submicrograin Ceramics Based on SHS Reaction**
**ZHENGYI FU**, WEIMING WANG, HAO WANG, JINYONG ZHANG, YUCHENG WANG, Wuhan University of Technology, Wuhan, China

## Session CD-3 - Micro-/Nano-joining

*Room:* **ZENITH**

*Chair:* H. TSUDA, Japan

15.00 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

15.30 *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

16.00 *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

## Session CF-2 - Oxidation, Corrosion and Testing

*Room:* **SIRIO**

*Chair:* E.J. OPILA, USA

15.00 *CF-2:IL07* **UHTC Oxidation using Concentrated Solar Energy**
**M. BALAT-PICHELIN**, PROMES-CNRS Laboratory, Font-Romeu Odeillo, France

15.30 *CF-2:L08* **Influence of Oxidation Processes on Mechanical Properties of Silicon Nitride**
**H. KLEMM**, W. KUNZ, Fraunhofer IKTS Dresden, Germany

15.50 *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

16.10 *Break*

## Session CF-3 - Mechanical and Thermal Properties

*Chair:* R.A. ANDRIEVSKI, Russia

16.40 *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

17.10 *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

17.40 *CF-3:L08* **Modelling Damage and Creep Crack Growth in Ultra-High Temperature Ceramics**
**M. PETTINA'**, K. NIKBIN, Mechanical Engineering Dept., Imperial College London, London, UK; A. HEATON, P. BROWN, Defence Science and Technology Lab., Porton Down, Salisbury, Wiltshire, UK; W.E. LEE, Materials Dept., Imperial College London, London, UK

18.00 *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]Dept. of Mechanical, Energy and Materials Engineering, University of Extremadura, Badajoz, Spain; [2]Dept. of Condensed Matter Physics, University of Sevilla, Spain

18.20 *CF-3:L11* **Thermochemistry of Metal Borosilicate Glasses**
**P. KROLL**, Department of Chemistry and Biochemistry, The University of Texas at Arlington, Arlington, TX, USA

## Session CF-4 - Characterization and Analysis

18.40 *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

## Session CH-4 - Modelling and Simulation of Porous Structures and Properties

*Room:* **URANO**

*Chair:* A. ORTONA, Switzerland

15.00 *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

15.30 *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

16.00 *CH-4:IL03* **Adsorption Deformation of Micro- and Mesoporous Solids**
**A.V. NEIMARK**, Rutgers University, Piscataway, USA

16.30 *Break*

*Chair:* A.V. NEIMARK, USA

17.00 *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

17.20 *CH-4:IL05* **Modeling the Properties of Cellular Ceramics: From Foams to Lattices and Back to Foams**
**A. ORTONA**, SUPSI, Manno, Switzerland

17.50 *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 CI-5 - Smart and Multifunctional Thin Films and Coatings

*Room:* **GIOVE**

*Chair:* M. OSADA, Japan

15.00 *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

15.30 *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

16.00 *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

16.20 *Break*

16.50 *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

17.10 *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 CJ-3 - Multiferroics

*Room:* **VENERE**

*Chair:* JUNLING WANG, Singapore

15.30 *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

16.00 *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

16.30 *Break*

## Session CJ-4 - Semiconducting Ceramics

*Chair:* MOON-HO JO, Korea

17.00 *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

17.30 *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

17.50 *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-6.2 - Microfabrication, Device Design

*Room:* **LE PLEIADI**

*Chair:* F. TYHOLDT, Norway

15.00 *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

15.30 *CJ-6.2:IL03* **Piezoelectric MEMs: Fabrication, Testing, & Characterization**
**J.T. EVANS, Jr.**, Radiant Technologies, Inc., Albuquerque, NM, USA

16.00 *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

16.30 *Break*

*Chair:* SWEE LEONG KOK, Malaysia

17.00 *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

17.30 *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

## Session CK-4 - Multiferroic and Magnetoelectric Compounds

*Room:* **ORSA MAGGIORE**

*Chair:* D. MEIER, Switzerland

15.00 *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

15.30 *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

16.00 *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

16.20 *Break*

*Chair:* J. INIGUEZ, Spain

16.50 *CK-4:IL06* **Multifunctional Interfaces in Ferroic Oxides**
**D. MEIER**, M. FIEBIG, ETH Zuerich, Zuerich, Switzerland

