

## Opening Ceremony

(Location: TBD)

**Chair:** Yu Zhou, *Harbin Institute of Technology*

**08:30–08:45** Welcome and opening remarks

1. Ruiping Gao, President of the Chinese Ceramic Society
2. Municipal Government Leader/Speech by Futian District Leader
3. Yudong Huang, President of Harbin Institute of Technology, Shenzhen

## Plenary Session

**Session Chair:** Yanchun Zhou, *Zhengzhou University*  
 Jing-Feng Li, *Tsinghua University*

**08:45–09:20**



**Rajendra K. Bordia**, *Clemson University, USA*

Academician of the World Academy of Ceramics

Title: **Analysis and Simulation Guided Processing and Properties of Anisotropic Hierarchical Porous Ceramics for Energy Conversion and Storage**

**09:20–09:55**



**Hideo Hosono**, *Tokyo Institute of Technology, Japan*

Distinguished Fellow, National Institute for Materials Science  
 Academician of the World Academy of Ceramics

Title: **Hidden Potential of Abundant Materials: Frontier Opened from Transparent Oxide Research**

**09:55–10:15**

**Break**

**Session Chair:** Wei Pan, *Tsinghua University*

Hua-Tay Lin, *Guangdong University of Technology*

Dechang Jia, *Harbin Institute of Technology*

**10:15–10:50**



**Shaoming Dong**, *Shanghai Institute of Ceramics, China*

Academician of Chinese Academy of Engineering  
 Academician of the World Academy of Ceramics

Title: **Design and Construction of Carbon Fiber Reinforced Ultra-high Temperature Ceramic Matrix Composites**

**10:50–11:25**



**Hui-Suk Yun**, *Korea Institute of Materials Science (KIMS), Korea*

Head of Advanced Biomaterials Research Department

Title: **Novel Multi-material Additive Manufacturing Technologies for Biomedical Applications**

**11:25–12:00**



**Steven J. Zinkle**, *University of Tennessee, USA*

Member of National Academy of Engineering  
 Academician of the World Academy of Ceramics

Title: **High Performance Ceramic Materials for the Extreme Environments of Fission and Fusion Energy Systems**

**Symposium 1: Virtual Materials Design and Ceramic Genome  
(Location: TBD)**

**Session Chair:** Chao Wang, *Harbin Institute of Technology*

**13:30 (S1-01) Recommender System for Discovery of Inorganic Crystals (Keynote)**

Isao Tanaka<sup>1,2</sup>

<sup>1</sup>*Dept. Mater. Sci. Eng., Kyoto University*

<sup>2</sup>*Nano Research Lab., JFCC*

**14:00 (S1-02) Theoretical Investigation of Water Molecule Adsorption Behavior on X<sub>2</sub>-RE<sub>2</sub>SiO<sub>5</sub> (RE=Lu, Yb, Tm, Er, Ho, Dy, Tb) Surface (Keynote)**

Jiemin Wang<sup>1,\*</sup>, Mei Liu<sup>1,2</sup>, Jingyang Wang<sup>1</sup>

<sup>1</sup>*Advanced ceramic and composite division, Institute of Metal Research, CAS*

<sup>2</sup>*School of Materials Science and Engineering, University of Science and Technology of China*

**14:30 (S1-03) Crystal Structure and Elasticity of Alumina-Rich Spinel (Invited)**

Bingtian Tu<sup>1,\*</sup>, Ye Wu<sup>2</sup>, Wei Xu<sup>3</sup>, Hao Wang<sup>1,\*</sup>

<sup>1</sup>*State Key Lab of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

<sup>2</sup>*School of Science, Wuhan University of Technology*

<sup>3</sup>*Chemistry Institute for Synthesis and Green Application, Ningbo University*

**14:55 (S1-04) Ceramic Genome of Sintered SiC: Insight from  $\mu$ SHD (Invited)**

Zhiheng Huang<sup>1,\*</sup>, Kaiwen Zheng<sup>1</sup>, Dechang Jia<sup>2</sup>, Hua-Tay Lin<sup>3</sup>, Yuezhong Meng<sup>1</sup>

<sup>1</sup>*The Key Laboratory of Low-carbon Chemistry & Energy Conservation of Guangdong Province, and School of Materials Science and Engineering, Sun Yat-sen University*

<sup>2</sup>*Institute for Advanced Ceramics, and School of Materials Science and Engineering, Harbin Institute of Technology*

<sup>3</sup>*School of Electromechanical Engineering, Guangdong University of Technology*

**15:20 (S1-05) Microstructure Control of (K,Na)NbO<sub>3</sub> Lead-Free Ceramics and Enhanced Electric-Field-Induced Strain via Rapid Sintering Method**

Ran Chen<sup>1</sup>, Juanjuan Xing<sup>1,\*</sup>, Faqiang Zhang<sup>2</sup>, Hui Gu<sup>1</sup>

<sup>1</sup>*School of Materials Science and Engineering, Shanghai University*

<sup>2</sup>*Shanghai Institute of Ceramics*

**15:40 Break**

**Session Chair:** Bingtian Tu, *Wuhan University of Technology*

**16:00 (S1-06) Machine Learning Design of High Entropy Ceramics (Keynote)**

Shijun Zhao<sup>\*</sup>, Jun Zhang; *City University of Hong Kong*

**16:30 (S1-07) A Deep Learning Interatomic Potential Developed for Atomistic Simulation of Zirconia (Invited)**

Chao Wang; *Harbin Institute of Technology*

**16:55 (S1-08) Quantifying Configurational Entropy of High Entropy Ceramics Enabled by Machine-Learned Cluster Expansion Method (Invited)**

Yanhui Zhang; *School of materials science and engineering, Yanshan University*

**17:20 (S1-09) The Effect of Impurities on The Structural Transitions in MgO Grain Boundaries**

Qian Chen<sup>1</sup>, Mitsuhiro Saito<sup>2</sup>, Kazuaki Kawahara<sup>2</sup>, Kazutoshi Inoue<sup>1</sup>, Atsutomo Nakamura<sup>3</sup>, Yuichi Ikuhara<sup>1,2,\*</sup>

<sup>1</sup>*Advanced Institute for Materials Research, Tohoku University*

<sup>2</sup>*Institute of Engineering Innovation, The University of Tokyo*

<sup>3</sup>*Graduate school of Engineering Science, Osaka University*

**Symposium 2: Advanced Characterization, Testing, and Analysis of Materials  
(Location: TBD)**

**Session Chair:** Yunseok Kim, *Sungkyunkwan University*

**13:30 (S2-01) Grain Boundary Atomic Structures and their Dynamics in Ceramics (Keynote)**

Yuichi Ikuhara<sup>1,2,3</sup>

<sup>1</sup>*Institute of Engineering Innovation, The University of Tokyo*

<sup>2</sup>*WPI, Advanced Institute for Materials Research, Tohoku University*

<sup>3</sup>*Nanostructures Research Laboratory, Japan Fine Ceramic Center*

**14:00 (S2-02) Atomic Structures of Polar Topologies in Oxide Films (Keynote)**

Yun-Long Tang

Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

**14:25 (S2-03) In-situ Stressing and Biasing Transmission Electron Microscopy of Ferroelectrics (Invited)**

Xiaozhou Liao<sup>1,\*</sup>, Zibin Chen<sup>1,2</sup>, Qianwei Huang<sup>1</sup>, Ying Liu<sup>1</sup>

<sup>1</sup>School of Aerospace, Mechanical and Mechatronic Engineering, University of Sydney

<sup>2</sup>Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University

**14:50 (S2-04) Direct Observation of Cation Diffusion using In Situ Scanning Transmission Electron Microscopy (Invited)**

Xiahua Sang; Wuhan University of Technology

**15:15 (S2-05) Combinatorial Material Chip Synthesis and High Throughput Screening on Ta<sub>x</sub>Hf<sub>1-x</sub>C Ternary Ceramics: Exploration of Chemical Composition with Optimized Hardness and Oxidation Resistance**

Xirui Lv, Yiming Lei, Jie Zhang\*, Jingyang Wang

Advanced Ceramics and Composites Division, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

**15:35 Break**

Session Chair: Yuichi Ikuhara, Japan Fine Ceramic Center

**16:00 (S2-06) Highly Enhanced Ferroelectricity in HfO<sub>2</sub>-based Ferroelectrics via Defect Engineering (Keynote)**

Yunseok Kim

School of Advanced Materials Science and Engineering, Sungkyunkwan University (SKKU)

**16:30 (S2-07) Atomic Structural Visualization on Ho<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> Using iDPC-STEM Technique and its Correlation with Thermal Expansion as Advanced Environmental Barrier Coating (Invited)**

XiRui Lv, Yixiu Luo, Jingping Cui, Jie Zhang\*, Lei Zhang, Jingyang Wang

Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

**16:55 (S2-08) Correlation Between Local Subtle Structure Fluctuation and Properties in Functional Materials (Invited)**

Qiang Zheng; National Center for Nanoscience and Technology

**17:20 (S2-09) Spin Polarization-assisted Dopant Segregation at a Coherent Phase Boundary**

Yixiao Jiang<sup>1,2</sup>, Hongping Li<sup>3,4</sup>, Tingting Yao<sup>1,2</sup>, Yujia Wang<sup>1</sup>, Deqiang Yin<sup>3</sup>, Chunlin Chen<sup>1,2,3,\*</sup>, Xiuliang Ma<sup>1,5,\*</sup>, Hengqiang Ye<sup>2</sup>, Yuichi Ikuhara<sup>3,6,7</sup>

<sup>1</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

<sup>2</sup>Jihua Lab

<sup>3</sup>Advanced Institute for Materials Research, Tohoku University

<sup>4</sup>Institute for Advanced Materials, School of Materials Science and Engineering, Jiangsu University

<sup>5</sup>State Key Lab of Advanced Processing and Recycling on Non-ferrous Metals, Lanzhou University of Technology

<sup>6</sup>Institute of Engineering Innovation, The University of Tokyo

<sup>7</sup>Nanostructures Research Laboratory, Japan Fine Ceramics Center

**17:40 (S2-10) High Temperature X-ray Diffraction Study on Incommensurate Composite Crystal (Mn,Fe,V)Si<sub>2</sub>**

Toshiaki Chiba\*, Kei Hayashi, Yuzuru Miyazaki

Department of Applied Physics, Graduate School of Engineering, Tohoku University

**Symposium 3: Advanced Powder Processing and Green Manufacturing Technologies  
(Location: TBD)**

Session Chair: Jingxian Zhang, Shanghai Institute of Ceramics, Chinese Academy of Sciences

**13:30 (S3-01) Dense Silicon Carbide Ceramics for Ultra-high Temperature Applications (Keynote)**

Pavol Šajgalík<sup>1,\*</sup>, Ondrej Hanzel<sup>1</sup>, Michal Hičák<sup>1</sup>, Alexandra Kovalčíková<sup>1</sup>, Chengyu Zhang<sup>2</sup>, Alexander Mukasyan<sup>3</sup>, Young-Wook Kim<sup>4</sup>

<sup>1</sup>Slovak Academy of Sciences

<sup>2</sup>North Western Polytechnic University

<sup>3</sup>University of Notre Dame

<sup>4</sup>University of Seoul

**14:00 (S3-02) In-situ Investigation on Crack-initiation and Deformation of Alumina Green Bodies during Dewaxing Process by Combined OCT-TG-FTIR and TMA (Keynote)**

Junichi Tatami<sup>1,\*</sup>, Mariko Minami<sup>1</sup>, Motoyuki Iijima<sup>1</sup>, Takuma Takahashi<sup>2</sup>, Tatsuki Ohji<sup>3</sup>

<sup>1</sup>Yokohama National University

<sup>2</sup>Kanagawa Institute of Industrial Science and Technology

<sup>3</sup>National Institute of Advanced Industrial Science and Technology (AIST)

**14:30 (S3-03) Development of Silicon-based Non-oxide Ceramics with High Thermal Conductivity (Invited)**

Yinsheng Li<sup>1,2,\*</sup>, Ha-Neul Kim<sup>2</sup>, Binwei Huang<sup>1</sup>, Hai-Doo Kim<sup>2</sup>, Qing Huang<sup>1</sup>

<sup>1</sup>Engineering Laboratory of Advanced Energy Materials, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

<sup>2</sup>Engineering Ceramics Research Group, Korea Institute of Materials Science

**14:55 (S3-04) Laser 3D Printing and Properties of SiC Ceramics (Invited)**

Jie Yin<sup>\*</sup>, Xuejian Liu, Zhengren Huang

Shanghai Institute of Ceramics, Chinese Academy of Sciences

**15:20 (S3-05) The Efficiency and Spectral Optimization for GAGG:Cr<sup>3+</sup> NIR Ceramic Phosphors (Invited)**

Zhaohua Luo; Ningbo Institute of Materials Technology and Engineering, CAS

**15:45 Break**

**Session Chair:** Wai-Yeung Wong, The Hong Kong Polytechnic University

**16:00 (S3-06) Metallated Graphynes: Synthesis, Characterization and Application Studies (Keynote)**

Wai-Yeung Wong

Department of Applied Biology and Chemical Technology and Research Institute for Smart Energy, The Hong Kong Polytechnic University

**16:30 (S3-07) Rapid Fabrication of Ceramic Molds with Integral Core/shell Structures for the Investment Casting of Advanced Turbine Blades (Invited)**

Kai Miao; State Key Laboratory for Manufacturing Systems Engineering, Xi'an Jiaotong University

**16:55 (S3-08) Wet Chemical Preparation of 2D Sheets-oxides Powders for the Deformation-sensing Ceramic Composites (Invited)**

Wentao Xu<sup>1,2,3,\*</sup>, Youfu Zhou<sup>1,2,3,\*</sup>, Tianwen Dong<sup>1</sup>, Jiawen Wu<sup>1</sup>, Ming Jin<sup>1</sup>

<sup>1</sup>Key Laboratory of Optoelectronic Materials Chemistry and Physics, Fujian Institute of Research on the Structure of Mater, Chinese Academy of Sciences

<sup>2</sup>State Key Laboratory of Structure Chemistry, Fujian Institute of Research on the Structure of Mater, Chinese Academy of Sciences

<sup>3</sup>Fujian Science & Technology Innovation Laboratory for Optoelectronic Information of China

**17:20 (S3-09) Designing Slurry Conditions for Controlling the Size and Size Distribution of YSZ Granules with Superior Mechanical Strength via Spray-drying**

Hyun-Ae Cha<sup>1</sup>, Cheol-Woo Ahn<sup>1</sup>, Byung-Dong Hahn<sup>1</sup>, Jong-Jin Choi<sup>1,\*</sup>, Young Kook Moon<sup>1</sup>, Do Kyung Kim<sup>1,\*</sup>

<sup>1</sup>Department of Functional Ceramics, Ceramic Materials Division, Korea Institute of Materials Science (KIMS)

**17:40 (S3-10) Surface Passivation of Alumina Powder to Improve the Aqueous Slurry Rheology and Sintering Properties**

Eun chae You, Dang-Hyok Yoon<sup>\*</sup>; School of Materials Science and Engineering, Yeungnam University

**Symposium 4: Novel and Strategic Processing and Manufacturing Technologies for Ceramics (Location: TBD)**

**Session Chair:** Guanghua Liu, Tsinghua University

**13:30 (S4-01) Multifunctional Materials for Emerging Technologies (Keynote)**

Federico Rosei

Centre for Energy, Materials and Telecommunications, Institut National de la Recherche Scientifique

**14:00 (S4-02) Reactive Sintering of Diboride-carbide Composites with Enhanced Densification and Mechanical Properties (Invited)**

Sijia Huo<sup>\*</sup>, Yujin Wang<sup>\*</sup>, Xinrui Liu, Lei Chen, Yu Zhou

School of Material Science and Engineering, Harbin Institute of Technology

**14:25 (S4-03) High-Performance Colossal Permittivity for Textured (La+Nb) and (Al+Nb) Co-doped Rutile TiO<sub>2</sub> Ceramics Fabricated by Strong Magnetic Field Alignment (Invited)**

Wen-Wen Wu<sup>\*</sup>, Yue-Chan Song, Jin-Qiu Liu, Peng Liu  
*School of Physics and Information Technology, Shaanxi Normal University*

**14:50 (S4-04) Ablation Mechanism of C<sub>f</sub>/SiBCN Composites and High-entropy Ceramics (Hf<sub>0.2</sub>Zr<sub>0.2</sub>Ta<sub>0.2</sub>Nb<sub>0.2</sub>Ti<sub>0.2</sub>)C (Invited)**

Qi Ding<sup>1,\*</sup>, Yuchi Fan<sup>1</sup>, Na Ni<sup>2</sup>, Dewei Ni<sup>3</sup>, Shaoming Dong<sup>3</sup>, Wan Jiang<sup>1</sup>  
<sup>1</sup>*Institute of Functional Materials, Donghua University*  
<sup>2</sup>*School of Material Science and Engineering, Shanghai Jiao Tong University*  
<sup>3</sup>*Structural Ceramics and Composites Engineering Research Center, Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**15:15 (S4-05) Crack Mitigation Strategies for Dense Freeze Casting of Near-Net Shape Ceramic Components (Invited)**

Samuel Pinches<sup>1</sup>, George V Franks<sup>2,\*</sup>  
<sup>1</sup>*Swinburne University of Technology*  
<sup>2</sup>*The University of Melbourne*

**15:40 Break**

**Session Chair:** Federico Rosei, *Institut National de la Recherche Scientifique*

**15:50 (S4-06) Direct Preparation of Dense Bulk Ceramics by Combustion Synthesis (Invited)**

Guanghua Liu<sup>1,\*</sup>, Kexin Chen<sup>1</sup>, Jiangtao Li<sup>2</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Tsinghua University*  
<sup>2</sup>*Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**16:15 (S4-07) Advanced Sintering of UO<sub>2</sub> Composites based Fuel Pellets (Invited)**

Chen Xu  
*Institute of Materials, China Academy of Engineering Physics*

**16:40 (S4-08) Polycrystalline 3YSZ Fabricated by Ultrafast High-temperature Sintering**

Ryuhei Murakami<sup>1,2,\*</sup>, Bin Feng<sup>1,2</sup>, Koji Matsui<sup>1,2</sup>, Naoya Shibata<sup>1,3</sup>, Yuichi Ikuhara<sup>1,2,3,\*</sup>  
<sup>1</sup>*Institute of Engineering Innovation, School of Engineering, The University of Tokyo*  
<sup>2</sup>*Next Generation Zirconia Social Cooperation Program, Institute of Engineering Innovation, The University of Tokyo*  
<sup>3</sup>*Nanostructure Research Laboratory, Japan Fine Ceramic Center*

**17:00 (S4-09) Investigation of Ultrafast High-Temperature Sintering (UHS)'s Densification Mechanism**

Zonghao Guo, Richard I Todd<sup>\*</sup>  
*University of Oxford*

**17:20 (S4-10) Aerosol Deposition - Novel Fields of Applications beyond Semiconductor Business**

Daniel Stock<sup>\*</sup>, Ilka Verena Luck<sup>\*</sup>, Thomas Stoecker<sup>\*</sup>  
*Heraeus High Performance Coatings*

**Symposium 5: Advanced Additive Manufacturing Technologies: Materials, Processes, and Systems (Location: TBD)**

**Session Chair:** Le Hortense Ferrand, *Nanyang Technological University*

**13:30 (S5-01) Additive Manufacturing of Ceramics from Liquid Feedstocks (Keynote)**

Paolo Colombo<sup>1,2</sup>  
<sup>1</sup>*Department of Industrial Engineering, University of Padova*  
<sup>2</sup>*Department of Materials Science and Engineering, The Pennsylvania State University*

**14:00 (S5-02) Biomineralized Structural Materials: Insights for Designing Structural and Functional Ceramic-based Materials (Keynote)**

Ling Li; *Department of Mechanical Engineering, Virginia Tech*

**14:30 (S5-03) 3D Printing of Close/Open-cell 3YSZ Ceramics for Thermal and Desalination Application (Invited)**

Zehui Du<sup>1,2,\*</sup>, Terence Ho<sup>1,2</sup>, Chee Lip Gan<sup>1,2</sup>  
<sup>1</sup>*Temasek Laboratories, Nanyang Technological University*  
<sup>2</sup>*School of Materials Science and Engineering, Nanyang Technological University*

**14:55 (S5-04) 3D/4D Additive-subtractive Manufacturing of Ceramics (Invited)**

Guo Liu\*, Jian Lu  
City University of Hong Kong

**15:20 (S5-05) Photopolymerization-based Additive Manufacturing of SiC-based Ceramics (Invited)**

Yong Yang\*, Jie Tang, Zhengren Huang  
Shanghai Institute of Ceramics, Chinese Academy of Sciences

**15:45 Break**

**Session Chair:** Ling Li, *Virginia Tech*

**16:00 (S5-06) Design and Additive Manufacturing of Multi-functional Metamaterials (Keynote)**

Huachen Cui  
Smart Manufacturing Thrust, Hong Kong University of Science and Technology (Guangzhou)

**16:30 (S5-07) 3D Printing of Ceramics with Locally Controlled Microstructure (Keynote)**

Hortensen Le Ferrand  
School of Mechanical and Aerospace Engineering, Nanyang Technological University

**17:00 (S5-08) Additive Manufacturing of Advanced Porous Ceramics (Invited)**

Zhangwei Chen  
Shenzhen University

**17:25 (S5-09) Vat Photopolymerization of High-performance Ceramics - Status Quo and Future Perspectives (Invited)**

Martin Schwentenwein<sup>1,\*</sup>, Thomas Konegger<sup>2</sup>, Raul Bermejo<sup>3</sup>, Serkan Nohut<sup>4</sup>, Johannes Homa<sup>1</sup>  
<sup>1</sup>Lithoz GmbH  
<sup>2</sup>Institute of Chemical Technologies and Analytics, TU Wien  
<sup>3</sup>Institut für Struktur- und Funktionskeramik, Montanuniversität Leoben  
<sup>4</sup>Department of Mechanical Engineering, Piri Reis University

**Symposium 6: Engineering Ceramics and Ceramic Matrix Composites (CMCs):  
Processing, Design, Development, and Applications  
(Location: TBD)**

**Session Chair:** Hui Mei, *Northwestern Polytechnical University*

**13:30 (S6-01) Plastic Deformation in Ceramics from Dream to Reality (Keynote)**

Kexin Chen  
Department of Engineering and Material Sciences, National Natural Science Foundation of China

**14:00 (S6-02) Reaction Assisted Flash Sintering of Al<sub>2</sub>O<sub>3</sub>/Y<sub>2</sub>O<sub>3</sub> Composites (Invited)**

Liyang Chen<sup>1,2</sup>, Shu Yao<sup>3</sup>, Ke Zhao<sup>1,2</sup>, Dianguang Liu<sup>3</sup>, Jinling Liu<sup>1,2,\*</sup>  
<sup>1</sup>School of Mechanics and Aerospace Engineering, Southwest Jiaotong University  
<sup>2</sup>Applied Mechanics and Structure Safety Key Laboratory of Sichuan Province, Southwest Jiaotong University  
<sup>3</sup>School of Materials Science and Engineering, Southwest Jiaotong University

**14:25 (S6-03) Introduction to Nano Composite Ceramics with Better Plasma Etching Resistance over Monolithic Y<sub>2</sub>O<sub>3</sub> (Invited)**

Young-Jo Park<sup>1,\*</sup>, Ho Jin Ma<sup>1</sup>, Jae-Wook Lee<sup>1</sup>, Mi-Ju Kim<sup>1</sup>, Ha-Neul Kim<sup>1</sup>, Jae-Woong Ko<sup>1</sup>  
<sup>1</sup>Engineering Ceramics Department, Korea Institute of Materials Science

**14:55 (S6-04) Interfacial Bonding Mechanism and Joint Weakness Area of Brazed SiC and Nb with AuNi Filler Alloy: First-principles and Experimental Perspective**

Peixin Li, Junlei Qi\*  
State Key Laboratory of Advanced brazing and Joining, Harbin Institute of Technology

**15:15 (S6-05) Phase Field Simulation of Interfacial Phase Failure for SiC/SiC Composites**

Jin Gao, Yuelel Bai\*, Haolong Fan, Guangping Song, Yongting Zheng, Xiaodong He  
National Key Laboratory of Science and Technology on Advanced Composites in Special Environments and Center for Composite Materials and Structures, Harbin Institute of Technology

**15:35 Break**

**Session Chair:** Kexin Chen, *National Natural Science Foundation of China*

**16:00 (S6-06) Lead-Free KNN-Based Piezoelectric Ceramics: Materials Design and Device Fabrication (Invited)**

Jiagang Wu

*College of Materials Science and Engineering, Sichuan University*

**16:25 (S6-07) Structure Design and Mechanism of Ceramic-based Stealth Metamaterials (Invited)**

Hui Mei\*, Li Yao, Minggang Zhang, Yuekai Yan, Dou Yang

*Science and technology on Thermostructural Composite Materials Laboratory, School of Materials Science and Engineering, Northwestern Polytechnical University*

**16:50 (S6-08) Research on the Preparation and Performance of C/SiC Composites with High Thermal Conductivity Via RMI Method (Invited)**

Yejie Cao\*, Liyang Cao, Yongsheng Liu\*

*Northwestern Polytechnical University*

**17:15 (S6-09) Design Concept for Prepreg-MI SiC<sub>f</sub>/SiC Components in Gas Turbine Engine Applications Field with the Tensile Proportional Limit as Design Boundary**

Yana Wang<sup>1,2</sup>, Jian Jiao<sup>1,2,\*</sup>

<sup>1</sup>*Surface Engineering Division, AECC Beijing Institute of Aeronautical Materials*

<sup>2</sup>*Key Laboratory of Advanced Composites, AECC Beijing Institute of Aeronautical Materials*

**17:35 (S6-10) Additive Manufacturing of Fiber Reinforced Ceramic Matrix Composites**

Kai Liu\*, Zhao Hu; *Wuhan University of Technology*

**Symposium 7: Advanced Structural Ceramics and CMCs for Ultra Extreme Environments  
(Location: TBD)**

**Session Chair:** Zbigniew Pedzich, *AGH University of Krakow*

Ji Zou, *Wuhan University of Technology*

**13:30 (S7-01) Entropy-driven Expansion of the Thermodynamic Stability of Compositionally Complex Ceramics (Keynote)**

Frederic Monteverde

*Institute of Science, Technology and Sustainability for Ceramics - National Research Council of Italy*

**14:00 (S7-02) Reactive Synthesis of High Entropy Ceramics Composites (Invited)**

Cheng Fang\*, Feilong Huang, Hailong Wang

*School of Materials Science and Engineering, Zhengzhou University*

**14:25 (S7-03) Achieving Superhardness and Enhanced Toughness in High-entropy Boride-based Composites by Tailoring their Multi-scale Microstructures**

Shuaihang Qiu<sup>1</sup>, Ji Zou<sup>1,\*</sup>, Yanchun Zhou<sup>2</sup>, Weimin Wang<sup>1</sup>, Zhengyi Fu<sup>1</sup>

<sup>1</sup>*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

<sup>2</sup>*School of Materials Science and Engineering, Zhengzhou University*

**14:45 (S7-04) High-toughness (Hf<sub>0.2</sub>Zr<sub>0.2</sub>Ta<sub>0.2</sub>Nb<sub>0.2</sub>Ti<sub>0.2</sub>)B<sub>2</sub> Ceramics Prepared at a Low Temperature**

Liang Xu<sup>1</sup>, Ji Zou<sup>1,\*</sup>, Weiming Guo<sup>2,\*</sup>, Yang Liu<sup>2</sup>, Huayue Liang<sup>1</sup>, Shuaihang Qiu<sup>1</sup>, Hua-Tay Lin<sup>2</sup>, Zhengyi Fu<sup>1</sup>

<sup>1</sup>*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

<sup>2</sup>*School of Electromechanical Engineering, Guangdong University of Technology*

**15:05 (S7-05) Synthesis of Monodispersed ZrC Nanoparticles Derived from MOF-801**

Yun Zou<sup>1,2</sup>, Hee-Jung Lee<sup>3</sup>, Sea-Hoon Lee<sup>1,2,\*</sup>

<sup>1</sup>*Department of Advanced Materials Engineering, University of Science and Technology*

<sup>2</sup>*Extreme Materials Institute, Korea Institute of Materials Science*

<sup>3</sup>*Composites Research Division, Korea Institute of Materials Science*

**15:25 (S7-06) Microstructure Evolution, High-temperature Oxidation and Ablation Mechanism of Nano-Ta<sub>4</sub>HfC<sub>5p</sub>/SiBCN Ceramics**

Bingzhu Wang; *Dalian University of Technology*

**15:45 Break**

**Session Chair:** Frederic Monteverde, *National Research Council of Italy*  
Dewei Ni, *Shanghai Institute of Ceramics, CAS*

- 16:00 (S7-07) The Influence of Different Sintering Additives on ZrB<sub>2</sub>-HfB<sub>2</sub> Composites Densification Process and their Final Properties (Keynote)**  
Zbigniew Pedzich<sup>1,\*</sup>, Agnieszka Gubernat<sup>1,\*</sup>, Dariusz Zientara<sup>1</sup>, Lukasz Zych<sup>1</sup>, Kamil Kornaus<sup>1</sup>, Kamil Wojteczko<sup>1</sup>, Norbert Moskala<sup>1</sup>, Piotr Klimczyk<sup>2</sup>, Marcin Podsiadlo<sup>2</sup>, Jerzy Morgiel<sup>3</sup>  
<sup>1</sup>*Department of Ceramics and Refractory Materials, AGH University of Krakow*  
<sup>2</sup>*Lukasiewicz Research Network, Krakow Technological Institute*  
<sup>3</sup>*Institute of Metallurgy and Materials Science, Polish Academy of Sciences*
- 16:30 (S7-08) Novel Carbon and Boron Nitride Materials with High Plasticity and High Strength Designed by Functional Motifs Ordering (Keynote)**  
Zhisheng Zhao  
*Center for High Pressure Science, State Key Laboratory of Metastable Materials Science and Technology, Yanshan University*
- 17:00 (S7-09) Insight into Hexacelsian-to-Celsian Transformation in Hot-pressed h-BN/BAS Composites**  
Qian Li<sup>1</sup>, Zhihua Yang<sup>2</sup>, Dechang Jia<sup>2,\*</sup>, Yu Zhou<sup>2</sup>  
<sup>1</sup>*School of Architectural and Civil Engineering, Harbin University of Science and Technology*  
<sup>2</sup>*School of Materials Science and Engineering, Harbin Institute of Technology*
- 17:20 (S7-10) Thermal Shock and Ablation Behavior of BN Composite Ceramics**  
Delong Cai<sup>1</sup>, Dechang Jia<sup>2,\*</sup>  
<sup>1</sup>*College of Materials Science and Chemical Engineering, Harbin Engineering University*  
<sup>2</sup>*Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology*
- 17:40 (S7-11) Ablation Behavior of Si<sub>3</sub>N<sub>4</sub>/BN fiber Monolithic Ceramics in an Oxyacetylene Combustion Flame**  
Qingqing Chen<sup>1</sup>, Guobing Ying<sup>2,\*</sup>  
<sup>1</sup>*School of Electronic Engineering and Intelligent Manufacturing, Anqing Normal University*  
<sup>2</sup>*College of Mechanics and Materials, Hohai University*

**Symposium 8: Polymer Derived Ceramics (PDCs) and Composites**  
(Location: TBD)

**Session Chair:** Zhaoju Yu, *Xiamen University*

- 13:30 (S8-01) Accelerated Moisture-curing of Polysilazanes for Functional Coating Applications (Keynote)**  
Ralf Riedel  
*Department of Materials and Earth Sciences, Technical University of Darmstadt*
- 14:00 (S8-02) Novel Polysiloxane/Polysilazane Precursors for Digital Light Processing 3D Printing of Functional Ceramics (Invited)**  
Ruizhe Xing, Rui Zhou, Jie Kong<sup>\*</sup>  
*School of Chemistry and Chemical Engineering, Northwestern Polytechnical University*
- 14:25 (S8-03) Transition Metal-containing Polymer-derived Ceramics for Clean Energy (Invited)**  
Marwan Ben Miled, Maxime Cheype, Samuel Bernard<sup>\*</sup>  
*Institute of Research for Ceramics (CNRS, University of Limoges)*
- 14:50 (S8-04) Synthesis and Pyrolysis Behavior of High entropy Carbide ceramic Precursors and Properties of Composite Materials Prepared by PIP Process (Invited)**  
Rongjun Liu<sup>\*</sup>, Chenyi Xie, Huaming Miao, Fan Wan  
*College of Aerospace Science and Engineering, National University of Defense Technology*
- 15:15 (S8-05) Designing and Fabrication of SiBNO Ultrafine Fiber with Excellent High-temperature Thermal Insulation and Wave-transparent Performances**  
Xiaoshan Zhang<sup>\*</sup>, Bing Wang, Yingde Wang<sup>\*</sup>  
*Science and Technology on Advanced Ceramic Fiber and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology*

**15:35 Break**



**Session Chair:** Ralf Riedel, *Technical University of Darmstadt*

- 16:00 (S8-06) Si-based Ceramic Nanocomposites: Synthesis, Microstructural Evolution and Properties (Keynote)**  
Zhaoju Yu<sup>1, 2\*</sup>  
<sup>1</sup>College of Materials, Key Laboratory of High-performance Ceramic Fibers, Xiamen University  
<sup>2</sup>College of Materials, Xiamen Key Laboratory of Electronic Ceramic Materials and Devices, Xiamen University
- 16:30 (S8-07) Synthesis, Characterization and Application of Polymer-derived Ceramic Aerogels (Invited)**  
Gian Domenico Soraru  
 Department of Industrial Engineering., University of Trento
- 16:55 (S8-08) Preparation and Conductivity Regulation of SiBCN Coatings (Invited)**  
Xingang Luan<sup>1,\*</sup>, Shaomin Gu<sup>1</sup>, Qinghua Zhao<sup>1</sup>, Ralf Riedel<sup>2</sup>  
<sup>1</sup>Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University  
<sup>2</sup>Institut für Materialwissenschaft, Technische Universität Darmstadt
- 17:20 (S8-09) Preparation of BN Fibers, Coatings, and Nanomaterials based on Novel Polyborazane Precursors**  
Yi'ang Du<sup>\*</sup>, Bing Wang, Yingde Wang<sup>\*</sup>  
 Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology
- 17:40 (S8-10) Microstructure and Properties Changes of KD-SA SiC Fibers after Long-time Annealing at High Temperature**  
Shuang Wu, Yanzi Gou<sup>\*</sup>, Yingde Wang<sup>\*</sup>  
 Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology

**Symposium 9: Novel Ceramic Coatings and Technology**  
**(Location: TBD)**

**Session Chair:** Wei Pan, *Tsinghua University*

- 13:30 (S9-01) A Novel Radio-frequency Inductively Coupled Plasma (RF-ICP) Source for Treating Ceramic Powders (Keynote)**  
Javad Mostaghimi; *University of Toronto*
- 14:00 (S9-02) Improving Oxidation Resistance of Bond Coat for Durable Thermal Barrier Coatings (Invited)**  
Guan-Jun Yang<sup>\*</sup>, Chang-Jiu Li  
 School of Materials Science and Engineering, Xi'an Jiaotong University
- 14:25 (S9-03) Investigating Thermal Conduction Mechanisms of Ferroelastic High-entropy Oxides for Enhanced Thermal Barrier Coatings**  
Guoliang Ren<sup>1</sup>, Yao Yao<sup>1</sup>, Fan Yang<sup>2</sup>, Xiaofeng Zhao<sup>1,\*</sup>  
<sup>1</sup>Shanghai Key Laboratory of High Temperature Materials and Precision Forming, School of Materials Science and Engineering, Shanghai Jiao Tong University  
<sup>2</sup>School of Mechanical Engineering, Shanghai Jiao Tong University
- 14:45 (S9-04) Corrosion Behavior of Al<sub>2</sub>O<sub>3</sub>-modified Yb<sub>2</sub>SiO<sub>5</sub> Environmental Barrier Coating Under Water Vapor Conditions at 1500 °C**  
Hongkang Ou<sup>1</sup>, Jia Sun<sup>1,\*</sup>, Qiangang Fu<sup>1,\*</sup>  
<sup>1</sup>School of Materials, Northwestern Polytechnical University
- 15:05 (S9-05) Phase Distribution and Properties Evolution of La<sub>1-x</sub>Yb<sub>x</sub>Zr<sub>1-y</sub>Ce<sub>y</sub>O<sub>7</sub> TBC**  
 Wei Pan<sup>\*</sup>, Shuoyan Zhai; *School of material science and technology, Tsinghua university*
- 15:25 (S9-06) A promising Radiation Thermal Protection Coating Based on Ca-Cr Doped Y<sub>3</sub>NbO<sub>7</sub> Ceramic**  
Guoliang Chen<sup>1, 2</sup>, Shuqi Wang<sup>1, 2</sup>, Yongchun Zou<sup>1, 2</sup>, Yaming Wang<sup>1, 2,\*</sup>, Jiahu Ouyang<sup>1, 2</sup>, Dechang Jia<sup>1, 2</sup>, Yu Zhou<sup>1, 2</sup>  
<sup>1</sup>Institute for Advanced Ceramics, Harbin Institute of Technology  
<sup>2</sup>Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, Harbin Institute of Technology