17.20 *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

## Session CM-1 - Preparation and Characterization

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* W.M. KRIVEN, USA

15.00 *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

15.30 *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

15.50 *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

16.10 *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

16.30 *Break*

## Session CM-2 - Applications

*Chair:* W. YODSUDJAI, Thailand

17.00 *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

17.30 *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

18.00 *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

## Session CA-5 - Innovation in Fabrication and Technology

*Room:* **LE PLEIADI**

*Chair:* A.S. ZURUZI, Singapore

9.00 *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

9.30 *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

10.00 *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

10.30 *Break*

*Chair:* M. YOSHIMURA, Japan

11.00 *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

11.30 *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

12.00 *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

## Session CB-7 - Other Non Traditional or Novel Routes

*Room:* **AUDITORIUM**

*Chair:* T. SANO, Japan

9.00 *CB-7:IL01* **New Materials Processing under Strong Gravitational Field**
**T. MASHIMO**, Institute of Pulsed Power Science, Kumamoto University, Kumamoto, Japan

9.30 *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

10.00 *CB-7:L03* **Anisotropic Property and Nanostructure of Phosphate Glass**
**S. ITO**, S. INABA, H. HOSONO, J. ENDO, Tokyo Institute of Technology, Yokohama, Japan

10.20 *Break*

*Chair:* R. RIEDEL, Germany

10.50 *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

11.20 *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

11.40 *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

12.00 *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

## Session CB-9.4 - SHS Products Characterization, Application, Industrialization, Commercialization

*Room:* **ORSA MINORE**

*Chair:* A.S. MUKASYAN, USA

9.00 *CB-9.4:IL01* **Oxynitride and Nitride Luminescent Materials for Solid-state Lighting**
**CHANG WHAN WON**, Chungnam National University, Daejeon, Korea

9.30 *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

10.00 *CB-9.4:IL03* **SHS Technology Applied to Renewable Energy Efficient for Exergy Loss Minimization**
**O. ODAWARA**, Tokyo Institute of Technology, Nagatsuta, Yokohama, Japan

10.30 *Break*

## Session CB-9.5 - SHS-coupled Processes

*Chair:* R. ORRU', Italy

11.00 *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

11.30 *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

12.00 *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

## Session CD-3 - Micro-/Nano-joining

*Room:* **ZENITH**

*Chair:* K. VAN BENTHEM, USA

9.00 *CD-3:IL05* **Modeling Micro-laser Solidification for Microstructure Tailoring during Additive Manufacturing**
**M. BROCHU**, D.W. HEARD, R. GAUVIN, **J. MILLIGAN**, McGill University, Montreal, Canada

9.30 *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

10.00 *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

10.20 *Break*

## Session CD-4 - Application Engineering

*Chair:* F. SMEACETTO, Italy

10.50 *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

11.20 *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

11.50 *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

12.20 *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

12.50 *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

## Session CF-1 - Synthesis and Processing

*Room:* **SIRIO**

*Chair:* J. BINNER, UK

9.00 *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

9.30 *CF-1:L14* **Reaction Bonded Si3N4 (RBSN) / BN Composites for Industrial Applications**
**L. CAVALLI**, Petroceramics spa, Stezzano (BG), Italy

9.50 *CF-1:L15* **Development and Processing of SiAlON Nanoceramics 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

## Session CF-3 - Mechanical and Thermal Properties

10.10 *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

## Session CH-5 - Application of Porous Ceramics

*Room:* **URANO**

*Chair:* G.G. WICKS, USA

8.30 *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

9.00 *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

9.30 *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, Lab. for Hydrogen & Energy, Dübendorf, Switzerland; [2]University of Freiburg, Dept. of Crystallography, Freiburg i. Brsg.; [3]Dept. of Mechanical and Process Engineering, ETH Zurich, Switzerland

9.50 *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

10.10 *CH-5:L05* **Thermochemical Solar Energy Storage via Functionalized Porous Ceramic Structures**
**C. AGRAFIOTIS**, M. ROEB, C. SATTLER, German Aerospace Center - DLR, Köln, Germany

10.30 *Break*

*Chair:* A.M. CREAN, Ireland

11.00 *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, Lab. for Hydrogen & Energy, Dübendorf, Switzerland; [2]University of Freiburg, Institute of Earth and Environmental, Dept. of Crystallography; [3]Dept. of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland

11.30 *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

12.00 *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

12.20 *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

## Session CI-6 - Modelling and Simulation of Coatings and Films

*Room:* **GIOVE**

*Chair:* C.C. BERNDT, Autralia

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

10.30 *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

10.50 *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

## Session CJ-5 - Fast Ion-conducting Ceramics

*Room:* **ALBA 2**

*Chair:* E.N.S. MUCCILLO, Brazil

9.00 *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]Dept. 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, Laboratory for High Performance Ceramics, Duebendorf, Switzerland

9.20 *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

9.50 *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

10.20 *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

10.40 *Break*

## Session CJ-6.3 - Thin Film Piezoelectric MEMS/NEMS Applications

*Chair:* M. DE VITTORIO, Italy

11.10 *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

11.40 *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]Dept. of Material Science and Engineering, Pennsylvania State University University Park, PA, USA; [2]IBM TJ Watson Research Center