**15:45 Break**

**Session Chair:** Guan-Jun Yang, *Xi'an Jiaotong University*

**16:00 (S9-07) Metallization of Ceramic Substrates using Atmosphere Plasma Spraying (Keynote)**

Wei Pan  
*Tsinghua university*

**16:30 (S9-08) Coating on Powder by Chemical Vapor Deposition (Keynote)**

T. Goto<sup>1, 2, \*</sup>, R. Tu<sup>2</sup>  
<sup>1</sup>State Key Laboratory of Advanced Technology for Material Synthesis and Processing, Wuhan University of Technology  
<sup>2</sup>New Industry Creation Hatchery Center, Tohoku University

**17:00 (S9-09) Effect of Gradient Structure on Mechanical Performance of Multilayer Hard Coatings (Invited)**

Rong Tu<sup>1, 2, \*</sup>, Mingquan Jiang<sup>2</sup>, Baifeng Ji<sup>3</sup>, Song Zhang<sup>1, 2</sup>, Lianmeng Zhang<sup>1, 2</sup>  
<sup>1</sup>Chaozhou Branch of Chemistry and Chemical Engineering Guangdong Laboratory  
<sup>2</sup>State Key Lab of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology  
<sup>3</sup>School of Civil Engineering and Architecture, Wuhan University of Technology

**17:25 (S9-10) Oxidative Ablation Resistance of ZrC Based Ceramic Coatings on C/C Composites (Invited)**

Jia Sun  
*Northwestern Polytechnical University*

**17:50 (S9-11) Quaternary Rare-earth Oxide Co-doped ZrO<sub>2</sub> as a Promising Thermal Barrier Coating for Gas Turbine Engine**

Hongyu Shen<sup>1, 2, 3, \*</sup>, Jie Zhang<sup>1, 2, \*</sup>, Jingyang Wang<sup>1, 2</sup>  
<sup>1</sup>Institute of Metal Research, Chinese Academy of Sciences  
<sup>2</sup>Shenyang National Laboratory for Materials Science  
<sup>3</sup>Materials Science and Engineering, Northeastern University

**18:10 (S9-12) Hierarchical Microstructures in Rare-earth Tantalate Ceramics**

Yu Zhang<sup>1</sup>, Hui Gu<sup>1, \*</sup>, Jing Feng<sup>2</sup>  
<sup>1</sup>Materials Genome Institute, School of Materials Science and Engineering, Shanghai University  
<sup>2</sup>Faculty of Materials Science and Engineering, Kunming University of Science and Technology

**Symposium 10: Nano-laminated Ternary Carbides, Nitrides, Borides, and MXenes/MBenes (Location: TBD)**

**Session Chair:** Ping-An Hu, *Harbin Institute of Technology*

Hao-Bin Zhang, *Beijing University of Chemical Technology*

**13:30 (S10-01) Refining Crystal Defects & Surface Chemistry of MXenes for Electronic Applications (Keynote)**

Chong Min Koo  
*Department of Advanced Materials Science and Engineering, Sungkyunkwan University*

**14:00 (S10-02) 3D Printing of Multifunctional MXene Architectures for Electromagnetic Interference Shielding (Keynote)**

Hao-Bin Zhang  
*State Key Laboratory of Organic-Inorganic Composites, Beijing University of Chemical Technology*

**14:30 (S10-03) Bio-inspired Skin Electronics and Optoelectronics Based on 2D Materials (Invited)**

PingAn Hu<sup>\*</sup>, Jia Zhang, Yunxia Hu  
*School of Materials Science and Engineering, Harbin Institute of Technology*

**14:50 (S10-04) 2D MXene for High-performance Microwave Absorption (Invited)**

Meng Wu, Lei Rao, Guobing Ying<sup>\*</sup>  
*Department of Materials Science and Engineering, College of Mechanics and Materials, Hohai University*

**15:10 (S10-05) Nanocellulose-assisted Construction of Multi-cavity Structured Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>/Melamine Composite Foam for Ultra-efficient Electromagnetic Interference Shielding (Invited)**

Daqiang Zhao, Dong Wen, Xu Zhou, Xiao-Ai Ye, Gui-Gen Wang<sup>\*</sup>  
*School of Materials Science and Engineering, Harbin Institute of Technology, Shenzhen*

**15:30 (S10-06) Finely Design and Functionalization of MXene-Based Electromagnetic Wave Absorption Materials**

XiaoJun Zeng  
*School of Materials Science and Engineering, Jingdezhen Ceramic University*

15:45

Break

**Session Chair:** Junjie Wang, *Northwestern Polytechnical University*  
Guorui Zhao, *Songshan Lake Materials Laboratory*

**16:00 (S10-07) Discovery of Hexagonal MAB Phases and Two-dimensional Mbenes (Keynote)**

Junjie Wang\*, Nanxi Miao; *Northwestern Polytechnical University*

**16:30 (S10-08) Stabilizing MXene Suspension with Polyhydric Alcohols (Invited)**

Renfei Cheng<sup>1</sup>, Junchao Wang<sup>1, 2</sup>, Tao Hu<sup>3, \*</sup>, Yiming Zhao<sup>1, 2</sup>, Yan Liang<sup>1</sup>, Xiaohui Wang<sup>1, \*</sup>, Yanchun Zhou<sup>4, \*</sup>

<sup>1</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

<sup>2</sup>School of Materials Science and Engineering, University of Science and Technology of China

<sup>3</sup>Institute of Mater Sci & Devices, School of Mater Sci & Eng, Suzhou University of Science and Technology

<sup>4</sup>School of Materials Science and Engineering, Zhengzhou University

**16:50 (S10-09) Grain Size Effect on Oxidation Behavior Ti<sub>2</sub>AlC and its Atomic Level Decomposition Mechanism (Invited)**

Wenbo Yu; *Beijing Jiaotong University*

**17:10 (S10-10) A New Method for Fabricating Metallic Whiskers from Layered Crystal Precursors (Invited)**

Peigen Zhang\*, Haifeng Tang, Pei Ding, Zhihua Tian

*School of Materials Science and Engineering, Southeast University*

**17:30 (S10-11) REB<sub>2</sub>C<sub>2</sub>: A Novel Class of Ternary Layered Ultrahigh Temperature Ceramics with High Damage Tolerance (Invited)**

Guorui Zhao; *Songshan Lake Materials Laboratory*

**17:50 (S10-12) DFT-assisting Discovery and Characterization of a Hexagonal MAB-phase V<sub>3</sub>PB<sub>4</sub> (Invited)**

Hang Yin<sup>1</sup>, Xiaodong He<sup>1</sup>, Jinze Zhang<sup>1</sup>, Guangping Song<sup>1</sup>, Yongting Zheng<sup>1</sup>, Yuelei Bai<sup>1, \*</sup>

<sup>1</sup>National Key Laboratory of Science and Technology on Advanced Composites in Special Environments and Center for Composite Materials and Structures, Harbin Institute of Technology

**Symposium 11: High Entropy Ceramics and Composites  
(Location: TBD)**

**Session Chair:** Yujin Wang, *Harbin Institute of Technology*

**13:30 (S11-01) Practical Design of High-entropy Ceramics for Structural and Functional Applications in High and Ultrahigh Temperature Environments (Keynote)**

Yanchun Zhou\*, Huimin Xiang; *School of Materials Science & Engineering, Zhengzhou University*

**14:00 (S11-02) Annealing of a (Hf,Ta,Ti,Nb,Zr)C High-entropy Ceramic up to 2100°C: In-situ Removal of Oxide Impurities and Microstructural Modification (Invited)**

Huifen Guo<sup>1</sup>, Dmitry Moskovskikh<sup>2</sup>, Sergey Yudin<sup>2, 3</sup>, Zanlin Cheng<sup>1</sup>, Weiheng Zou<sup>1</sup>, Sergey Volodko<sup>2</sup>, Chengyu Zhang<sup>1, \*</sup>

<sup>1</sup>NPU-SAS Joint Research Center, School of Materials Science, Northwestern Polytechnical University

<sup>2</sup>National University of Science and Technology MISIS

<sup>3</sup>Moscow Polytechnic University

**14:25 (S11-03) Ultra-high Strength of Medium-entropy Ultra-high Temperature Ceramics up to 1900°C (Invited)**

Xingang Wang<sup>1, \*</sup>, Xiaofei Wang<sup>1</sup>, Danyu Jiang<sup>1</sup>

*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**14:50 (S11-04) Optimization Design and Hardening-toughening Approach of Multi-component Carbide (Invited)**

Lei Chen<sup>1, 2</sup>, Yujin Wang<sup>1, 2, \*</sup>

<sup>1</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>2</sup>Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, Harbin Institute of Technology

**15:15 (S11-05) Fracture Mode Transition from Intergranular to Transgranular in (TiZrNbTaCr)C: the Grain Boundary Purification Effect of Cr Carbide**

Wentao Sun<sup>1, 2</sup>, Lei Chen<sup>1, 2, \*</sup>, Yujin Wang<sup>1, 2, \*</sup>

<sup>1</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>2</sup>Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, Harbin Institute of Technology

15:45

Break

**Session Chair:** Yanchun Zhou, *Zhengzhou University*

**16:00 (S11-06) High Toughness High Entropy Diboride Ceramics Densified at Lower Temperature (Keynote)**

Ji Zou\*, Jie Liu, Liang Xu, Zhengyi Fu  
*Wuhan University of Technology*

**16:30 (S11-07) The Oxidation Behaviors of High Entropy Carbide Ceramics (Invited)**

Chenran Li, Ke Ren, Haoxuan Wang, Lei Luo, Zuozheng Chen, Yiguang Wang\*  
<sup>1</sup>*Institute of Advanced Structure Technology, Beijing Institute of Technology*  
<sup>2</sup>*Beijing Institute of Long March Aerospace Vehicles*

**16:55 (S11-08) Oxidation Resistance of High Entropy Ceramics: Influence of Entropy Stabilization and Composition Design (Invited)**

Yichen Wang<sup>1, 2, \*</sup>, Xiang Xiong<sup>1</sup>, Michael John Reece<sup>2</sup>  
<sup>1</sup>*State Key Laboratory of Powder Metallurgy, Central South University*  
<sup>2</sup>*School of Engineering and Materials Science, Queen Mary University of London*

**17:20 (S11-09) Anti Ablation High-entropy Oxides, Carbides and Borides Coatings on C/C Composites**

Lingxiang Guo\*, Bing Liu, Hongkang Ou, Shiwei Huang, Jia Sun\*  
*Shaanxi Key Laboratory of Fiber Reinforced Light Composite Materials, Northwestern Polytechnical University*

**17:40 (S11-10) Non-Equimolar (Hf, Zr, Ta, W)B<sub>2</sub> High-entropy Diborides Enable Superior Oxidation Resistance**

Zihao Wen, Yanhui Chu\*  
*School of Materials Science and Engineering, South China University of Technology*

**Symposium 13: Piezoelectric, Ferroelectric/Multiferroic Materials & Components  
(Location: TBD)**

**Session Chair:** Jing-Feng Li, *Tsinghua University*  
Jing Ma, *Hong Kong Baptist University*

**13:30 (S13-01) h-RFeO<sub>3</sub> Room Temperature Single Phase Multiferroic Ceramics and Thin Films (Keynote)**

Xiangming Chen  
*School of Materials Science and Engineering, Zhejiang University*

**14:00 (S13-02) High Entropy Effect in BaTiO<sub>3</sub>-BiFeO<sub>3</sub>-based Dielectrics (Invited)**

Soonil Lee  
*School of Materials Science and Engineering / Department of Materials Convergence and System Engineering, Changwon National University*

**14:25 (S13-03) High Energy Storage Performance in AgNbO<sub>3</sub>-based Materials (Invited)**

Lei Zhao  
*College of Physics Science and Technology, Hebei University*

**14:50 (S13-04) Enhanced Energy Storage Performance in BaTiO<sub>3</sub> Glass-Ceramics by Nanosized Cubic BaTiO<sub>3</sub> Phase (Pseudoferroelectric Phase) Precipitating**

Fei Shang\*, Jiwen Xu\*  
*Electronical Information Materials and Devices Engineering Research Center of Ministry of Education, Guangxi Key Laboratory of Information Materials, and School of Material Science and Engineering, Guilin University of Electronic Technology*

**15:05 (S13-05) The Study of Energy Storage Properties of Mg-doped NBCT Lead-free Ceramics through a Viscous Polymer Process**

Yingjie Fan, Quan Li\*, Gang Liu  
*School of Materials and Energy, Southwest University*

**15:20 (S13-06) Study on the Dielectric Behavior of Flexible Ferroelectric Composites for Energy Storage and Electrocaloric Effect Performance**

Hailong Hu<sup>1, \*</sup>, Fan Zhang<sup>2</sup>, Chun-Hui Wang<sup>3</sup>, Dou zhang<sup>4</sup>  
<sup>1</sup>*Research Institute of Aerospace Technology, Central South University*  
<sup>2</sup>*School of Minerals Processing and Bioengineering, Central South University*  
<sup>3</sup>*School of Mechanical and Manufacturing Engineering, University of New South Wales*  
<sup>4</sup>*State Key Laboratory of Powder Metallurgy, Central South University*

**15:35 (S13-07) Giant and Temperature-Insensitive Strain and Energy-Storage Density in Fine PbHfO<sub>3</sub>**

Zenghui Liu<sup>1,\*</sup>, Hongyan Wan<sup>1</sup>, Jingrui Li<sup>1</sup>, Wei Ren<sup>1</sup>, Zuo-Guang Ye<sup>2</sup>

<sup>1</sup>Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, School of Electronic and Information Engineering, Xi'an Jiaotong University

<sup>2</sup>Department of Chemistry and 4D LABS, Simon Fraser University

15:45

Break

**Session Chair:** Soonil Lee, *Changwon National University*

Haibo Zhang, *Huazhong University of Science and Technology*

**16:00 (S13-08) Relaxor-antiferroelectric HfO<sub>2</sub> Thin Films and its Applications (Keynote)**

Jiyan Dai

*The Hong Kong Polytechnic University*

**16:30 (S13-09) Ultrahigh Energy Density of PbZrO<sub>3</sub>-based Antiferroelectric Films at Low Electric Field (Invited)**

Dongxu Li<sup>1</sup>, Xiangyu Meng<sup>1</sup>, Enhao Zhou<sup>1</sup>, Xiaoxiao Chen<sup>1</sup>, Zhonghui Shen<sup>1</sup>, Qinghu Guo<sup>2</sup>, Zhonghua Yao<sup>1</sup>, Minghe Cao<sup>1</sup>, Jinsong Wu<sup>1</sup>, Shujun Zhang<sup>3,\*</sup>, Hanxing Liu<sup>1</sup>, Hua Hao<sup>1,2,\*</sup>

<sup>1</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, School of Material Science and Engineering, International School of Material Science and Engineering, Wuhan University of Technology

<sup>2</sup>Foshan Xianhu Laboratory of the Advanced Energy Science and Technology Guangdong Laboratory

<sup>3</sup>Institute for Superconducting and Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong

**16:55 (S13-10) "Polar Nano-Regions" Originated from Local Displacive Correlations in Relaxor-ferroelectrics (Invited)**

Nan Zhang<sup>\*</sup>, Zhen Wang, Zheyi An, Fei Li

Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, School of Electronic and Information Engineering, Xi'an Jiaotong University

**17:20 (S13-11) Enhanced Energy Storage Performance of NBT-based Ferroelectric Ceramics by the Inhibition of Oxygen Vacancy**

Chen Wu, Xiaoming Qiu, Haoyu Tang, Wenwei Ge<sup>\*</sup>

*School of Materials Science and Engineering, Jilin University*

**17:35 (S13-12) Characteristics of Acoustic Resonators using YbAlN and YbGaN Epitaxial Piezoelectric Thin Films**

Zitai Feng<sup>1,2</sup>, Song Li<sup>1,2,\*</sup>, Junjun Jia<sup>1,\*</sup>, Takahiko Yanagitani<sup>1,2,3,4,\*</sup>

<sup>1</sup>Waseda University

<sup>2</sup>ZAIKEN

<sup>3</sup>JST-CREST

<sup>4</sup>JST-FOREST

**17:50 (S13-13) RF Power Durability of Polarization-inverted C-axis Zigzag ScAlN Piezoelectric Multilayers**

Saneyuki Shibata<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4,\*</sup>

<sup>1</sup>Waseda University

<sup>2</sup>ZAIKEN

<sup>3</sup>JST-CREST

<sup>4</sup>JST-FOREST

**18:05 (S13-14) Robust Thermal Neutron Detection by LiInP<sub>2</sub>Se<sub>6</sub> Bulk Single Crystals**

Ziwan Du<sup>1</sup>, Yuxuan Lai<sup>2</sup>, Ruirong Bai<sup>3</sup>, Bolun Wang<sup>1</sup>, Qiang Zheng<sup>4</sup>, Chuan Xu<sup>5</sup>, Teng Lu<sup>6</sup>, Jun Pei<sup>1</sup>, Wei Li<sup>1</sup>, Yun-Ning Wu<sup>3,\*</sup>, Kai Liu<sup>1</sup>, Yun Liu<sup>6</sup>, Engang Fu<sup>5</sup>, Jing-Feng Li<sup>1,\*</sup>, Yigang Yang<sup>2,\*</sup>, Qian Li<sup>1,\*</sup>

<sup>1</sup>State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University

<sup>2</sup>Department of Engineering Physics Ministry of Education Key Laboratory of Particle & Radiation Imaging, Tsinghua University

<sup>3</sup>Key Laboratory of Polar Materials and Devices (MOE) Department of Electronics, East China Normal University

<sup>4</sup>CAS Key Laboratory of Standardization and Measurement for Nanotechnology, CAS Center for Excellence in Nanoscience National, Centre for Nanoscience and Technology

<sup>5</sup>State Key Laboratory of Nuclear Physics and Technology School of Physics, Peking University

<sup>6</sup>Research School of Chemistry, The Australian National University

**Symposium 14: Thermoelectric Materials and Devices for Sustainable Energy Utilization  
(Location: TBD)**

**Session Chair:** Lidong Chen, *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**13:30 (S14-01) Thermoelectrics: from Polar Intermetallics Crystals to Material Engineering (Keynote)**

Franck Gascoin  
*CNRS, CRISMAT Laboratory, University of Caen Normandie*

**14:00 (S14-02) Thermoelectric Performance Enhancement by Lattice Defect Engineering (Keynote)**

Jing-Feng Li  
*School of Materials Science and Engineering, Tsinghua University*

**14:30 (S14-03) The Real Origin of Donor-like Effect in Bismuth-Telluride-Based Thermoelectric Materials (Keynote)**

Tiejun Zhu\*, Feng Liu, Chenguang Fu  
*School of Materials Science and Engineering, Zhejiang University*

**15:00 (S14-04) Achieving Enhanced Thermoelectric Performance in Multi-phase Materials (Keynote)**

Qingyu Yan  
*School of Materials Science and Engineering, Nanyang Technological University*

**15:30 Break**

**Session Chair:** Wenqing Zhang, *Southern University of Science and Technology*

**15:45 (S14-05) Interface and Grain Boundary Effects on Thermoelectrics (Keynote)**

Jeffrey Snyder  
*Northwestern University*

**16:15 (S14-06) High-performance Layered Oxygen-containing Thermoelectric Materials (Keynote)**

Yuan-Hua Lin  
*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*

**16:45 (S14-07) Structure Design for Optimizing Thermoelectric Performance of MXene-based Flexible Films (Keynote)**

Congcong Liu<sup>1</sup>, Jingkun Xu<sup>2,\*</sup>  
<sup>1</sup>*Flexible Electronics Innovation Institute, Jiangxi Science & Technology Normal University*  
<sup>2</sup>*East China University of Technology*

**17:15 (S14-08) Optimizing Carrier Concentration toward Improved ZT on Metallic W<sub>18</sub>O<sub>49</sub> with Inherently Low Lattice Thermal Conductivity (Keynote)**

Michitaka Ohtaki<sup>1,2,\*</sup>  
<sup>1</sup>*Interdisciplinary Graduate School of Engineering Sciences, Kyushu University*  
<sup>2</sup>*Transdisciplinary Research and Education Center for Green Technologies, Kyushu University*

**17:45 (S14-09) A Computational Study of Unconventional Lattice Thermal Transport in Crystals with Complex Structures (Invited)**

Yue Chen; *Department of Mechanical Engineering, The University of Hong Kong*

**Symposium 15: Perovskites for Solar Cells, LEDs, and Other Applications  
(Location: TBD)**

**Session Chair:** Shengzhong Liu, *Dalian Institute of Chemical Physics, CAS & Shaanxi Normal University*

**13:30 (S15-01) High Voltage Lead-based and Lead-free Perovskite Solar Cells (Keynote)**

Tsutomu Miyasaka  
*Toin University of Yokohama*

**14:00 (S15-02) Composition Design and Interface Modulation of Perovskite Solar Cells (Keynote)**

Baomin Xu  
*Department of Materials Science and Engineering, Southern University of Science and Technology*

**14:30 (S15-03) Modified Spiro HTL for Improved Stability of Perovskite Solar Cells (Invited)**

Xiaojing Hao<sup>\*</sup>, Xu Liu, Meng Zhang

*School of Photovoltaic and Renewable Energy Engineering, The University of New South Wales*

**14:55 (S15-04) Uniformity of Halide Perovskite Photovoltaic Materials and Devices (Invited)**

Qi Chen

*School of Materials Science and Engineering, Beijing Institute of Technology*

**15:20 (S15-05) Potentials of Co-evaporated Perovskites for Optoelectronic Devices (Invited)**

Annalisa Bruno

*Nanyang Technological University*

**15:45 Break**

**Session Chair:** Tsutomu Miyasaka, *Toin University of Yokohama*

**16:00 (S15-06) Development of Stability Perovskite Solar Cells (Invited)**

Zhu Zhang<sup>1</sup>, Ligu Gao<sup>3</sup>, Tingli Ma<sup>2,\*</sup>

<sup>1</sup>*China Jiliang University*

<sup>2</sup>*Kyushu Institute of Technology*

<sup>3</sup>*Dalian University of Technology*

**16:25 (S15-07) Supramolecule Host-Guest Inclusion Strategy for Enhancing the Stability and Biocompatibility of Perovskite Materials and Devices (Invited)**

Wuqiang Wu

*School of Chemistry, Sun Yat-sen University*

**16:50 (S15-08) Lead-free Tin Halide Perovskite Solar Cells (Invited)**

Xiangyue Meng

*University of Chinese Academy of Sciences*

**17:15 (S15-09) Introduction of Halogen in Spiro-based Hole-transporting Materials Enable Highly Efficient and Stable Perovskite Solar Cells**

Kunpeng Guo

*Taiyuan University of Technology*

**17:35 (S15-10) Phase Control of Organometal Halide Perovskite Solar Cells with Superlattice (Invited)**

Satoshi Uchida<sup>\*</sup>, Hiroshi Segawa

*Research Center for Advanced Science and Technology, The University of Tokyo*

**Symposium 16: Transparent Ceramics and Luminescent Materials  
(Location: TBD)**

**Session Chair:** Yiquan Wu, *Alfred University*

**13:30 (S16-01) Invention of Polycrystalline Optical Ceramics Exceeding High Quality Single Crystal (Keynote)**

Akio Ikesue

*World Lab Co Ltd, Japan*

**14:00 (S16-02) Data-driven Discovery of Luminescent Materials (Keynote)**

Rong-Jun Xie<sup>1,2,\*</sup>

<sup>1</sup>*Fujian Provincial Key Laboratory of Surface and Interface Engineering for High Performance Materials, College of Materials, Xiamen University*

<sup>2</sup>*State Key Laboratory of Physical Chemistry of Solid Surfaces, Xiamen University*

**14:30 (S16-03) Properties and Applications of Transparent Lead Based Relaxor Ferroelectric Ceramics (Invited)**

Yongcheng Zhang<sup>\*</sup>, YaLin Qin, Xue Tian, YaQi Wang

*College of Physics, Qingdao University*

**14:50 (S16-04) Engineering of Layered Rare-earth Hydroxide for Low-temperature Sintering of Oxysulfide Ceramics and Photoluminescence (Invited)**

Ji-Guang Li<sup>1,\*</sup>, Xuejiao Wang<sup>2</sup>

<sup>1</sup>*Research Center for Electronic and Optical Materials, National Institute for Materials Science*

<sup>2</sup>*College of Chemistry and Materials Engineering, Bohai University*

**15:10 (S16-05) Structural Modification, Luminescence and Uses of Rare Earth Ions Doped Synthetic Mica (Invited)**

Shikao Shi<sup>\*</sup>, Junshan Liu

*College of Chemistry and Materials Science, Hebei Key Laboratory of Inorganic Nanomaterials, Hebei Normal University*

**15:30 (S16-06) Synthesis and Photoluminescence of Cr<sup>3+</sup> Activated Broadband Near-infrared Phosphors**

Xuejiao Wang<sup>\*</sup>, Jiantong Wang, Bowen Wang, Changshuai Gong

*College of Chemistry and Materials Engineering, Bohai University*

**15:45 Break**

**Session Chair:** Do Kyung Kim, *Korea Advanced Institute of Science and Technology (KAIST)*

**16:00 (S16-07) Highly Non Stoichiometric Garnet Materials with Modified Optical Properties (Invited)**

Mathieu Allix<sup>1,\*</sup>, Weiwei Cao<sup>1</sup>, Ana Becerro<sup>2</sup>, Victor Castaing<sup>2</sup>, Xue Fang<sup>1</sup>, Cécile Genevois<sup>1</sup>, Pierre Florian<sup>1</sup>,

Franck Fayon<sup>1</sup>, Didier Zanghi<sup>1</sup>, Michael Pitcher<sup>1</sup>

<sup>1</sup>CEMHTI, CNRS

<sup>2</sup>ICMS, CSIC

**16:20 (S16-08) Transparency and Luminescence of Rare-earth Doped  $\alpha$ -SiAlON Ceramics (Invited)**

Junichi Tatami<sup>1,\*</sup>, Kohei Aminaka<sup>1</sup>, Motoyuki Iijima<sup>1</sup>, Takuma Takahashi<sup>2</sup>

<sup>1</sup>Yokohama National University

<sup>2</sup>Kanagawa Institute of Industrial Science and Technology

**16:40 (S16-09) Glasses and Fibers for Detection Applications (Invited)**

Shifeng Zhou

*School of Materials Science and Engineering, South China University of Technology*

**17:00 (S16-10) Manipulation of Energy Transfer and Luminescence Performance in Mn<sup>2+</sup> Doped Metal Halide Micro-nanocrystals (Invited)**

Yibo Chen

*School of Chemistry and Chemical Engineering, Guangzhou University*

**17:20 (S16-11) Fabrication of High Strength IR Transparent Ceramics using Spark-Plasma-Sintering (SPS) Technique (Invited)**

Koji Morita

*National Institute for Materials Science (NIMS), Research Center for Electronic and Optical Materials*

**17:40 (S16-12) Computational Materials Science and Optical Materials (Invited)**

Mikhail G. Brik<sup>1, 2, 3, 4, 5,\*</sup>

<sup>1</sup>College of Sciences & CQUPT-BUL Innovation Institute, Chongqing University of Posts and Telecommunications

<sup>2</sup>Centre of Excellence for Photoconversion, Vinča Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade

<sup>3</sup>Institute of Physics, University of Tartu

<sup>4</sup>Faculty of Science and Technology, Jan Długosz University

<sup>5</sup>Academy of Romanian Scientists

**Symposium 17: Materials for Advanced Nuclear Energy Systems and Nuclear Waste Management (Location: TBD)**

**Session Chair:** Guo-Jun Zhang, *Donghua University*

**13:30 (S17-01) Cold Immobilization and High Entropy Adsorbents for Radioactive Waste Management (Keynote)**

Sujeong Lee<sup>1</sup>, Tien-Shee Chee<sup>1</sup>, Min Seok Lee<sup>2</sup>, Hyun Woo Seong<sup>2</sup>, Ho Jin Ryu<sup>1, 2</sup>

<sup>1</sup>Department of Materials Science and Engineering, KAIST

<sup>2</sup>Department of Nuclear and Quantum Engineering, KAIST

**14:00 (S17-02) Phosphate Cements for Stabilization of Nuclear Wastes (Invited)**

Henry A. Colorado; *Universidad de Antioquia*

**14:25 (S17-03) The Application of Flash Sintering in High Level Wastes Immobilization (Invited)**

Chen Xu; *Institute of Materials, China Academy of Engineering Physics*



**14:50 (S17-04) Progress in Development of Glass Formulations for High Level Waste Vitrification by Cold Crucible Induction Melter Technology (Invited)**

Shengheng Tan<sup>1,\*</sup>, Jiong Chang<sup>1</sup>, Cheng He<sup>1</sup>, Hua Zhang<sup>1</sup>, Minzhi Ruan<sup>2</sup>, Zhongdi Li<sup>2</sup>

<sup>1</sup>Department of Radiochemistry, China Institute of Atomic Energy

<sup>2</sup>China Nuclear Power Engineering Co Ltd

**15:15 (S17-05) Chemical Durability and Structural Evolution of Rare Earth Titanite Pyrochlore (REE<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>) Nuclear Wasteform (Invited)**

Kun Yang

Department of Nuclear Science and Technology, Nanjing University of Aeronautics and Astronautics

**15:50**

**Break**

**Session Chair:** Weichao Bao, *Shanghai Institute of Ceramics*

**16:00 (S17-06) Immobilisation of High-level Waste in Zirconolite-based Wasteforms (Invited)**

Shi-Kuan Sun<sup>1,\*</sup>, Lewis Blackburn<sup>2</sup>, Neil Hyatt<sup>2</sup>, Wei-Ming Guo<sup>3</sup>

<sup>1</sup>School of Material Science and Energy Engineering, Foshan University

<sup>2</sup>Immobilisation Science Laboratory, Department of Materials Science and Engineering, University of Sheffield

<sup>3</sup>School of Electromechanical Engineering, Guangdong University of Technology

**16:25 (S17-07) Multi-scale Modeling of the Irradiation-induced Deformation Behaviors of Porous Carbons (Invited)**

Jing Zhang<sup>1</sup>, Zekun Li<sup>1</sup>, Shurong Ding<sup>1,\*</sup>, Yiran Xie<sup>2</sup>, Qisen Ren<sup>2</sup>, Jiexiang Xue<sup>2</sup>

<sup>1</sup>Institute of Mechanics and Computational Engineering, Department of Aeronautics and Astronautics, Fudan University

<sup>2</sup>Department of ATF R&D, Nuclear Fuel Research and Development Center, China Nuclear Power Technology Research Institute Co., Ltd., China General Nuclear Power Corporation (CGN)

**16:50 (S17-08) Rare Earth Aluminate Ceramics For Neutron Absorbing Materials**

Wugang Fan<sup>1</sup>, Xiaojiao Wang<sup>1</sup>, Xiangyang Chen<sup>2</sup>, Junqiang Lu<sup>2</sup>, Zhaoquan Zhang<sup>1,\*</sup>

<sup>1</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>Shanghai Nuclear Engineering Research & Design Institute Co

**17:10 (S17-09) Investigation of Molybdenum Species in the Simplified Nuclear Waste Glass Under Reducing Condition**

Ziqiang Jia, Chenchen Niu, Kai Xu\*

State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology

**17:30 (S17-10) First-principles Study on the Property of Interface Reaction Phases for Cr Coating on SiC Substrate**

Hengfeng Gong\*, Jun Yan, Daxi Guo, Sigong Li, Zhanwei Wang, Jianhan Zhai, Rongkun Yang, Jiexiang Xue, Yehong Liao

Nuclear Fuel and Materials Department, China Nuclear Power Technology Research Institute Co.

**17:50 (S17-11) Molecular Dynamics Simulation of Chemical Vapor Deposition Process and Irradiation Behavior of Silicon Carbide Materials**

Zefan Yan, Yu Tian, Rongzheng Liu, Bing Liu, Youlin Shao, Malin Liu\*

Institute of Nuclear and New Energy Technology, Tsinghua University

**Symposium 18: Solid Oxide Fuel Cells and Hydrogen Technologies**

(Location: TBD)

**Session Chair:** Fatih Dogan, *Missouri University of Science and Technology*

Di Chen, *Tsinghua University*

**13:30 (S18-01) Operando Observations of SOC Fuel Electrodes (Keynote)**

Naoki Shikazono

Institute of Industrial Science, the University of Tokyo

**14:00 (S18-02) Submicron GDC Barrier Layer Fabrication via In-situ Hydrothermal Growth: Mechanism, Performance and Durability (Invited)**

Tenglong Zhu\*, Qiuqiu Lyu, Haoyu Zhao, Qin Zhong

School of Chemistry and Chemical Engineering, Nanjing University of Science and Technology

**14:25 (S18-03) Preparation and Performance Optimization of Bi<sub>2</sub>O<sub>3</sub>-YSZ Composite Electrolyte for Solid Oxide Fuel Cells**

Shuangshuang Liu<sup>\*</sup>, Guifang Han<sup>\*</sup>, Jingde Zhang<sup>\*</sup>

Key Laboratory for Liquid-Solid Structural Evolution and Processing of Materials, Ministry of Education, School of Material Science and Engineering, Shandong University

**14:45 (S18-04) Fabrication of Tri-layer GDC/YSZ/GDC Electrolytes for SOFCs through Reactive Sputtering in an Industrial Setup**

Fuyuan Liang, Haiqing Wang, Junwei Wu<sup>\*</sup>

School of Materials Science and Engineering, Harbin Institute of Technology (Shenzhen)

**15:05 (S18-05) Cobalt-free Double Perovskite Oxide as a Promising Cathode for Solid Oxide Fuel Cells**

Binze Zhang, Changrong Xia<sup>\*</sup>

Department of Materials Science and Engineering, University of Science and Technology of China

**15:25 (S18-06) Fe-Sm Co-doped Ceria as Electrolytes for Anode-supported SOFC**

Lijie Zhang, Changrong Xia<sup>\*</sup>

Department of Materials Science and Engineering, University of Science and Technology of China

**15:45 Break**

**Session Chair:** Xianwen Mao, National University of Singapore

Sihyuk Choi, Kumoh National Institute of Technology

**16:00 (S18-07) Understanding Electrochemically-Driven Exsolution in Perovskite Oxides by Designing Graded Oxygen Chemical Potential (Invited)**

Ying Lu, Qiyang Lu<sup>\*</sup>; Westlake University

**16:25 (S18-08) Electrostatic Spray Deposition Based Interface Engineering for High Performance Solid Oxide Electrochemical Cells (Invited)**

Hyun Sik Yoo<sup>1</sup>, Yonas Tsegaye Megra<sup>1,2</sup>, Joon Gyu Kim<sup>1</sup>, Ji Won Suk<sup>1,2,3</sup>, Wonyoung Lee<sup>1,4,\*</sup>

<sup>1</sup>Department of Mechanical Engineering, Sungkyunkwan University

<sup>2</sup>Department of Smart Fab. Technology, Sungkyunkwan University

<sup>3</sup>SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University

<sup>4</sup>SKKU Institute of Energy Science and Technology (SIEST), Sungkyunkwan University

**16:50 (S18-09) Lattice Boltzmann Study of Solid Oxide Fuel Cell Anode Degradation Based on Three Dimensional Reconstruction (Invited)**

Shixue Liu<sup>1,2,\*</sup>, Zhijing Liu<sup>1,2</sup>, Shuxing Zhang<sup>1,2</sup>, Hao Wu<sup>1,2</sup>

<sup>1</sup>Hydrogen Energy Industrial Technology Innovation Center, China Nuclear Power Technology Research Institute

<sup>2</sup>Shenzhen Engineering Research Center for Hydrogen Safety, China Nuclear Power Technology Research

**17:15 (S18-10) Multi-rare-earth Oxide Doped Zirconia: A Design Strategy of Improving Anti-ageing Performance of Solid Oxide Fuel Cell Electrolyte Materials**

Jiefu Lang, Yiguang Wang<sup>\*</sup>

Institute of Advanced Structure Technology, Beijing Institute of Technology

**17:35 (S18-11) Pt-based Oxygen Reduction Reaction Catalysts with High Efficiency and High Durability for Proton Exchange Membrane Fuel Cells**

Ye Xiao, Mingjie Xu, Jiewen Liu, Yanhao Dong<sup>\*</sup>, Chang-an Wang<sup>\*</sup>

State Key Lab of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University

**Symposium 19: Ionic and Mixed Conducting Ceramics**

(Location: TBD)

**Session Chair:** Zhaoyin Wen, Shanghai Institute of Ceramics, Chinese Academy of Science

Palani Balaya, National University of Singapore

**13:30 (S19-01) Challenges and Opportunities of All Solid-state Batteries (Keynote)**

Xueliang Andy Sun

University of Western Ontario

**14:00 (S19-02) Application of Thin Films to Fundamental Studies on Solid-state Batteries (Keynote)**

Kazunori Takada<sup>\*</sup>, Tsuyoshi Ohnishi; National Institute for Materials Science