12.10 *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

## Session CK-5 - Coexistence of Superconductivity and Magnetism; Oxides with Diluted Magnetic Moments

*Room:* **ORSA MAGGIORE**

*Chair:* H. KATAYAMA-YOSHIDA, Japan

9.00 *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

9.30 *CK-5:IL03* **Phase Diagrams of Fe Based Superconductors**
**B. BUECHNER**, Institut fuer Festkoerperforschung, IFW Dresden and Institut fuer Festkoerperphysik, TU Dresden, Dresden, Germany

10.00 *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

10.30 *Break*

*Chair:* S. SANNA, Italy

11.00 *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

11.30 *CK-5:IL06* **Room Temperature Ferromagnetic Oxide Semiconductor**
**T. FUKUMURA**, Department of Chemistry, University of Tokyo, Tokyo, Japan

## Session CL-3 - Light Management for Active Applications

*Room:* **VENERE**

*Chair:* J. McKITTRICK, USA

8.30 *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]Dept. 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, France

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

9.30 *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

9.50 *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

10.10 *Break*

*Chair:* B. VIANA, France

10.40 *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

11.10 *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

11.40 *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

12.10 *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 CM-1 - Preparation and Characterization

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* H.W. NUGTEREN, The Netherlands

9.00 *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

9.30 *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

10.00 *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

10.20 *Break*

*Chair:* M. ALZEER, New Zealand

10.50 *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

11.10 *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

11.30 *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

11.50 *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

## Session CB-9 - SHS-coupled Processes

*Room:* **ORSA MINORE**

*Chair:* A.S. ROGACHEV, Russia

15.00 *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

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

15.50 *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

16.10 *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

## Session CD-4 - Application Engineering

*Room:* **ZENITH**

*Chair:* J. JANCZAK-RUSCH, Switzerland

15.00 *CD-4:IL06* **Microwelding for Implantable Medical Devices**
**M.W. REITERER**, M.D. BREYEN, Medtronic, Inc., Corp. Core Technologies, Minneapolis, MN, USA

15.30 *CD-4:IL07* **Glass and Glass-ceramic Based Sealants for Solid Oxide Cells**
**F. SMEACETTO**, Politecnico di Torino, Torino, Italy

16.00 *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

16.30 *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

## Session CF-4 - Characterization and Analysis

*Room:* **SIRIO**

*Chair:* W.G. FAHRENHOLTZ, USA

15.00 *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

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

16.00 *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

16.20 *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

16.40 *CF-4.1:L07* **Modelling and Experimental Thermodynamic Approach of High Temperature IVB-metal Carbides and Oxy-carbides**
**O. RAPAUD**, F. RÉJASSE, N. PRADEILLES, A. MAÎTRE, G. TROLLIARD, SPCTS, Limoges Cedex, France

## Session CH-5 - Applications of Porous Ceramics

*Room:* **URANO**

*Chair:* P. COLOMBO, Italy

15.00 *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

15.30 *CH-5:IL12* **Ceramics for Filtration**
**J. ADLER**, R. KRIEGEL, U. PETASCH, H. RICHTER, I. VOIGT, M. WEYDT, Fraunhofer IKTS, Dresden/Hermsdorf, Germany

16.00 *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

16.30 *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

16.50 *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

17.10 *CH-5:L16* **Characterization of Novel Designed Tialite-based Ceramic Filter for Aftertreatment Application**
**K. IWASAKI**, Sumika Ceramics Poland Sp.zo.o., Wroclaw, Poland

## Session CJ-5 - Fast Ion-conducting Ceramics

*Room:* **LE PLEIADI**

*Chair:* J.A. VARELA, Brazil

15.00 *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

15.30 *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

16.00 *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

16.30 *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

## Session CK-6 - Novel Synthesis, Characterization and Application

*Room:* **ORSA MAGGIORE**

*Chair:* D. MARRE', Italy

15.00 *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

15.30 *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

16.00 *CK-6:IL03* **SPINWIRE®, Magnetism for Security and Traffic Management**
**X. MARTI**, J. GARCES, IGS Reserach, La Pobla de Mafumet (Tarragona), Spain

## Session CL-4 - Advances in Research and Applications

*Room:* **VENERE**

*Chair:* M. FERRARI, Italy

15.00 *CL-4:IL01* **Multi-harmonic Generation in Micro-structured Ferroelectrics**
**M.O. RAMIREZ**, L. MATEOS, P. MOLINA, L.E BAUSÁ, Dpto. Física de Materiales and Instituto Nicolás Cabrera, Universidad Autónoma de Madrid, Madrid, Spain

15.30 *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

16.00 *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

16.30 *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

## Session CM-2 - Applications

*Room:* **GUTTUSO (Hotel Croce di Malta)**

*Chair:* K.J.D. MACKENZIE, New Zealand

15.00 *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

15.30 *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

16.00 *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

16.20 *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

# POSTER DISCUSSION

THURSDAY JUNE 12: 17.00 - 19.00*

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

FRIDAY JUNE 13: 16.30 - 18.30

ALL POSTERS

**Posters desmounting:**

After the discussion session of June 13.