**14:30 (S19-03) Design of High Performance Solid State Lithium Batteries by Ultrathin Composite Solid Electrolytes (Invited)**

Stefan Adams

*Department of Materials Science and Engineering, National University of Singapore*

**14:55 (S19-04) Hydride Ion Conducting Materials: Development of Solid Electrolytes and Electrodes (Invited)**

Genki Kobayashi

*Cluster for Pioneering Research, RIKEN*

**15:20 (S19-05) Solid State Ionics for Information, Energy and Environmental Applications (Invited)**

Xin Guo

*Huazhong University of Science and Technology*

**15:45 Break**

**Session Chair:** Xin Guo, *Huazhong University of Science and Technology*

Stefan Adams, *National University of Singapore*

**16:00 (S19-06) R&Ds of Oxide-based All-Solid-State Batteries using Aerosol Deposition (Keynote)**

Yasutoshi Iriyama

*Department of Materials Design Innovation Engineering, Graduate School of Engineering, Nagoya University*

**16:30 (S19-07) Developing Safe and Inexpensive High Power Li-ion Battery. (Invited)**

Balaya Palani

*Department of Mechanical Engineering, National University of Singapore*

**16:55 (S19-08) Solid Garnet Electrolytes and Batteries (Invited)**

Xiangxin Guo

*College of Physics, Qingdao University*

**17:20 (S19-09) Neutron Reflectometry Studies on Fast Lithium Intercalation Mechanism at Surface-Modified Cathodes for Lithium-ion Batteries (Invited)**

Masaaki Hirayama<sup>1,\*</sup>, Norifumi L. Yamada<sup>2</sup>, Kota Suzuki<sup>3</sup>, Ryoji Kanno<sup>3</sup>

<sup>1</sup>*School of Materials and Chemical Technology, Tokyo Institute of Technology*

<sup>2</sup>*Institute of Materials Structure Science, High Energy Accelerator Research Organization*

<sup>3</sup>*Institute of Innovative Research, Tokyo Institute of Technology*

**17:45 (S19-10) Integrating Garnet Oxide Ceramics into Composite Solid Electrolytes for All-Solid-State Lithium-metal Batteries**

Rong-ao Tong, Linhui Chen, Yanhao Dong\*, Chang-an Wang\*

*State Key Lab of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*

**Symposium 20: Multifunctional Nanomaterials and Heterostructures for Sensing Devices (Location: TBD)**

**Session Chair:** Ping Wang, *Zhejiang University*

**13:30 (S20-01) Synaptic Features of Transparent Memristor for Neuromorphic Computing (Keynote)**

Tseung-Yuen Tseng

*Institute of Electronics, Yang Ming Chiao Tung University*

**14:00 (S20-02) Functional Transistors for Ultra-sensitive and Low-power Sensors (Keynote)**

Wei Huang

*School of Automation Engineering, University of Electronic Science and Technology of China*

**14:30 (S20-03) Graphene-based Field-effect Transistors for Optoelectronic Sensing (Invited)**

Lin Jiang<sup>1,\*</sup>, Qinyong Dai<sup>3</sup>, Gang Hu<sup>3</sup>, Grégory F. Schneider<sup>2</sup>, Yingquan Peng<sup>1</sup>

<sup>1</sup>*School of Microelectronics, Shanghai University*

<sup>2</sup>*Leiden Institute of Chemistry, Leiden University*

<sup>3</sup>*Institute of Microelectronics, College of Optical and Electronic Technology, China Jiliang University*

**14:55 (S20-04) Dual-parameter Gas Sensing with Functional Graphene Field-effect Transistors**

Shen Ao, Wangyang Fu\*

*School of Materials Science and Engineering, Tsinghua University*

The underlined author indicates the presenter. \* Indicates the corresponding author.

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**15:15 (S20-05) Ultrasensitive Detection of Unamplified Target miRNA Using Duplex-specific Nuclease and Graphene Field-effect Transistors**  
Qianlong Wang<sup>1</sup>, Lei Bao<sup>1</sup>, Lishuang Wang<sup>2</sup>, Xiaoyan Zhang<sup>2</sup>, Weipeng Wang<sup>1</sup>, Yunhan Ling<sup>1</sup>, Zhengjun Zhang<sup>1</sup>, Wangyang Fu<sup>1,\*</sup>  
<sup>1</sup>School of Materials Science and Engineering, Tsinghua University  
<sup>2</sup>School of Pharmaceutical Sciences, Capital Medical University

**15:35 (S20-06) Ce<sub>0.8</sub>Gd<sub>0.2</sub>O<sub>1.95</sub> based Mixed Potential Gas Sensor: AgRu Bimetallic Co-regulated WO<sub>3</sub> for H<sub>2</sub> Sensing under High Temperature**  
Tong Wang<sup>\*</sup>, Xishuang Liang<sup>\*</sup>, Geyu Lu<sup>\*</sup>  
 State Key Laboratory of Integrated Optoelectronics, Key Laboratory of gas sensors, College of Electronic Science and Engineering, Jilin University

**15:55 Break**

**Session Chair:** Chen Wang, *Tsinghua University*

**16:00 (S20-07) Bioelectronic Nose and Bioelectronic Tongue with Hetero-sensitive Devices (Keynote)**  
Ping Wang  
 Biosensor National Special Laboratory, Key Laboratory for Biomedical Engineering of Ministry of Education, Department of Biomedical Engineering, Zhejiang University

**16:30 (S20-08) Limit of Detection in Field-effect Biosensors (Invited)**  
Wangyang Fu  
 School of Materials Science and Engineering, Tsinghua University

**16:55 (S20-09) On-chip Integrated Biosensing for Rapid and Accurate Detection of Biomarkers (Invited)**  
Lizhou Xu<sup>1,2</sup>  
<sup>1</sup>ZJU-Hangzhou Global Scientific and Technological Innovation Center, Zhejiang University  
<sup>2</sup>College of Biosystems Engineering and Food Science, Zhejiang University

**17:20 (S20-10) Expanding Selectivity Functionality of a ZnO Nanotetrapod-Based Volatile Organic Compound Sensor using Au Nanoparticle Decoration**  
Fang Xu  
 Shenzhen Technology University

**17:40 (S20-11) Mixed Potential Type Acetone Gas Sensor based on YSZ Solid State Electrolyte and CuSb<sub>2</sub>O<sub>6</sub> Sensing Electrode for Ketosis Diagnosis**  
Siyuan Lv, Fangmeng Liu<sup>\*</sup>, Geyu Lu<sup>\*</sup>  
 Jilin university

**Symposium 21: Ceramics for Environmental Conservation, Energy and Environmental catalysis, Pollution Control, and Critical Materials**  
 (Location: TBD)

**Session Chair:** Chun-Hong Kuo, *National Yang Ming Chiao Tung University*

**13:30 (S21-01) Preparation and Properties of SiC Ceramic Membrane for High Temperature Gas Purification (Keynote)**  
Kaiqi Liu  
 State Key Laboratory of multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences

**14:00 (S21-02) Synthesis, Characteristics, and Detection Properties of Metal Phosphates (Invited)**  
 Pi Chen Wei, Ying Li, Chih Min Wang<sup>\*</sup>  
 National Taiwan Ocean University

**14:25 (S21-03) New Fe<sub>3</sub>O<sub>4</sub>/In(OH)<sub>3</sub> Nanocomposite for Photocatalytic-degradation of Medical Wastes (Invited)**  
Teck Hock Lim<sup>1,\*</sup>, Chi Yan Chong<sup>1</sup>, Hien Fuh Ng<sup>2</sup>, Joon Ching Juan<sup>3</sup>, Mohd Rafie Johan<sup>3</sup>, Chui Fung Loke<sup>1</sup>, Kim Hooi Ng<sup>1</sup>, Yun Fong Ngeow<sup>2</sup>  
<sup>1</sup>Department of Physical Science, Faculty of Applied Sciences, Tunku Abdul Rahman University of Management and Technology  
<sup>2</sup>Dr. Wu Lien-Teh Centre for Research in Communicable Diseases, M. Kandiah Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman  
<sup>3</sup>Nanotechnology & Catalysis Research Centre, Institute of Advanced Studies, University of Malaya

- 14:50 (S21-04) Defect Chemistry in Highly-efficient Titanium-based Nitrogen Fixation Photocatalyst**  
Ming Feng  
*Key Laboratory of Functional Materials Physics and Chemistry of the Ministry of Education, Jilin Normal University*
- 15:10 (S21-05) Coating of Phosphide Catalysts on p-Silicon by a Necking Strategy for Improved Photoelectrochemical Characteristics in Alkaline Media**  
Hongmei Wu, Feng Li\*, Yanqi Yuan\*, Jing Liu\*  
*Materials Science and Engineering, Shanghai Jiao Tong University*
- 15:30 (S21-06) Confinement Effect of Mesopores: In Situ Synthesis of Cationic Tungsten-vacancies for a Highly Ordered Mesoporous Tungsten Phosphide Electrocatalyst**  
Baoshan Liu, Feng Li, Jing Liu\*, Peng Zhang\*  
*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**15:50 Break**

**Session Chair:** Chih Min Wang, *National Taiwan Ocean University*

- 16:00 (S21-07) (Mg, Mn, Fe, Co, Ni)O: A New Rocksalt High-entropy Oxide (Invited)**  
 Yuguang Pu, Duncan Moseley, Zhen He, K. C. Pitike, M. E. Manley, J. Yan, V. R. Cooper, V. Mitchell, V. Peterson, B. Johannessen, R. P. Hermann, P. Cao\*  
*The University of Auckland*
- 16:25 (S21-08) Application of Nano-sized Metal Oxide Powder on Steam Reforming of Methanol (Invited)**  
 Chung-Lun Yu<sup>1, 2</sup>, Kuan-Jun Ke<sup>1, 2</sup>, Te-Wei Chiu<sup>1, 2, \*</sup>  
<sup>1</sup>*Department of Materials and Mineral Resources Engineering, National Taipei University of Technology*  
<sup>2</sup>*Institute of Materials Science and Engineering, National Taipei University of Technology*
- 16:50 (S21-09) Nanoarchitectonic Engineering towards Small Molecule Conversion (Invited)**  
Chun-Hong Kuo<sup>1, 2, \*</sup>  
<sup>1</sup>*Department of Applied Chemistry, National Yang Ming Chiao Tung University*  
<sup>2</sup>*National Synchrotron Radiation Research Center*
- 17:15 (S21-10) Catalysis Enhancement by MOF Confinement Effects at Room Temperature (Invited)**  
Lien-Yang Chou  
*ShanghaiTech University*
- 17:40 (S21-11) Surface Phosphorization for Enhanced Photoelectrochemical Performance of Fe<sub>2</sub>O<sub>3</sub>/Si Photocathode**  
Yanqi Yuan, Jing Liu\*, Peng Zhang\*  
*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**Symposium 22: Ceramic Integration and Joining Technologies**  
 (Location: TBD)

**Session Chair:** Peng He, *Harbin Institute of Technology*  
 Qian Wang, *Osaka University*

- 13:30 (S22-01) Advanced Glass and Ceramics as Joining and Coating Materials for Energy Conversion: Integration Issues, Challenges and Perspectives (Keynote)**  
Federico Smeacetto  
*Politecnico di Torino*
- 14:00 (S22-02) Design of TiB<sub>2</sub>-based Gradient Composite Ceramic and Optimization of its Brazing Performance with Metal (Invited)**  
Ying Wang  
*Tianjin Key Laboratory of Advanced Joining Technology, School of Materials Science and Engineering, Tianjin University*
- 14:20 (S22-03) Strength Optimization Strategies on Ti-6Al-4V/Si<sub>3</sub>N<sub>4</sub> Dissimilar Joint Engineered for Spacecraft Thruster Application (Invited)**  
Fei Shen Ong<sup>1, \*</sup>, Eiichi Sato<sup>2</sup>  
<sup>1</sup>*Department of Materials Engineering, The University of Tokyo*  
<sup>2</sup>*Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency*

- 14:40 (S22-04) Investigation on the Microstructure and Mechanical Properties of SiC<sub>f</sub>/SiC Composites/Gh536 Superalloy Joints Brazed with (CoFeNiCrMn)<sub>100-x</sub>Nb<sub>x</sub> High-entropy Alloy Filler**  
Shuai Zhao, Haiyan Chen\*  
*School of Materials Science and Engineering, Northwestern Polytechnical University*
- 14:55 (S22-05) Research on the Brazing Process and Mechanism of C/C Composites and Nb Assisted by Carbon Nanotubes**  
Qing Chang  
*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*
- 15:10 (S22-06) Active Metal Brazing of Silicon Nitride with Oxygen-free Copper Foil**  
Liangliang Tang, Yu-Ping Zeng\*  
*State Key Laboratory of High-Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences*
- 15:25 (S22-07) Switching Ultra-Stretchability and Sensitivity in Metal Films for Electronic Skins: A Pufferfish-inspired, Interlayer Regulation Strategy**  
Tianming Sun<sup>1,2</sup>, Bin Feng<sup>2</sup>, Wenxian Wang<sup>1,\*</sup>, Guisheng Zou<sup>2,\*</sup>, Lei Liu<sup>2,\*</sup>  
<sup>1</sup>Taiyuan University of Technology  
<sup>2</sup>Tsinghua University

**15:40 Break**

**Session Chair:** Federico Smeacetto, *Politecnico di Torino*  
Chun Li, *Harbin Institute of Technology*

- 15:55 (S22-08) Advanced Joining Technologies for New and Heterogeneous Materials (Keynote)**  
Peng He\*, Panpan Lin, Tiesong Lin, Ce Wang  
*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*
- 16:25 (S22-09) Preparation and Property Study of Glass Frits for Electronic Pastes (Invited)**  
Huidan Zeng\*, Ao Li, Qi Jiang, Yijing Chen, Jingtao Yan, Yali Yang  
*School of Materials Science and Engineering, East China University of Science and Technology*
- 16:45 (S22-10) Flash Joining of the Transparent Ceramics (Invited)**  
Yan Liu  
*Shanghai Institute of Ceramics, Chinese Academy of Sciences*
- 17:05 (S22-11) Corrosion Behavior Monitoring and Mechanism Analysis of Heterogeneous Brazed Joints**  
Yaotian Yan, Junlei Qi\*  
*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*
- 17:20 (S22-12) Fast Joining of 8YSZ Ceramic to NiCrFe Medium Entropy Alloy using Threshold Electric Field**  
Junbo Xia  
*College of Science, Xi'an University of Posts and Telecommunications*
- 17:35 (S22-13) The Carbon-coated Silicon Nanoparticle Structure is Utilized as a Joining Layer for C<sub>f</sub>/SiC Composites**  
Lianghao Chen, Xiaobing Zhou\*  
*Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences*
- 17:50 (S22-14) Joining Ti<sub>3</sub>AlC<sub>2</sub> Ceramic to Zr-4 alloy using Copper as an Interlayer**  
Bo Yang, Chun Li, Xiaoqing Si, Jian Cao\*  
*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*

**Symposium 24: Advanced Refractories and Traditional Ceramics  
(Location: TBD)**

**Session Chair:** In-Ho Jung, *Seoul National University*

- 13:30 (S24-01) Refractory Solutions to “the Carbon Challenge” (Keynote)**  
Yawei Li  
*The Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology*

**14:00 (S24-02) Simulation of Marangoni Effect for Refractory Materials (Invited)**

Sandra Vollmann

*Chair of Ceramics, Montanuniversität Leoben*

**14:25 (S24-03) Densification Mechanism and Properties of h-BN/ZrO<sub>2</sub> Composites by Spark Plasma Sintering**

Mao Chen, Fan Zhang, Bingbing Fan, Yongqiang Chen\*

*Zhengzhou University*

**14:45 (S24-04) Effect of  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Content on Microstructures, Mechanical Properties and Purification Efficiency on Molten Steel of MgO-based Ceramic Filters**

Ying Liu, Wen Yan\*

*The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology*

**15:05 (S24-05) Study on the Preparation and Properties of Typical Tailings and Fine Mud Synergistic Low Temperature Sintering Ceramics in Chengde Area**

Xin Min\*, Yupeng Duan

*Materials Science and Engineering, China University of Geosciences (Beijing)*

**15:25 (S24-06) Interaction Behavior of Periclase-hercynite Material with Cement Clinker**

Yuchi Liu, Hongfeng Yin\*

*College of Materials Science and Engineering, Xi'an University of Architecture & Technology*

**15:45 Break**

**Session Chair:** Yueming Li, *Jingdezhen Ceramic University*

**16:00 (S24-07) Estimation of Production Places of Unknown Excavated Porcelains Based on the Difference in Solubility of Metals during Elutriation Process (Keynote)**

Masaaki Tabata

*Faculty of Science and Engineering, Saga University*

**16:30 (S24-08) Studies on High-temperature In-situ Preparation of TiO<sub>2</sub> Superhydrophilic Self-cleaning Glaze and Photocatalytic Synergistic Enhancement Mechanism (Keynote)**

Weixia Dong

*Jingdezhen Ceramic University*

**17:00 (S24-09) In-situ Synthesis of SiAlON Based Ceramics for Thermal Storage by Aluminothermic or Silicothermic Nitridation of Aluminosilicate Wastes (Invited)**

Xinbin Lao\*, Xiaoyang Xu, Zhi Tu, Yujie Deng, Zhihuan Mao, Yali Zhao, Jian Liang

*Jingdezhen Ceramic University*

**17:25 (S24-10) Chemical Composition and Color Analysis of White and White Porcelain from Xinan Kiln in Henan Province**

Qingyu Wang, Tian Wang\*, Fen Wang, Jianfeng Zhu, Ying Wang, Zhao Ren

*School of Materials Science and Engineering, Shaanxi University of Science and Technology*

**17:45 (S24-11) Improvement of Thermal Shock Resistance by Prestress Developed in Sandwich Structure Bone-China Body**

Hongbing Wei<sup>1</sup>, Yueming Li<sup>1,\*</sup>, Yi Sun<sup>1</sup>, Kai Li<sup>1</sup>, Yiwang Bao<sup>2</sup>, Detian Wan<sup>2</sup>

<sup>1</sup>*Jingdezhen Ceramic University*

<sup>2</sup>*China Building Material Academy*

**18:05 (S24-12) Dissolution Behavior of MgO in the Molten Slags under Weak Static Magnetic Field**

Xinyu Chen<sup>1,2</sup>, Ao Huang<sup>1,2,\*</sup>, Shenghao Li<sup>1,2</sup>, Shihui Ding<sup>2</sup>, Yongshun Zou<sup>1,2</sup>, Huazhi Gu<sup>1,2</sup>