* Presenting Authors of Posters of Symposia CC - CE - CG - CN - CO - CP who leave the Congress before June 13, may remove their posters after discussion session of June 12.

## SYMPOSIUM CA

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

*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. PETRAKLI**[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**
**R.R. RIBEIRO**, 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: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: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: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. WÊGLARZ, 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* **Influence of the Ceramic Powders Crystallite Substructure on the Sintering Kinetics**
**B.A. TARASOV**, M.S. YURLOVA, V.G. BARANOV, V.I. SKRITNIY, NRNU MEPHI, Russia

*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: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: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], R. DE OLIVEIRA MAGNAGO[1, 2], [1]UERJ-FAT - Universidade do Estado do Rio de Janeiro, Brazil; [2]UNIFOA, Brazil

*CA:HP42* **The Influence of Metal Impurity Content in Raw Si Powder on the Characteristics of Sintered Reaction Bonded Silicon Nitrides**
**D. KUSANO**, H. HYUGA, Y. ZHOU, K. HIRAO, Fine Ceramics Research Association, AIST Chubu, Nagoya, Japan

*CA:HP43* **The Effect of the Si3N4 diluent for Sintered Reaction-bonded Silicon Nitride**
**S. IWAKIRI**, Y. ZHOU, H. HYUGA, K. HIRAO, Fine Ceramics Research Association, AIST Chubu, Nagoya, Japan

*CA:HP45* **Grinding and Characterisation of Nano Pigments for Inkjet Decoration of Ceramic Tiles**
**E. KUCUKOGLU**[1], E. OZEL[2], [1]Ceramic Research Center, Eskisehir, Turkey; [2]Anadolu University, Department of Material Science and Engineering, Eskisehir, Turkey

*CA:HP46* **Influencing Parameters of Intercalation of Solid Ammonium Acetate into Kaolinite**
**A. KOVACS**, E. MAKÓ, University of Pannonia, Veszprem, Hungary

## SYMPOSIUM CB

# PROGRESS IN NON CONVENTIONAL AND NOVEL MANUFACTURING ROUTES TO CERAMICS

*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: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: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:HP22* **Self-assembled α-Fe2O3 Mesocrystals/Graphene Nanohybrid for Enhanced Electrochemical Capacitor**
**LIAN GAO**, SHUHUA YANG, XUEFENG SONG, PENG ZHANG, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai, China

*CB:HP23* **Coacervate-mediated Mineralization of Calcium Carbonate Microparticles for Drug Delivery**
**V.R. LAUTH**, M. MAAS, K. REZWAN, Advanced Ceramics Institute, University of Bremen, Bremen, Germany

*CB:HP24* **Facile Synthesis of Nitrogen-doped Graphene-ultrathin MnO2 Sheets Composites and their Electrochemical Performances**
**XUEFENG SONG**, SHUHUA YANG, PENG ZHANG, LIAN GAO, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai, China

*CB:HP25* **Two-step Synthesis of Ultrafine and Nanosized Powders of Tungsten Oxide**
**I.V. NIKOLAENKO**, G.P. SHVEIKIN, Institute of Solid State Chemistry, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia

*CB:HP26* **Fabrication Novel Nanostructural Tungsten Based Composites**
**A. PEIKRISHVILI**, E. CHAGELISHVILI, V. PEIKRISHVILI, M. TSIKLAURI, A. DGEBUADZE, Science and Technology Center in Ukraine, Tbilisi, Georgia

*CB:HP27* **Bioactive Materials Manufactured from Natural Calcium Phosphates**
**A. DOBRADI**, M. ENISZ-BODOGH, K. KOVACS, University of Pannonia, Veszprém, Hungary

## Special Session CB-9

## SHS CERAMICS

*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

## SYMPOSIUM CC

# JOINING INORGANIC MATERIALS AT DIFFERENT LENGTH SCALES

*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

## SYMPOSIUM CD

# JOINING INORGANIC MATERIALS AT DIFFERENT LENGTH SCALES

*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:HP05* **Influencing Factors on the Reactive Wetting of Cu-Sn-Ti- and Ag-Cu-Ti-alloys on Silicon Carbide – Microstructural Observations, Effects and Multivariate Modelling**
W. TILLMANN, **J. PFEIFFER**, L. WOJARSKI, M. BRUNS, Institute of Materials Technology, TU Dortmund, Germany

## SYMPOSIUM CE

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

*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: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: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