<sup>1</sup>*The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology*

<sup>2</sup>*Materials Department of Wuhan University of Science and Technology*

**Symposium 27: Biomimetics and Bioinspired Processing of Advanced Ceramics  
(Location: TBD)**

**Session Chair:** Zhaoyong Zou, *Wuhan University of Technology*

**13:30 (S27-01) Bio-inspired Sustainable Structural Materials (Keynote)**

Shu-Hong Yu

*University of Science and Technology of China*

**14:00 (S27-02) Bio-inspired Multi-Structured Hollow Ceramic Nanofibers for Energy and Catalysis (Invited)**

Yong Zhao  
School of Chemistry, Beihang University

**14:25 (S27-03) Biological and Bioinspired Energy Absorption and Impact Resistant Structures and Materials (Invited)**

Wei Huang  
Huazhong University of Science and Technology

**14:50 (S27-04) Self-assembled Silica Colloids as Lightweight and Tough Bioinspired Composites**

Victoria Vilchez, Shitong Zhou, Florian Bouville\*  
Imperial College London

**15:10 (S27-05) Pressure-induced Crystallization and Densification of Amorphized Calcium Carbonate Hexahydrate Controlled by Interfacial Water**

Qihang Wang, Zhaoyong Zou\*, Zhengyi Fu\*  
Wuhan University of Technology

**15:30 Break**

**Session Chair:** Bing-Qiang Lu, *Tongji University*

**16:00 (S27-06) Biomineralisation in Bivalves: Inspiring Blueprints for Advanced Hybrid and Graded Ceramics (Keynote)**

Stephan E Wolf  
Friedrich-Alexander University Erlangen-Nürnberg (FAU)

**16:35 (S27-07) Spontaneous Oriented Growth of Amorphous Calcium Phosphate and its Implications in Biomineralization (Invited)**

Bing-Qiang Lu; Tenth People's Hospital, *Tongji University*

**17:00 (S27-08) Bioinspired Photonic Thermal Regulation Materials (Invited)**

Han Zhou; *Shanghai Jiao Tong University*

**17:25 (S27-09) Bioprocessing-Inspired Synthesis of Nanoporous Hematite Mesocrystals with Hierarchical Nanostructures for Energy Storage**

Rongjie Wang, Wenhao Chi, Jingjing Xie\*, Zhengyi Fu\*  
Wuhan University of Technology

**Symposium 28: PACRIM Young Scholars Forum  
(Location: TBD)**

**Session Chair:** Jing Feng, *Kunming University of Science and Technology*

**13:30 (S28-01) Design, Fabrication, and Application of Nitride-based Functionally Graded Materials for Extreme Environments (Keynote)**

Fei Chen<sup>1,\*</sup>, Zhifeng Huang<sup>2</sup>, Mingyong Jia<sup>1</sup>, Yueqi Wu<sup>1</sup>, Binhua Xiang<sup>1</sup>, Qiang Shen<sup>1</sup>, Lianmeng Zhang<sup>1</sup>  
<sup>1</sup>State Key Lab of Advanced Technology for Materials Synthesis and Processing, *Wuhan University of Technology*  
<sup>2</sup>International School of Materials Science and Engineering, *Wuhan University of Technology*

**14:00 (S28-02) Atomic Structure and Chemistry of Ceramic Grain Boundaries Studied using Atomic-resolution STEM-EDS (Invited)**

Bin Feng<sup>1,\*</sup>, Naoya Shibata<sup>1,2</sup>, Yuichi Ikuhara<sup>1,2</sup>  
<sup>1</sup>Institute of Engineering Innovation, *The University of Tokyo*  
<sup>2</sup>Nanostructures Research Laboratory, *Japan Fine Ceramics Center*

**14:25 (S28-03) Contributions of Bonding Heterogeneity to Mechanical and Thermal Properties of Rare Earth Molybdates for Thermal Barrier Coatings (Invited)**

Yiran Li; *Shanghai University*

**14:50 (S28-04) Effect of Post-annealing on High Temperature Performances of LaMgAl<sub>11</sub>O<sub>19</sub>/Yb<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> Thermal/environmental Barrier Coatings (Invited)**

Shujuan Dong\*, Xueqiang Cao  
State Key Laboratory of Silicate Materials for Architectures, *Wuhan University of Technology*



**15:15 (S28-05) Design and Realization of Interface Strengthening to GNPs/YSZ Nanocomposite Coating (Invited)**

Chenkun Sun, Xiaodong Zhang<sup>\*</sup>, You Wang  
*School of Materials Science and Engineering, Harbin Institute of Technology*

**15:40 Break**

**Session Chair:** Fei Chen, *Wuhan University of Technology*

**16:00 (S28-06) Synthesizable Discovery of Unconventional Proton-conducting Oxides by Computation and Machine Learning for Defect Chemistry (Keynote)**

Susumu Fujii<sup>1, 2, \*</sup>, Yuta Shimizu<sup>3</sup>, Junji Hyodo<sup>3</sup>, Akihide Kuwabara<sup>2</sup>, Yoshihiro Yamazaki<sup>3</sup>  
<sup>1</sup>*Division of Materials and Manufacturing Science, Osaka University*  
<sup>2</sup>*Nanostructures Research Laboratory, Japan Fine Ceramics Center*  
<sup>3</sup>*INAMORI Frontier Research Center, Kyushu University*

**16:30 (S28-07) Opportunities of In Situ Transmission Electron Microscopy for Measuring Microstructural Changes of Memristive Devices during Operation (Invited)**

Baoming Wang  
*School of Materials Science and Intelligent Engineering, Nanjing University*

**16:55 (S28-08) Preparation and Characterization of Nanostructured Lu<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> Feedstocks for Plasma-sprayed Environmental Barrier Coatings (Invited)**

Feifei Zhou<sup>1, \*</sup>, Donghui Guo<sup>2</sup>, Baosheng Xu<sup>2</sup>, Jie Xu<sup>1</sup>, You Wang<sup>3</sup>  
<sup>1</sup>*Zhenzhou Research Institute, Harbin Institute of Technology*  
<sup>2</sup>*Institute of Advanced Structure Technology, Beijing Institute of Technology*  
<sup>3</sup>*School of Materials Science and Engineering, Harbin Institute of Technology*

**17:20 (S28-09) Preparation and Properties of Low-temperature Co-fired Ceramics via Digital Light Processing Technology (Invited)**

Zhifeng Huang<sup>1, 2, \*</sup>, Yujuan Zhou<sup>2</sup>, Fei Chen<sup>1, 2</sup>, Qiang Shen<sup>2</sup>  
<sup>1</sup>*International School of Materials Science and Engineering, Wuhan University of Technology*  
<sup>2</sup>*State Key Lab of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

**17:45 (S28-10) Analyzing Grain Boundary Diffusivity of Nanocrystalline Alumina and Zirconia Ceramics from Sintering Models**

Yilei Huang, Hongbing Yang, Chang-An Wang, Yanhao Dong<sup>\*</sup>  
*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*

**Symposium 1: Virtual Materials Design and Ceramic Genome  
(Location: TBD)**

**Session Chair:** Yanhui Zhang, *Yanshan University*

**08:30 (S1-10) Stability and Properties of the MAX and MAB Phases: from Understanding to Prediction by DFT Simulations (Keynote)**

Yuelei Bai<sup>\*</sup>, Hang Yin, Zhiyao Lu, Xinxin Qi, Guangping Song, Yongting Zheng, Xiaodong He  
*Harbin Institute of Technology*

**09:00 (S1-11) Modeling and High-throughput Design of Complex-Structure Ceramics for Thermal/Environmental Barrier Coatings Applications (Invited)**

Yixiu Luo, Luchao Sun, Jiemin Wang, Jingyang Wang<sup>\*</sup>  
*Institute of Metal Research, Chinese Academy of Sciences*

**09:25 (S1-12) Thermodynamics of Surface and Oxygen Vacancy in Rare Earth Stannates by First-principles Calculations (Invited)**

Juanli Zhao<sup>1,2</sup>, Bin Liu<sup>2,\*</sup>  
<sup>1</sup>*Key Laboratory for Optoelectronics and Communication of Jiangxi Province, Jiangxi Science & Technology Normal University*  
<sup>2</sup>*School of Materials Science and Engineering, Shanghai University*

**09:50 (S1-13) Screening Rare Earth Aluminates as Promising Thermal Barrier Coatings by High-throughput First-principles Calculations**

Kaili Chu, Bin Liu<sup>\*</sup>; *Shanghai University*

**10:10 Break**

**Session Chair:** Yixiu Luo, *Institute of Metal Research, Chinese Academy of Sciences*

**10:30 (S1-14) Design of Electron-rich Intermetallic Compounds for Catalysis and Energy Applications (Keynote)**

Junjie Wang; *Northwestern Polytechnical University*

**11:00 (S1-15) Microstructural Design of BaTiO<sub>3</sub> Based Ceramics for Multilayer Ceramic Capacitor (Invited)**

Juanjuan Xing<sup>1,\*</sup>, Jiayan Huang<sup>1</sup>, Faqiang Zhang<sup>2</sup>, Hui Gu<sup>1</sup>  
<sup>1</sup>*Shanghai University*  
<sup>2</sup>*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**11:25 (S1-16) Investigation on Composition-dependent Optical and Mechanical Properties of Mg<sub>5x</sub>Al<sub>23-5x</sub>O<sub>27+5x</sub>N<sub>5-5x</sub> by First Principles Calculations Combined with Bond Valence Models**

Lu Ren<sup>1,2</sup>, Hao Wang<sup>1,\*</sup>, Bingtian Tu<sup>1</sup>  
<sup>1</sup>*Wuhan University of Technology*  
<sup>2</sup>*Jingchu University of Technology*

**11:45 Lunch**

**Session Chair:** Bin Liu, *Shanghai University*

**13:30 (S1-17) Material Discovery with Machine Learning Trained from a Small Database (Keynote)**

Shuzhou Li; *Nanyang Technological University*

**14:00 (S1-18) Application of Machine Learning Potentials in Materials Science (Invited)**

Fu-Zhi Dai; *AI for Science Institute*

**14:25 (S1-19) CALPHAD as a Foundational Tool for Genomic Design of Ceramics (Invited)**

Qing Chen<sup>1,\*</sup>, Weiwei Zhang<sup>2</sup>, Lina Kjellqvist<sup>1</sup>, Huahai Mao<sup>1</sup>, Johan Bratberg<sup>1</sup>  
<sup>1</sup>*Thermo-Calc Software AB*  
<sup>2</sup>*Thermo-Calc Software Inc*

**14:50 (S1-20) Theoretical Guided Discovery of 2D Materials: from Metal to MXene and XMene Layers (Invited)**

Weiwei Sun<sup>1,2,\*</sup>, Jiawei Tang<sup>1</sup>, Hui Li<sup>2,3</sup>, Xiaomin Zhang<sup>4</sup>, Jin Yu<sup>2,3</sup>, Litao Sun<sup>1</sup>  
<sup>1</sup>*SEU-FEI Nano-Pico Center, Key Laboratory of MEMS of Ministry of Education, Southeast University*  
<sup>2</sup>*Jiangsu Province Key Laboratory of Advanced Metallic Materials, Southeast University*  
<sup>3</sup>*School of Materials Science and Engineering, Southeast University*  
<sup>4</sup>*School of Physics, Southeast University*

**15:15 (S1-21) First-principles Investigation of Structural, Mechanical and Thermal Properties for Rare Earth Oxides RE<sub>2</sub>O<sub>3</sub> (RE = La - Lu)**

Yanning Zhang, Yiran Li\*, Bin Liu\*

*School of Materials Science and Engineering, Shanghai University*

**15:35 Break**

**Session Chair:** Yuanyuan Cui, *Shanghai University*

**16:00 (S1-22) Unveiling Structural Features and Mechanical Properties of Amorphous SiBCN Ceramics (Keynote)**

Bin Liu<sup>1,\*</sup>, Yuchen Liu<sup>1,2</sup>, Dechang Jia<sup>2</sup>, Yu Zhou<sup>2</sup>

<sup>1</sup>*School of Materials Science and Engineering, Shanghai University*

<sup>2</sup>*Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology*

**16:30 (S1-23) Topological Ordering of Memory Glass in Extended Length Scales (Invited)**

Sheng-Cai Zhu<sup>1,\*</sup>, Gu-Wen Chen<sup>1</sup>, Dongzhou Zhang<sup>2</sup>, Liang Xu<sup>3</sup>, Zhi-Pan Liu<sup>4</sup>, Ho-kwang Mao<sup>5</sup>, Qingyang Hu<sup>5</sup>

<sup>1</sup>*School of Materials, Shenzhen Campus of Sun Yat-sen University*

<sup>2</sup>*Hawai'i Institute of Geophysics and Planetology, School of Ocean Earth Science and Technology*

<sup>3</sup>*National Key Laboratory of Shock Wave and Detonation Physics, Institute of Fluid Physics, China Academy of Engineering Physics*

<sup>4</sup>*Collaborative Innovation Center of Chemistry for Energy Material, Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Key Laboratory of Computational Physical Science, Department of Chemistry, Fudan University*

<sup>5</sup>*Center for High Pressure Science and Technology Advanced Research (HPSTAR)*

**16:55 (S1-24) Theoretical Insight into the Solar Thermal Absorption Property of M<sub>2</sub>AlC MAX Phases (Invited)**

Huimin Xiang<sup>1,\*</sup>, Yanchun Zhou<sup>2,\*</sup>

<sup>1</sup>*Science and Technology on Advanced Functional Composite Laboratory, Aerospace Research Institute of Materials and Processing Technology*

<sup>2</sup>*School of Materials Science and Engineering, Zhengzhou University*

**17:20 (S1-25) Influence of Chemical Disorder on Mechanical and Thermal Properties of Multi-component Rare Earth Zirconate Pyrochlores (Invited)**

Yiran Li, Qi Wu, Bin Liu; *Shanghai University*

**17:45 (S1-26) Theoretical and Experimental Determination of Rare Earth Stannates RE<sub>2</sub>Sn<sub>2</sub>O<sub>7</sub> (RE = La - Lu) for High-temperature Wave-transparent Material Applications**

Shuping Wen, Zhilin Tian\*, Bin Li\*; *School of Materials, Shenzhen Campus of Sun Yat-sen University*

**Symposium 2: Advanced Characterization, Testing, and Analysis of Materials  
(Location: TBD)**

**Session Chair:** Masatomo Yashima, *Tokyo Institute of Technology*

**08:30 (S2-11) Tuning the Microstructure of Halide Perovskites for Better Performance and Stability (Keynote)**

Fang Zeng<sup>1,2</sup>, Tiebin Yang<sup>1</sup>, Weiyu Kong<sup>2</sup>, Yuhang Liang<sup>1</sup>, Yuze Lvtao<sup>1</sup>, Feng Li<sup>1</sup>, Tao Wang<sup>2</sup>, Binguo Peng<sup>2</sup>,

Xudong Yang<sup>2</sup>, Rongkun Zheng<sup>1,\*</sup>

<sup>1</sup>*School of Physics, The University of Sydney*

<sup>2</sup>*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**09:00 (S2-12) Phase Transition and Damage Evolution Mechanisms of Ductile Grinding of GaN Crystals (Keynote)**

Chen Li<sup>1,2</sup>

<sup>1</sup>*State Key Laboratory of Robotics and System (HIT), Harbin Institute of Technology*

<sup>2</sup>*School of Mechatronics Engineering, Harbin Institute of Technology*

**09:25 (S2-13) Grain Boundaries in Nanotwinned Diamond: Structure, Transition, and Migration (Invited)**

Wentao Hu, Ke Tong, Xiang Zhang, Bo Xu\*, Yongjun Tian\*

*Center for High Pressure Science (CHiPS), State Key Laboratory of Metastable Materials Science and Technology, Yanshan University*

**09:50 (S2-14) Subsurface Oxygen at Transition Metal Surfaces: its Direct Atom-resolved Imaging and Role in Metal Oxidation (Invited)**

Tingting Yao, Chunlin Chen\*

*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences*

**10:15 Break**

**Session Chair:** Rongkun Zheng, *The University of Sydney*

**10:30 (S2-15) Search for High Ion Conductors and their Crystal Structure Analyses (Keynote)**

Masatomo Yashima

*Department of Chemistry, School of Science, Tokyo Institute of Technology*

**11:00 (S2-16) Atomic Insights into the Growth of Energy Materials (Invited)**

Yue Lin

*Hefei National Research Center for Physical Sciences at the Microscale, University of Science and Technology of China*

**11:25 (S2-17) Amorphization in Hard Ceramics (Invited)**

Madhav Reddy Kolan

*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**11:50 Lunch**

**Session Chair:** Chunlin Chen, *University of Science and Technology of China*

**13:30 (S2-18) Physical Properties and Irradiation-energy Transport in Metal Diborides and Perspectives in High-entropy Materials (Keynote)**

Yanwen Zhang; *Energy and Environment Science & Technology, Idaho National Laboratory*

**14:00 (S2-19) X-Ray Imaging and Multi-Scale Heterogeneous Reaction: From Liquid-Electrolyte Batteries To All-Solid-State Batteries (Invited)**

Shuaifeng Lou; *School of Chemistry and Chemical Engineering, Harbin Institute of Technology*

**14:25 (S2-20) Ultrafast Dynamics Studies of Ferroelectric Materials (Invited)**

Qian Li; *Tsinghua University*

**14:50 (S2-21) Direct Observation of Thermally Induced Low-speed Martensitic Transformation in Yttria-Stabilized Zirconia**

Hiromu Shibaguchi<sup>1</sup>, Shun Kondo<sup>1</sup>, Bin Feng<sup>1</sup>, Naoya Shibata<sup>1,2</sup>, Yuichi Ikuhara<sup>1,2,\*</sup>

<sup>1</sup>*Institute of Engineering Innovation, The University of Tokyo*

<sup>2</sup>*Nanostructures Research Laboratory, Japan Fine Ceramics Center*

**15:10 (S2-22) Atomic-scale Structural Variation in a New Superconducting Ternary Boride**

Hanbin Gao<sup>1</sup>, Yang Song<sup>1</sup>, Yue Gong<sup>1</sup>, Er-Jia Guo<sup>2</sup>, Li-Zhi Zhang<sup>1</sup>, Qiang Zheng<sup>1,\*</sup>

<sup>1</sup>*National Centre for Nanoscience and Technology*

<sup>2</sup>*Institute of Physics*

**15:45 Break**

**Session Chair:** Yanwen Zhang, *Idaho National Laboratory*

**16:00 (S2-23) Atomic and Electronic Structures of Boundaries in AlN Thin Films (Keynote)**

Chunlin Chen

*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences*

**16:30 (S2-24) Domain Morphology Characterizations of High-performance Textured Piezoelectric Ceramics (Invited)**

Yingchun Liu<sup>1,\*</sup>, Hongjun Zhang<sup>1,\*</sup>, Bin Yang<sup>1</sup>, Wenwu Cao<sup>1,2</sup>, Jiubin Tan<sup>3</sup>

<sup>1</sup>*School of Instrumentation Science and Engineering, Harbin Institute of Technology*

<sup>2</sup>*Materials Research Institute, The Pennsylvania State University*

<sup>3</sup>*Center of Ultra-precision Optoelectronic Instrument Engineering, Harbin Institute of Technology*

**16:55 (S2-25) In-Situ Monitoring of Stress Evolution in Sealing Glass Based on Fiber Bragg Grating Sensors**

Keqian Gong, Yangyang Cai, Zheng Liu, Yong Zhang\*

*School of materials science and engineering, Yanshan University*

**17:15 (S2-26) Description of Fracture Features in the Presence of Small Cracks and Dynamic Loads Based on the Structural-temporal Approach**

Yanhui Zhang

*Beijing Key Laboratory of Fine Ceramics, State Key Laboratory of New Ceramics and Fine Processing, Institute of Nuclear and New Energy Technology, Tsinghua University*

**17:35 (S2-27) Microstructure and Formation Mechanism of BiFeO<sub>3</sub>-BaTiO<sub>3</sub> Ceramics**

Weixiong Qian<sup>1</sup>, Tao Liu<sup>1</sup>, Juanjuan Xing<sup>2,\*</sup>, Ying Jiang<sup>3,\*</sup>, Hui Gu<sup>2</sup>

<sup>1</sup>Materials Genome Institute, Shanghai University

<sup>2</sup>School of Materials Science and Engineering, Shanghai University

<sup>3</sup>State Key Laboratory of Silicon Materials and Center of Electron Microscopy, School of Materials Science and Engineering, Zhejiang University

**Symposium 3: Advanced Powder Processing and Green Manufacturing Technologies  
(Location: TBD)**

**Session Chair:** Hui Gu, *Shanghai University*

**08:30 (S3-11) The Ubiquitous Core-rim Structures and the Control of Transforming Microstructures in High-performance Si-based Ceramics (Keynote)**

Hui Gu

*School of Materials Science & Engineering, Shanghai University*

**09:00 (S3-12) Grain Growth and Microstructural Evolution: the Mixed Control Mechanism of Atom Transport (Keynote)**

Suk-Joong Kang

*Department of Materials Science and Technology, KAIST*

**09:30 (S3-13) Research and Industrialization of High Thermal Conductivity Silicon Nitride Ceramic Substrates (Invited)**

Jingxian Zhang<sup>\*</sup>, Yusen Duan, Dongliang Jiang

*Structural Ceramics Engineering Research Center, Shanghai Institute of Ceramics*

**09:55 (S3-14) Preparation of Graphene@h-BN Nanosheet Composites and their Property of Radiative Heat Dissipation**

Hua Su<sup>1</sup>, Kang Yuan<sup>1</sup>, Hui Yang<sup>3</sup>, Yong Li<sup>2,\*</sup>, Linli Xu<sup>1,\*</sup>

<sup>1</sup>Department of Applied Biology and Chemical Technology and Research Institute for Smart Energy, The Hong Kong Polytechnic University

<sup>2</sup>Key Laboratory of Cryogenics, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences

<sup>3</sup>Laboratory of Bio-inspired Smart Interface Science, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences

**10:15 Break**

**Session Chair:** Yuchi Fan, *Donghua University*

**10:30 (S3-15) Cold Sintering of Highly Transparent Calcium Fluoride Nanoceramic as a Universal Platform for High-power Lighting (Invited)**

Yuchi Fan; *Donghua University*

**10:55 (S3-16) Sintering Nanocrystalline Materials with Ultra-uniform Microstructure (Invited)**

Yanhao Dong; *Tsinghua University*

**11:20 (S3-17) Theoretical Design and Low-temperature Synthesis of High-entropy Diborides**

Liang Huang<sup>1</sup>, Jianghao Liu<sup>1</sup>, Haijun Zhang<sup>1,\*</sup>, Shaowei Zhang<sup>2,\*</sup>

<sup>1</sup>The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

<sup>2</sup>College of Engineering, Mathematics and Physical Sciences, University of Exeter

**11:40 (S3-18) Mechanical and Thermal Properties of Liquid Phase Sintering SiC with Y<sub>2</sub>O<sub>3</sub>-RE<sub>2</sub>O<sub>3</sub> (RE=Ho and Sc)**

Yuhong Chen<sup>\*</sup>, Wubin Qi, Xiuling Zhan, Wanxiu Hai

*School of MSE, North Minzu University*

**12:00 Lunch**

**Session Chair:** Hiroaki Furuse, *National Institute for Materials Science*

**13:30 (S3-19) Fabrication of Non-cubic Fluorapatite Laser Ceramics with Fine Microstructure (Keynote)**

Hiroaki Furuse<sup>\*</sup>, Koji Morita, Byung-Nam Kim, Tohru S. Suzuki

*National Institute for Materials Science*

**14:00 (S3-20) Additive Manufacturing Technique for Gradient Doped Transparent Laser Ceramics (Keynote)**

Jian Zhang<sup>1,2,3,\*</sup>, Haohao Ji<sup>3</sup>, Wenlan Gao<sup>3</sup>, Yu Liu<sup>4</sup>, Jie Ma<sup>5</sup>, Shiwei Wang<sup>3</sup>

<sup>1</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences

<sup>3</sup>Research Center for Transparent Ceramics, Shanghai Institute of Ceramics, Chinese Academy of Science

<sup>4</sup>School of Mechanical Engineering, Jiangnan University

<sup>5</sup>School of Physics and Electronics Engineering, Jiangsu Normal University

**14:30 (S3-21) A General Mechanism of Grain Growth and its Implications (Invited)**

Jianfeng Hu; \_\_\_ School of materials science and engineering, Shanghai University

**14:55 (S3-22) Preparation of High Hardness AlMgB<sub>14</sub> Ceramic Material**

Tianxing Sun<sup>1,2</sup>, Jingxian Zhang<sup>2,\*</sup>

<sup>1</sup>University of Chinese Academy of Sciences

<sup>2</sup>Structural Ceramics Engineering Research Center, Shanghai Institute of Ceramics

**15:15 (S3-23) Sonocapillary and Wetting Mechanism during Ultrasonic Brazing Porous Si<sub>3</sub>N<sub>4</sub> Ceramics in Air**

Zhiwu Xu; \_\_\_ State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**15:35 Break**

**Session Chair:** Yuwei He, DKSH (Shanghai) Ltd. Technology Scientific Instruments

**15:50 (S3-24) Key Factors Determining Good Dispersion of Particles in a Pure Solvent or Polymer Solution, and Evaluation and Control Methods (Invited)**

Yuwei He; \_\_\_ DKSH (Shanghai) Ltd. Technology Scientific Instruments

**16:15 (S3-25) Flow Property Characterization of Advanced Ceramics (Invited)**

Xiangyun Lu; \_\_\_ Micromeritics Instrument Corporation

**16:40 (S3-26) AION Transparent Ceramics from Powders Synthesized by Improved Direct Nitridation**

Jian Yang<sup>1,2</sup>, Youfu Zhou<sup>1,2,\*</sup>

<sup>1</sup>Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences (FJIRSM, CAS)

<sup>2</sup>Fujian Science & Technology Innovation Laboratory for Optoelectronic Information of China

**17:00 (S3-27) MnAl Layered Double Hydroxides: A Robust Host for Aqueous Ammonium-ion Storage with Stable Plateau and High Capacity**

Qiang Liu<sup>1</sup>, Fei Ye<sup>1</sup>, Kailin Guan<sup>1</sup>, Yun ting Yang<sup>1</sup>, Hongliang Dong<sup>2</sup>, Yuping Wu<sup>3</sup>, Zilong Tang<sup>4</sup>, Linfeng Hu<sup>1,\*</sup>

<sup>1</sup>School of Materials Science and Engineering, Southeast University

<sup>2</sup>Center for High Pressure Science and Technology Advanced Research

<sup>3</sup>School of Energy and Environment, Southeast University

<sup>4</sup>State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University

**17:20 (S3-28) Method and Application for Evaluating the Consistency of Silicon Nitride Powder Properties by Combustion Synthesis**

Honghua Li<sup>1</sup>, Wanru Dong<sup>2</sup>, Zengchao Yang<sup>1</sup>, Jiangtao Li<sup>1,\*</sup>

<sup>1</sup>Key Laboratory of Cryogenics, Technical Institute of Physics and Chemistry, Chinese Academy of Science

<sup>2</sup>Institute of Optical Physics and Engineering Technology

**17:40 (S3-29) Preparation and Thermal Properties of Diamond Particles Reinforced Silicon Carbide Substrate**

Pengfei Liu<sup>\*</sup>, Zhao Han; \_\_\_ School of Metallurgical Engineering, Anhui University of Technology

**Symposium 4: Novel and Strategic Processing and Manufacturing Technologies for Ceramics (Location: TBD)**

**Session Chair:** Yi-Tao Liu, Donghua University

**08:30 (S4-11) Exsolution and Coarsening in Metal Oxide Systems (Keynote)**

Ivar Reimanis

Metallurgical and Materials Engineering Department, Colorado School of Mines

**09:00 (S4-12) Making Ultra-Tough Al<sub>2</sub>O<sub>3</sub>/ZrO<sub>2</sub> Nanoceramics through Columnar Submicrocrystals with Three-level Micro-nano Structures (Invited)**

Yongting Zheng<sup>\*</sup>, Yongdong Yu, Xudong Liu, Yuchen Yuan, Renjie Wang  
Center for Composite Materials and Structures, Harbin Institute of Technology

**09:25 (S4-13) Two-step Sintering of Gd<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> Nanoceramics by Self-propagating Chemical Furnace and its Aqueous Durability Analysis (Invited)**

Kuibao Zhang; Southwest University of Science and Technology

**09:50 (S4-14) AC Flash Sintering of 1.5 mol% Yttria-Stabilized Zirconia with High Toughness through Current-ramp Control**

Fei Shen Ong<sup>1,2,\*</sup>, Kohta Nambu<sup>3,4</sup>, Kohei Hosoi<sup>1,5</sup>, Kenta Kawamura<sup>1,5</sup>, Bin Feng<sup>1,6</sup>, Koji Matsui<sup>1,5</sup>, Yuichi Ikuhara<sup>1,6</sup>, Hidehiro Yoshida<sup>1,2</sup>

<sup>1</sup>Next Generation Zirconia Social Cooperation Program, Institute of Engineering Innovation, The University of Tokyo

<sup>2</sup>Department of Materials Engineering, The University of Tokyo

<sup>3</sup>Department of Materials Science and Engineering, Kyushu University

<sup>4</sup>Research Center for Functional Materials, National Institute for Material Science

<sup>5</sup>Inorganic Materials Research Laboratory, Tosoh Corporation

<sup>6</sup>Institute of Engineering Innovation, The University of Tokyo

**10:10 Break**

**Session Chair:** Ivar Reimanis, Colorado School of Mines

**10:30 (S4-15) Flexible/Elastic Oxide Ceramic Nanofiber Materials for Thermal Insulation (Invited)**

Yi-Tao Liu; Innovation Center for Textile Science and Technology, Donghua University

**10:55 (S4-16) Uniform Flash Sintering by Material System Design**

Shenghuan Ding<sup>\*</sup>, Richard Todd<sup>\*</sup>; University of Oxford

**11:15 (S4-17) Rapid Densification Kinetics of 3 mol% Yttria-Stabilized Zirconia during Current-surge Stage of Flash Sintering**

Ke Ren<sup>1,\*</sup>, Dianguang Liu<sup>2</sup>, Ziting Niu<sup>1</sup>, Jinling Liu<sup>2</sup>, Yiguang Wang<sup>1,\*</sup>

<sup>1</sup>Beijing Institute of Technology

<sup>2</sup>Southwest Jiao tong University

**11:35 (S4-18) High-pressure Sintering Strategies for Enhanced Ceramic Materials: Case Studies with Hf<sub>0.95</sub>Ta<sub>0.05</sub>B<sub>2</sub> and Hf<sub>0.95</sub>Nb<sub>0.05</sub>B<sub>2</sub> Systems**

Qiqi Zhu<sup>1,2</sup>, Wei Ji<sup>1,2,\*</sup>, Zhengyi Fu<sup>1,2</sup>

<sup>1</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

<sup>2</sup>Hubei Longzhong Laboratory, Wuhan University of Technology Xiangyang Demonstration Zone

**11:55 Lunch**

**Session Chair:** Wei Ji, Wuhan University of Technology

**13:30 (S4-19) Porous Si<sub>3</sub>N<sub>4</sub>-Based Ceramics by Gelcasting and Self-Propagating High-temperature Synthesis (SHS) (Keynote)**

Chang-An Wang; School of Materials Science and Engineering, Tsinghua University

**14:00 (S4-20) Objective-Orientated Automatic Design Guided Fast Fabrication of High-Property VO<sub>2</sub>-based Multilayered Smart Coatings (Invited)**

Baoshun Liu<sup>\*</sup>, Xiujian Zhao, Minghua Qin, Jun Wang

State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology

**14:25 (S4-21) Applications of Visualization High-temperature Deformation Analysis Technique in the Inorganic Materials Field (Invited)**

Xin WANG, Haiyuan Zhang<sup>\*</sup>

Tianjin Zhonghuan Electric Furnace Co., Ltd.

**14:50 (S4-22) Porous Silicon Carbide Ceramics were Prepared by Gel Casting Process using PMMA as Pore-making Agent (Invited)**

Yinghan Zheng<sup>\*</sup>, Hailin Liu, Xiaoting Huang, Peiyan Yuan

China Building Materials Academy Co.,Ltd.

**15:15 (S4-23) Confined Synthesis of Ceramic-encapsulated Perovskite Phosphors with High Quantum Yield and Excellent Stabilities**

Zesheng Pan, Lianjun Wang\*, Wan Jiang\*

State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University

**15:35 Break**

**Session Chair:** Chang-An Wang, *Tsinghua University*

**15:50 (S4-24) Densification, Microstructure and Properties of Advanced Ceramics Sintered under Ultra-high Pressure (Invited)**

Wei Ji

State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

**16:15 (S4-25) Effect of W Content and Brazing Temperature on the Microstructure and Mechanical Behavior of B<sub>4</sub>C/TC<sub>4</sub> Joints**

Zhaoran Chen; *Shanghai institute of Ceramics, Chinese Academy of Sciences*

**16:35 (S4-26) Effect of Drying Condition and Printing Patterns on Mechanical Property of Dense Monolithic Si<sub>3</sub>N<sub>4</sub> Ceramics Fabricated by Direct Ink Writing**

Yitian Yang<sup>1, 2, \*</sup>, Zihua Yang<sup>2, 3, 4</sup>, Dechang Jia<sup>2, 3, \*</sup>, Yu Zhou<sup>2, 3</sup>, Haibo Wu<sup>1</sup>, Zhengren Huang<sup>1</sup>

<sup>1</sup>Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>3</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

<sup>4</sup>Chongqing Institute of Harbin Institute of Technology

**16:55 (S4-27) Application of Natural Graphite in Bulk Graphite and C/C Composite**

Junzhuo Wang, Wan Jiang\*

State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University

**17:15 (S4-28) Effect of Pressure on the Microstructure and Sintering Kinetics of TaC Ceramics**

Junfeng Gu; *Wuhan University of Technology*

**Symposium 5: Advanced Additive Manufacturing Technologies: Materials, Processes, and Systems (Location: TBD)**

**Session Chair:** Chang-Jun Bae, *Korea Institute of Materials Science (KIMS)*

**08:30 (S5-10) How the Densification Processes of Ceramic Matrix Composite Materials can Empower the Additive Manufacturing of Complex Silicon Carbide Components (Keynote)**

Alberto Ortona

University of Applied Sciences (SUPSI): Mechanical Engineering and Materials Technology Institute (MEMTI), Polo Universitario Lugano

**09:00 (S5-11) Laser Additive Manufacturing of Ultra-high Temperature Oxide Eutectic Composite Ceramics base on Melt Growth (Keynote)**

Haijun Su\*, Zhonglin Shen, Hao Jiang, Minghui Yu, Zhuo Zhang

State Key Laboratory of Solidification Processing, Northwestern Polytechnical University

**09:30 (S5-12) Additive Manufacturing of Electromagnetic Wave Absorption Ceramic Composites via SLS (Invited)**

Tao Zeng<sup>1, 2, \*</sup>, Siwen Yu<sup>3</sup>, Zuzheng Chen<sup>1</sup>, Yipeng Yang<sup>1</sup>

<sup>1</sup>Department of Civil and Environmental Engineering, College of Engineering, Shantou University

<sup>2</sup>Intelligent Manufacturing Key Laboratory of Ministry of Education, Shantou University

<sup>3</sup>School of Materials Science and Chemical Engineering, Harbin University of Science and Technology

**09:55 (S5-13) Vat Photopolymerisation of Pickering Emulsions for Hierarchically Porous Silicon Carbide Structures**

Terence Yan King Ho<sup>1, 2, \*</sup>, Kah Sheng Pung<sup>1</sup>, Zehui Du<sup>1, 2, \*</sup>, Chee Lip Gan<sup>1, 2, \*</sup>

<sup>1</sup>School of Materials Science and Engineering, Nanyang Technological University

<sup>2</sup>Temasek Laboratories, Nanyang Technological University

**10:15 Break**

The underlined author indicates the presenter. \* Indicates the corresponding author.