## SYMPOSIUM CF

# HIGH AND ULTRA HIGH TEMPERATURE CERAMICS FOR EXTREME ENVIRONMENTS

*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: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: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: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:HP14* **Stressed Oxidation Life Predication of 3D C/SiC in Static Atmospheres**
**XINGANG LUAN**, LAIFEI CHENG, Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University, Xi'an, Shaanxi, China

*CF:HP15* **Influence of B4C, SiC and Si3N4 Additions on Microstructures and Selected Properties of Titanium Nitride Matrix Materials obtained by HPHT Method**
**J. CYBORON**, P. KLIMCZYK, P. FIGIEL, M. KAROLUS, The Institute of Advanced Manufacturing Technology, Cracow, Poland

## SYMPOSIUM CG

# PROGRESS IN NANO-LAMINATED TERNARY CARBIDES AND NITRIDES (MAX PHASES) AND DERIVATIVES THEREOF (MXENES)

*CG:HP02* **Optical and Electronic Properties of Two-dimensional Ti3C2 Epitaxial Thin Films**
**J. HALIM**[1,2,3], M.R. LUKATSKAYA[1,2], K.M. COOK[1,2], JUN LU[3], C.R. SMITH[1,2], L.-A. NÄSLUND[3], S.J. MAY[1], L. HULTMAN[3], Y. GOGOTSI[1,2], P. EKLUND[3], M.W. BARSOUM[1], [1]Dept. of Materials Science & Engineering, Drexel University, Philadelphia, PA, USA; [2]A.J. Drexel Nanotechnology Institute, Drexel University, Philadelphia, PA, USA, Dept. of Materials Science & Engineering, Drexel University, Philadelphia, PA, USA; [3]Thin Film Physics Division, Dept. of Physics, Chemistry and Biology (IFM), Linköping University, Linköping, Sweden

## SYMPOSIUM CH

# POROUS CERAMICS FOR ENVIRONMENTAL PROTECTION, ENERGY-RELATED TECHNOLOGIES AND ADVANCED INDUSTRIAL CYCLES

*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: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: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: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:HP10* **Thermal Stability of Nd-added Pt/SiO2 Catalyst for Oxidation of NO to NO2**
**YONG KWON CHUNG**, JUN YOUNG CHO, GWI RANG KIM, JAE HUN HAN, CHAN PARK, Department of Materials Science and Engineering, Seoul National University, Seoul, Rep. of Korea

*CH:HP11* **Mechanical and Durable Properties of Ni-YSZ Electrode under High Temperature for Solid Oxide Electrolysis Stack**
**BYUNG-KOOG JANG**[1], T. MATSUDAIRA[2], S. KITAOKA[2], SUNG-DONG KIM[3], SANG-KUK WOO[3], [1]National Institute for Materials Science, Japan; [2]Japan Fine Ceramics Center, Japan; [3]Korea Institute of Energy Research, Korea

*CH:HP12* **Co-assembly and One-pot Synthesis of Functionalized Mesoporous Silicas with the Use of Polyethyleneimines**
**A. PAPAVASILIOU**, E.G. DEZE, S.K. PAPAGEORGIOU, F.K. KATSAROS, Demokritos National Centre for Scientific Research, Institute of Advanced Materials, Physicochemical Processes, Nanotechnology and Microsystems, Athens, Greece; J.L. NYALOSASO, P. COOL, University of Antwerp, Department of Chemistry, Antwerpen, Belgium

## SYMPOSIUM CI

# CERAMIC THIN FILMS AND COATINGS FOR PROTECTIVE, TRIBOLOGICAL AND MULTIFUNCTIONAL APPLICATIONS

*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:P05* **Mullite-rare Earth Silicate EBC Coatings**
**KEE SUNG LEE**, FAN JIE FEN, School of Mechanical Systems Engineering, Kookmin University, Seoul, Korea

*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: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

*CI:HP14* **APCVD Synthesis of Ti-doped Hematite Photoanode based on Ferrocene Evaporation**
SHIPU LI, **PENG ZHANG**, XUEFENG SONG, LIAN GAO, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai, China

*CI:HP15* **Synthesis and Gas Sensing Properties of TiO2-ZnO Core-Shell Nanowires**
**JUN-SEONG LEE**, SUN-WOO CHOI, AKASH KATOCHI, JAE-HUN KIM, SANG SUB KIM, Department of Materials Science and Engineering, Inha University, Incheon, Rep. of Korea

*CI:HP16* **Synthesis of CuO-TiO2 Core-shell Nanowires and their Sensing Properties**
**JAE HYOUNG LEE**, SUN-WOO CHOI, AKASH KATOCH, GUN-JU SUN, SANG SUB KIM, Department of Materials Science and Engineering, Inha University, Incheon, Rep. of Korea

*CI:HP17* **Reactive Chemical Vapor Deposition of (111)-oriented TixAl1-xN Thin Films on Monocrystalline Aluminium Nitride**
**H. SHIMODA**[1, 2], F. MERCIER[1], S. LAY[1], E. BLANQUET[1], [1]SIMaP, CNRS, Grenoble University, Saint Martin d'Heres, France; [2]Tohoku University, Sendai, Japan

*CI:HP18* **High Temperature Thick Film Resistors for SiC Power Module Applications**
**T. SHIMIZU**, K. TANAKA, Fine Ceramics Research Association (FCRA), KOA Corporation, K. SHINODA, T. TSUCHIYA, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; Y. NAKAMURA, M. MIYAYAMA, University of Tokyo, Japan

## SYMPOSIUM CJ

## ADVANCES IN ELECTROCERAMICS

*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: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**, Dept. 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: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: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* **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: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: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

*CJ:HP20* **The Effect of Barium Carbonate Morphology on the Properties of Barium Titanate**
**S. CAN**[1], G.O. DEMIREL[2], A.M. AVCI[2], E. SUVACI[1], E. OZEL[1], [1]Anadolu University, Department of Materials Science and Engineering, Iki Eylul Campus, Eskisehir, Turkey; [2]ENTEKNO Ltd., Anadolu Teknopark, Eskisehir, Turkey

*CJ:HP21* **Effects of Hydrothermally Synthesized Powder Properties on Electrical and Optical Properties of Magnetron Sputtered $(SnO_2)_x(ZnO)_{1-x}$ (x=0.0-0.5) Thin Films**
**I.G. TUNCOLU**[1], C. ACIKSARI[1], E. SUVACI[1], E. OZEL[1], S.I. REMBEZA[2], E.S. REMBEZA[2], E.YU. PLOTNIKOVA[2], N.N. KOSHELEVA[2], [1]Anadolu University, Dept. of Materials Science and Engineering, Iki Eylul Campus, Eskisehir, Turkey; [2]Voronezh State Technical University, Department of Semiconductor Electronics and Nanoelectronics, Voronezh, Russia

*CJ:HP22* **Effects of Hydrothermally Synthesized Targets Properties on Physical and Electrical Properties of Magnetron Sputtered $(SnO_2)_x(ZnO)_{1-x}$ (x = 0.5-1.0) Films for Gas Sensor Application**
**C. ACIKSARI**[1], I.G. TUNCOLU[1], E. SUVACI[1], E. OZEL[1], S.I. REMBEZA[2], E.S. REMBEZA[2], E.YU. PLOTNIKOVA[2], N.N. KOSHELEVA[2], [1]Anadolu University, Dept. of Materials Science and Engineering, Iki Eylul Campus, Eskisehir, Turkey; [2]Voronezh State Technical University, Department of Semiconductor Electronics and Nanoelectronics, Voronezh, Russia

## SYMPOSIUM CK

## FUNCTIONAL MAGNETIC OXIDES

*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: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

*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-$\alpha$-SiAlON (M=Ca, Ba, Sr) Doped by Europium**
**D. MICHALIK**, T. PAWLIK, M. SOPICKA-LIZER, R. LISIECKI, Silesian University of Technology, Katowice, Poland

*CL:P06* **Influence of m and n Parameters of Ca-$\alpha$-sialon:Eu Solid Solution on Phosphor's Optical Properties**
**T. PAWLIK**, D. MICHALIK, M. SOPICKA-LIZER, S. SERKOWSKI, Department of Material Science, Silesian University of Technology, Gliwice, Poland

*CL: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: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

*CL:HP17* **Synthesis of Dual Fluorescently Labeled Silica Nanoparticles via a Reverse Microemulsion Method for in Vitro Studies**
**S. SHAHABI**, L. TRECCANI, K. REZWAN, Advanced Ceramics, University of Bremen, Bremen, Germany

*CL:HP18* **Huge Susceptibility Increase within the (1-x) TeO2 + x TeO3 Crystal System: Ab Initio Calculation Study**
**A. PLAT**, M. COLAS, J. CORNETTE, M.B. SMIRNOV, O. NOGUERA, O. MASSON, A.P. MIRGORODSKY, P. THOMAS, Université de Limoges, Laboratoire de Sciences des procédés céramiques et traitements de surface (SPCTS), Limoges, France

## SYMPOSIUM CM

# INORGANIC POLYMERS (GEOPOLYMERS) AND GEOCEMENTS: ENVIRONMENTALLY FRIENDLY CERAMIC MATERIALS FOR LOW-TECHNOLOGY AND HIGH-TECHNOLOGY APPLICATIONS

*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:HP06* **Strength Optimization of Geopolymers Containing Blast Furnace Slags as Sole Binder**
**I. BALCZAR**, T. KORIM, K. KOVÁCS, University of Pannonia, Veszprém, Hungary

## SYMPOSIUM CN

## SCIENCE AND TECHNOLOGY FOR SILICATE CERAMICS

*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: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: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: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: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

*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

*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

# *Notes*

# *Social Programme*

## *Welcome Party*
## *"Terme Tettuccio"*
*Montecatini Terme*

*Monday June 9*
*20.30 - 23.30*

The Welcome Party of CIMTEC 2014 will be held on June 9 evening at the magnificent "Tettuccio" ("Small Roof") establishment, the most important and renowned Spa in Montecatini.
The Tettuccio establishment, known as the "bagno nuovo" (new baths) from as early as the 14th century, derived its name from the canopy (or tettoia) that covered the spring. The building, designed by architect Gaspero Maria Paoletti, between 1779 and 1781, had a particularly striking rusticated door. In 1916, Florentine architect Ugo Giovannozzi drew up plans to renovate the entire complex. This project, based on the concept of the Roman baths, was for a Spa establishment set in leafy grounds planted with Lebanon cedars, palms, sequoias, acacias, laurel trees, wisteria, pines and lime trees, and adorned with impressive colonnades, rostra, fountains and large flower-beds bordered by box hedges. The building's main focus was to be a conch-shaped granite fountain, held up by a group of bronze statues of marine figures, whose waters would be collected in a pool with a parapet decorated with seahorses.

At the Welcome Party delegates with enjoy a taste of a large variety of the world renowned Tuscania traditional dishes and drinks in an elegant and friendly environment.

*Entrance ticket for non-registered companions: 30.00 EUR*

## *Gala Concert*
## *"Terme Tettuccio" **

*Wednesday June 11*
*21.30 - 23.00*

The "Gala Concert" will be performed by the "Quartetto D'Archi dell'Arena di Verona" ("String Quartet of the Arena di Verona" in the magnificent open spaces of "Terme Tettuccio".
The string quartet of the Arena of Verona springs up from the idea of conveying into chamber language the authentic magic of the Arena the millenary temple where music has enchanted and moved the audience from all over the world for centuries.
The original and deep musical message proposed by the Arena String Quartet expresses the passions, dramas, possible or impossible love stories which are inborn in melodrama; succeeding in this way to transmit the emotions of the atmosphere of Arena, the most beautiful theatre in the world.

**Quartetto d'Archi dell'Arena di Verona**
Gunther Sanin 1st Violino
Vincenzo Quaranta 2nd Violino
Sara Airoldi Violoncello
Luca Pozza Viola

**Pianista:** Roberto Corlianò

**Soprano:** Teresa di Bari

**Tenore:** Aldo Caputo

**Technical Management**
Associazione Culturale "Il Parnaso"

The programme will include pieces by: Bellini, Bizet, Mascagni, Puccini, Messenet, Falvo/Fusco, and Verdi.

**In case of bad weather, the Concert will be held at "Teatro Imperiale", Piazza Massimo D'Azeglio 5, Montecatini Terme.*

*Entrance ticket for non-registered companions: 20.00 EUR (subjected to place availability)*

## *Conference Dinner*
## *"Fattoria Medicea"*

*Friday June 13*
*20.00 - 23.30*

The CIMTEC 2014 Conference Dinner will be held at the "Fattoria Medicea" (Medici Farm) on Friday, June 13 evening (20.00-23.30). Located in Monsummano Terme, near Pistoia in the heart of the Valdinievole area, the Fattoria Medicea was built in 1515 by order of the Grand Duke Ferdinando I, the Grandson of Lorenzo de' Medici, on the design and under the management of the architect John Mechini. Today, after a long and careful restoration, commissioned in 1995 by the Prince Borghese family, the present owners, this extraordinary property has regained its unique majesty and is the ideal location for prestigious national and international events.

*Entrance ticket for non-registered companions: 60.00 EUR (subjected to place availability)*

# *Optional Tours*

## *PISTOIA*

*Monday June 9, afternoon*
*14.30 - 19.00*

Pistoia, characterized by Medieval buildings, is an ideal destination for those who want to know a typical Tuscan town far away from mass tourism. In Pistoia guide tour begins at Piazza S. Francis, from which you will soon reach the Romanesque church of S. Andrea with the beautiful marble pulpit by Giovanni Pisano, one of the most interesting works of art in Pistoia. Moving on to the Hospital of the Log, with its wonderful facade, we reach the Piazza del Duomo with its Romanesque cathedral, baptistery and the well-preserved city's buildings. Then we cross the bustling market town of Piazza della Sala to reach the church of S. John Fuoricivitas with its interesting pulpit of Fra 'William of Pisa and the Visitation of Luca della Robbia.

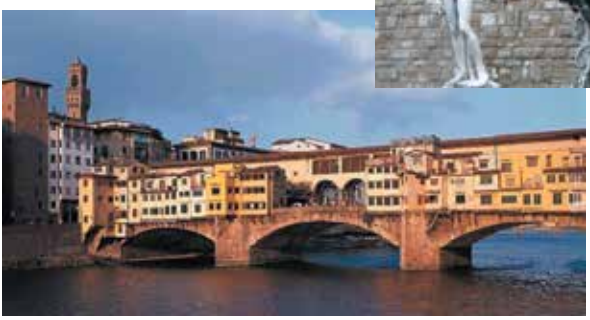
*Meeting point: entrance of the "Palazzo dei Congressi" at 14.30. Return to Montecatini Terme at about 19.00. The participation fee (25 EUR) includes transportation, city entrance tax, English speaking hostess and local guide.*

## *FIRENZE (FLORENCE)*

*Tuesday June 10, full day*
*9.00 - 19.00*

In the morning visit to the City Center. An unrivalled itinery of art and culture in the heart of Florence, Cathedral (Santa Maria del Fiore), with its Cupola by Brunelleschi, the Campanile (Bell Tower) by Giotto, and the Baptistery with the famous Gates of Paradise by Ghiberti and Andrea Pisano, Piazza della Signoria dominated by imposing Palazzo

della Signoria flanked by the Loggia of Lanzi and the beautiful Neptune Fountain, Ponte Vecchio, the Uffizi Gallery, etc. In the afternoon, after lunch, visit to Poggio Imperiale, Piazzale Michelangelo and San Miniato Church.



*Meeting point: entrance of the "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 19.00.*
*The participation fee (60 EUR) includes transportation, city entrance tax, English speaking hostess, local guide and lunch.*

# *AREZZO*

*Wednesday June 11, morning*
*8.30 - 13.30*

Arezzo is a beautiful city in Tuscany, where literature, art, architecture and history blend perfectly. Although overshadowed by the fame of Florence, Arezzo, located about seventy miles to the south-west, has nothing to envy to the Tuscan capital. And it is the city that gave birth to Francesco Petrarca, one of the most famous poets of Italy, known for his major work, Canzoniere, where he sang his love for Laura.
But it is not only Petrarch to be born in this city: to Arezzo are connected a string of famous men, as Cilnio Gaius Maecenas, one of the famous protagonists of Augustan Rome, the politician Henry Head, the painter Margaritone and Spinello Aretino, the poets Cenne from the Guitar and Guittone (1235-1294), painter and architect Margaritone (second half of the thirteenth century), the official political Leonardo Bruni, Andrea Cesalpino the philosopher, the architect Vasari, who signed some of the most important works of the city and the musician Marcantonio Baskets.

It is a medieval city, as expressed by the two most important monuments of the city itself, the Cathedral and the Medici Fortress. There are many places of historical and artistic interest such as the Cathedral or the Church of San Donato, the fourteenth-century church of San Domenico, passing by the church of Santa Maria and Basilica of San Francesco. Continuing along the buildings lay as one of the fraternity, which mixes Gothic and Renaissance architecture, or the birthplace of Petrarch, and the Palazzo dei Priori.

*Meeting point: entrance of "Palazzo dei Congressi" at 8.30. Return to Montecatini Terme at about 13.30.*
*The participation fee (30 EUR) includes transportation, city entrance tax, English speaking hostess and local guides.*

# *SIENA - SAN GIMIGNANO*

*Thursday June 12, full day*
*9.00 - 19.30*

Takes you through one of the most attractive landscapes of Central Italy, with wooded hills and valleys and the renowned Chianti area, famous throughout the world for its high-quality wines. Siena is a

treasure of history and art with its rich School of Sienese Painting, its marvellous Cathedral, the Palazzo Comunale rising majestically from the lovely fan-shaped Piazza del Campo, the Tower of Mangia, San Domenico, Piazza Salimbeni, Palazzo Ghigi, Piazza del Capitano, etc. It will leave unforgettable memories.

In the afternoon, visit to S. Gimignano, a small town famous for its numerous towers. It is a real gem of Medieval architecture which takes you back to the time of great battles and romantic love stories, as described by minstrels' tales.

*Meeting point: entrance of the "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 19.30.*
*The participation fee (65 EUR) includes transportation, cities entrance taxes, English speaking hostess, local guides and lunch.*

# *Tour to PISA*

*Friday June 13, morning*
*9.00 - 13.30*

Shown is one of the loveliest architectural complexes in the world. On a large smooth lawn stands the Cathedral, the Baptistery and the famous Leaning Tower, a unique group of buildings in an unrivaled setting, the legacy of a past age which now belongs to all mankind. Along the southern side of the piazza lie the buildings of the old University, center of research and thought and famous for scientific disciplines.

*Meeting point: entrance of the "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 13.30. The participation fee (30 EUR) includes transportation, city entrance tax, English speaking hostess and local guide.*

1. Palazzo dei Congressi
2. Hotel Tamerice Principe
3. Hotel Croce di Malta
4. Terme Tettuccio
5. Teatro Imperiale