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**Session Chair:** Alberto Ortona, *Polo Universitario Lugano*

**10:30 (S5-14) In-situ Monitoring of Multi-Physical Dynamics in Ceramic Additive Manufacturing (Keynote)**

Jihyun Lee, Sujin Park, Seongwan Jang, Chang-Jun Bae\*  
*Department of 3DPrinting Materials, Korea Institute of Materials Science (KIMS)*

**11:00 (S5-15) Microstructure and Properties of Ceramic Core for Turbine Engine Blades Prepared via Stereolithography 3D Printing (Keynote)**

Jinguo Li<sup>1,2,\*</sup>, Qiaolei Li<sup>1</sup>, Jingjing Liang<sup>1,2</sup>, Yizhou Zhou<sup>1</sup>, Xiaofeng Sun<sup>1</sup>  
<sup>1</sup>*Institute of Metal Research, Chinese Academy of Sciences*  
<sup>2</sup>*Space Manufacturing Technology (CAS Key Lab)*

**11:30 (S5-16) Vat Photopolymerization 3D Printing of Ceramics: Materials, Equipment, Process and Applications (Invited)**

Wenli Li<sup>1</sup>, Weiwei Liu<sup>1</sup>, Zhanwen Xing<sup>1,2,\*</sup>  
<sup>1</sup>*School of Mechanical and Electrical Engineering, Soochow University*  
<sup>2</sup>*ZRapid Technologies Co., Ltd*

**11:55 Lunch**

**Session Chair:** Junzong Feng, *National University of Defense Technology*

**13:30 (S5-17) 3D Printing of Transparent Ceramics (Keynote)**

Yiquan Wu  
*Kazuo Inamori School of Engineering, New York State College of Ceramics-SUNY, Alfred University*

**14:00 (S5-18) 3D Printed SiOC Ceramic-based Radar/Infrared Stealth Metamaterials (Keynote)**

Hui Mei\*, Li Yao, Hongxia Liu, Minggang Zhang, Yuekai Yan  
*Science and technology on Thermostructural Composite Materials Laboratory, School of Mater Sci & Eng, Northwestern Polytechnical University*

**14:30 (S5-19) FeCuNi based Cermets Prepared by Fused Deposition Molding: From High-qualified Composite Feedstock to Dense Sintered (Invited)**

Huiwen Xiong\*, Ting Shen, Lei Zhang, Kechao Zhou\*  
*State Key Laboratory of Powder Metallurgy, Central South University*

**14:55 (S5-20) Preparation and Properties of Si<sub>3</sub>N<sub>4</sub> Ceramics by Additive Manufacturing (Invited)**

Jia-Min Wu<sup>1,2,\*</sup>, Hai-Lu Huang<sup>1,2</sup>, Meng Li<sup>1,2</sup>, Ya-Ru Wu<sup>1,2</sup>, Chong Tian<sup>1,2</sup>, Yu-Sheng Shi<sup>1,2</sup>  
<sup>1</sup>*State Key Laboratory of Materials Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology*  
<sup>2</sup>*Engineering Research Center of Ceramic Materials for Additive Manufacturing, Ministry of Education*

**15:20 (S5-21) Embedded 3D Printing of Microstructured Multi-material Composites (Invited)**

Shitong Zhou\*, Florian Bouville, Eduardo Saiz\*  
*Department of Materials, Imperial College London*

**15:45 Break**

**Session Chair:** Yiquan Wu, *Alfred University*

**16:00 (S5-22) Additive Manufacturing and Properties of Silica-based Aerogels (Keynote)**

Junzong Feng\*, Lukai Wang, Yonggang Jiang, Liangjun Li, Yijie Hu, Jian Feng\*  
*Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology*

**16:30 (S5-23) Metal-doped Polymer-derived SiOC Composites with Inorganic Metal Salt as the Metal Source by Digital Light Processing 3D Printing (Invited)**

Anran Guo<sup>1,2,\*</sup>, Chong He<sup>2</sup>, Jiachen Liu<sup>1</sup>, Liwen Yan<sup>1</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Key Lab of Advanced Ceramics and Machining Technology of Ministry of Education*  
<sup>2</sup>*School of Textile Science and Engineering, State Key Laboratory of New Textile Materials and Advanced Processing Technology, Wuhan Textile University*

**16:55 (S5-24) Design and Additive Manufacturing of Ceramic Metamaterials with Programmable Thermal Expansion (Invited)**

Keqiang Zhang; *School of Materials Science and Engineering, Tsinghua University*

**17:20 (S5-25) 3D Printing of Bio-inspired Ceramic Composite (Invited)**

Jinxing Sun\*, Jiaming Bai, Jon Binner  
South University of Science and Technology of China

**17:45 (S5-26) Design of Lithium Ion diffusivity in Structured Electrodes Fabricated by Direct Ink Writing**

Sujin Park, Yangyang Li, Seongwan Jang, Chang-Jun Bae\*  
Department of 3D Printing Materials, Korea Institute of Materials Science (KIMS)

**Symposium 6: Engineering Ceramics and Ceramic Matrix Composites (CMCs):  
Processing, Design, Development, and Applications  
(Location: TBD)**

**Session Chair:** Jianjun Sha, *Dalian University of Technology*

**08:30 (S6-11) Multilevel Design of Environmental Barrier Coatings for SiC<sub>f</sub>/SiC Composite (Keynote)**

Jingyang Wang  
Institute of Metal Research, Chinese Academy of Sciences

**09:00 (S6-12) The Ablation Behaviors of C/SiC Composites in Plasma Wind Tunnel (Invited)**

Yiguang Wang\*, Zuozheng Chen; *Beijing Institute of Technology*

**09:25 (S6-13) The In-service Behavior of 2D SiC/SiC with Si/Mullite/BSAS Environmental Barrier Coatings under Simulated Conditions (Invited)**

Jianzhang Li<sup>1,\*</sup>, Xinxin Cao<sup>1</sup>, Yulei Wang<sup>1</sup>, Xingang Luan<sup>2</sup>, Ziqi Zhang<sup>1</sup>, Laifei Cheng<sup>2</sup>, Litong Zhang<sup>2</sup>  
<sup>1</sup>National Engineering Research Center of Ceramic Matrix Composite Manufacture Technology, Northwestern Polytechnical University  
<sup>2</sup>Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University

**09:50 (S6-14) Correlation Study of Tensile Properties and Microstructure Evolution of Fibre Bundle SiC/SiC**

Xiangyun Gao\*, Chen Zhang, Xuehan Ma, Bojie You  
<sup>1</sup>Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University  
<sup>2</sup>School of Materials Science and Engineering, Chang'an University

**10:10 Break**

**Session Chair:** Jingyang Wang, *Institute of Metal Research, Chinese Academy of Sciences*

**10:30 (S6-15) Microstructure and Mechanical Properties of Continuous Carbon Fiber-reinforced UHTC Composites (Invited)**

Jianjun Sha<sup>1,2,\*</sup>, Yingjun Liu<sup>1</sup>, Cheng Su<sup>1</sup>, Yufei Zu<sup>1</sup>, Jixiang Dai<sup>1</sup>  
<sup>1</sup>Key Laboratory of Advanced Technology for Aerospace Vehicles of Liaoning Province, Dalian University of Technology  
<sup>2</sup>State Key Laboratory of Structural Analysis, Optimization and CAE Software for Industrial Equipment, Dalian University of Technology

**10:55 (S6-16) Design, Preparation and Performance of Anti-oxidation Coatings for C<sub>f</sub>/C-SiC Composites (Invited)**

Sufang Tang\*, Chenglong Hu; *Institute of Metal Research, Chinese Academy of Sciences*

**11:20 (S6-17) Novel Fabrication Process for SiO<sub>2</sub><sub>f</sub>/SiO<sub>2</sub> Composites**

Tengteng Xu, Rubing Zhang\*; *Institute of Engineering Mechanics, Beijing Jiaotong University*

**11:40 (S6-18) The Effect of Different Ball Milling Methods on the Properties of h-BN Matrix Composites**

Wenlong Bai<sup>1</sup>, Boxin Wei<sup>1,\*</sup>, Lei Chen<sup>2,\*</sup>, Wen Zhang<sup>2,\*</sup>, Yujin Wang<sup>2,\*</sup>  
<sup>1</sup>School of Materials Science and Chemical Engineering, Harbin University of Science and Technology  
<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

**12:00 Lunch**

**Session Chair:** Sufang Tang, *Institute of Metal Research, Chinese Academy of Sciences*

**13:30 (S6-19) Effect of Electric Fields on Crack Healing Behavior in Polycrystalline ZrO<sub>2</sub>(8Y) (Invited)**

Koji Morita  
National Institute for Materials Science (NIMS), Research Center for Electronic and Optical Materials

**13:55 (S6-20) Design and Construction of Highly Hard yet Toughened TMB<sub>2</sub> based Nanocomposite Thin Films (Invited)**

Kan Zhang\*, Weitao Zheng; *State Key Laboratory of Superhard Materials, Department of Materials Science, Jilin University*

**14:20 (S6-21) Formation Ability Descriptors for High-entropy Carbides Established through High-throughput Methods and Machine Learning (Invited)**

Hong Hong, Yanhui Chu\*; *School of Materials Science and Engineering, South China University of Technology*

**14:45 (S6-22) Efficient Machine Learning Approach for Defect Characterization and Mechanical Property Prediction of Unidirectional Ceramic Matrix Composites**

Bo Zhang, Changqi Liu\*, Duoqi Shi, Xiaoguang Yang  
*School of Energy and Power Engineering, Beihang University*

**15:05 (S6-23) Intelligent Identification of High-temperature Tensile Damage in CVI-2D SiC/SiC Composites**

Bojie You<sup>1,\*</sup>, Xiangyun Gao<sup>1</sup>, Xuehan Ma<sup>1</sup>, Chen Zhang<sup>2</sup>, Yi Zhang<sup>3</sup>  
<sup>1</sup> *School of materials, Northwestern Polytechnical University*  
<sup>2</sup> *School of Materials Science and Engineering, Chang'an University*  
<sup>3</sup> *Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University*

**15:25 (S6-24) Fabrication and Characterization of Mullite Foamed Ceramics with Low Thermal Conductivity**

Wenyong Zhou<sup>1,\*</sup>, Degang Zhao<sup>1</sup>, Changcun Li<sup>1</sup>, Zheng Zhang<sup>2</sup>  
<sup>1</sup> *School of Materials Science and Engineering, University of Jinan*  
<sup>2</sup> *CNRS, CEMHTI UPR3079, Univ. Orléans*

**15:45 Break**

**Session Chair:** Xiaoming Duan, *Harbin Institute of Technology*

**16:00 (S6-25) Microstructure Evolution and Grain Growth Mechanisms of Pure h-BN Ceramic and h-BN Composite Ceramics during Hot-Pressing (Invited)**

Xiaoming Duan<sup>1,2,3,\*</sup>, Zhuo Zhang<sup>1,2,3</sup>, Baofu Qiu<sup>1,2,3</sup>, Dechang Jia<sup>1,2,3,\*</sup>, Yu Zhou<sup>1,2,3</sup>  
<sup>1</sup> *School of Materials Science and Engineering, Harbin Institute of Technology (HIT)*  
<sup>2</sup> *Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, HIT*  
<sup>3</sup> *Institute for Advanced Ceramics, Harbin Institute of Technology*

**16:25 (S6-26) Preparation of (HfZrCeTi-Ln)O<sub>2-x</sub> Nanocrystals and Robust Aerogel Spiral Fibers (Invited)**

Fangwei Guo<sup>1,2,3</sup>, Xing Zhang<sup>2</sup>, Ruiji Zhang<sup>1</sup>  
<sup>1</sup> *Shanghai Key Laboratory of Advanced High-temperature Materials and Precision Forming, School of Materials Science and Engineering, Shanghai Jiao Tong University*  
<sup>2</sup> *Aerospace System Engineering Shanghai*  
<sup>3</sup> *Laboratory for Multifunctional Materials, Department of Materials, ETH Zürich*

**16:50 (S6-27) Fabrication and Properties of C<sub>f</sub>(Ti<sub>0.2</sub>Zr<sub>0.2</sub>Hf<sub>0.2</sub>Nb<sub>0.2</sub>Ta<sub>0.2</sub>)C-SiC High-Entropy Ceramic Matrix Composites via Precursor Infiltration and Pyrolysis**

Feiyan Cai<sup>1,2,3</sup>, Dewei Ni<sup>1,2,\*</sup>, Shaoming Dong<sup>1,2,\*</sup>  
<sup>1</sup> *State Key Laboratory of High Performance Ceramics & Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences*  
<sup>2</sup> *Structural Ceramics and Composites Engineering Research Center, Shanghai Institute of Ceramics, Chinese Academy of Sciences*  
<sup>3</sup> *University of Chinese Academy of Sciences*

**17:10 (S6-28) Novel (Zr, Ti)(C, N)-SiC Ceramics via Reactive Hot-pressing and its Enhanced Oxidation Resistance at 850-950 °C**

Boxin Wei<sup>1,\*</sup>, Liwei Wang<sup>1</sup>, Mengmeng Zhang<sup>1</sup>, Dong Wang<sup>2</sup>, Lei Chen<sup>3</sup>, Yujin Wang<sup>3</sup>  
<sup>1</sup> *School of Materials Science and Chemical Engineering, Harbin University of Science and Technology*  
<sup>2</sup> *School of Materials Science and Engineering, Anhui University of Technology*  
<sup>3</sup> *Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology*

**17:30 (S6-29) Thermophysical Properties of SiC/SiC Composites Prepared by Chemical Vapour Infiltration Method**

Chen Zhang\*, Qing Zhang, Xiangyun Gao, Xuehan Ma, Bojie You  
<sup>1</sup> *School of Materials Science and Engineering, Chang'an University*  
<sup>2</sup> *Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University*

**Symposium 7: Advanced Structural Ceramics and CMCs for Ultra Extreme Environments  
(Location: TBD)**

**Session Chair:** Zhisheng Zhao, *Yanshan University*;  
Yongsheng Liu, *Northwestern Polytechnical University*

**08:30 (S7-12) Investigation on the Ultra-high Temperature Ceramic Matrix Composites Fabricated by Reactive Melt Infiltration (Keynote)**

Xiang Xiong; *State Key Laboratory of Powder Metallurgy, Central South University*

**09:00 (S7-13) Ultra-high Temperature Ceramics Coatings with High Oxygen-blocking Ability (Invited)**

Xuanru Ren; *Henan Academy of Sciences*

**09:25 (S7-14) Design and Performance of Ultra-High Temperature Ceramic Matrix Composites (Invited)**

Dewei Ni\*, Bowen Chen, Shaoming Dong; *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**09:50 (S7-15) An Unusual Carbon-Ceramic Composite with Gradients in Composition and Porosity Delivering Outstanding Thermal Protection Performance up to 1900 °C (Invited)**

Chenglong Hu, Meng Yan, Sufang Tang\*  
*Institute of Metal Research, Chinese Academy of Sciences*

**10:15 Break**

**Session Chair:** Xiang Xiong, *Central South University*  
Xuanru Ren, *Henan academy of sciences*

**10:30 (S7-16) Research of Ultra-high Temperature Ceramic Matrix Composites Prepared by Organic-inorganic Transformation (Keynote)**

Yuchen Pei; *Research Institute of Aerospace Special Materials and Processing Technology*

**11:00 (S7-17) Preparation, Microstructure and Properties of Ultra-high Temperature Carbide Ceramic Matrix Composites (Invited)**

Fan Wan\*, Rongjun Liu; *College of Aerospace Science and Engineering, National University of Defense Technology*

**11:25 (S7-18) Characterization of the Temperature Dependence of the Mechanical Properties of the Laminated Ultra-high Temperature Ceramic Matrix Composites (Invited)**

Ruzhuan Wang<sup>1,\*</sup>, Mingyu Gu<sup>1</sup>, Bi Jia<sup>1</sup>, Weiguo Li<sup>2</sup>  
<sup>1</sup>*Chongqing University of Science and Technology*  
<sup>2</sup>*Chongqing University*

**11:50 (S7-19) Design and Properties of Reusable Ultra-high Temperature Ceramic Matrix Composites**

Bowen Chen, Dewei Ni, Shaoming Dong  
*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**12:00 Lunch**

**Session Chair:** Xiaohong Sun, *Tianjin University*;  
Chenglong Hu, *Institute of Metal Research, CAS*

**13:30 (S7-20) Grain Boundary Mobility Control in Zirconia Ceramics (Keynote)**

Yanhao Dong; *Tsinghua University*

**14:00 (S7-21) Oxidation and Corrosion Behaviors of Yttrium Silicate Modified SiC<sub>f</sub>/SiC Composites in Water-oxygen Environments (Invited)**

Yongsheng Liu  
*Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University*

**14:25 (S7-22) Low-temperature Sintered (Ti,Zr, Nb,Ta, Mo)C-based Composites Toughened with Damage-free SiC<sub>w</sub>**

Yang Liu<sup>1</sup>, Weiming Guo<sup>1,\*</sup>, Liang Xu<sup>1</sup>, Shikuan Sun<sup>2</sup>, Hua-Tay Lin<sup>1,\*</sup>  
<sup>1</sup>*School of Electromechanical Engineering, Guangdong University of Technology*  
<sup>2</sup>*School of Material Science and Energy Engineering, Foshan University*

**14:45 (S7-23) Reactive Sintering of 2.5D C<sub>f</sub>/ZrC-SiC Ceramic Matrix Composites**

Haoyang Wu<sup>1</sup>, Ji Zou<sup>1,\*</sup>, Jingjing Liu<sup>1</sup>, Mirva Eriksson<sup>2</sup>, Weimin Wang<sup>1</sup>, Zhengyi Fu<sup>1</sup>

<sup>1</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

<sup>2</sup>Department of Materials and Environmental Chemistry, Stockholm University

**15:05 (S7-24) Preparation and Properties of C<sub>f</sub>/(Ti<sub>0.2</sub>Zr<sub>0.2</sub>Hf<sub>0.2</sub>Nb<sub>0.2</sub>Ta<sub>0.2</sub>)B<sub>2</sub>-SiC High Entropy Ceramic Matrix Composites by Spark Plasma Sintering**

Feilong Huang, Cheng Fang\*, Hailong Wang\*

<sup>1</sup>School of Materials Science and Engineering, Zhengzhou University

**15:25 (S7-25) Preparation and Oxidation Behavior of SiC-HfB<sub>2</sub>-Lu<sub>2</sub>O<sub>3</sub>/SiC Coatings for Carbon/Carbon Composites**

Wei Xie<sup>1,2</sup>, Qiangang Fu<sup>2,\*</sup>, Caixiang Xiao<sup>2</sup>, Hailong Wang<sup>1,\*</sup>

<sup>1</sup>Zhongyuan Critical Metals Laboratory, Zhengzhou University

<sup>2</sup>Shaanxi Province Key Laboratory of Fiber Reinforced Light Composite Materials, Northwestern Polytechnical University

**15:45**

**Break**

**Session Chair:** Yanhao Dong, *Tsinghua University*;

Wenwen Wu, *Shaanxi Normal University*

**16:00 (S7-26) Pre-research on Powder Synthesis, 3D Printing, and Application of Some Oxide and Nitride Ceramics (Invited)**

Xiaohong Sun; *Tianjin University*

**16:25 (S7-27) Dynamic Oxidation Mechanism of ZrB<sub>2</sub>-20 vol% SiC in High-enthalpy Plasma Wind Tunnel**

Zuozheng Chen, Yiguang Wang\*

*Institute of Advanced Structural Technology, Beijing Institute of Technology*

**16:45 (S7-28) The Mechanical Properties and Toughening Mechanism of ZrB<sub>2</sub>-SiC Spiral Fibers Composite Prepared by Combining Liquid Rope Effect with Non-solvent Induced Phase Separation Method**

Ruiji Zhang, Fangwei Guo\*, Xiaofeng Zhao

*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**17:05 (S7-29) Water and Oxygen Corrosion Resistance of SiC<sub>f</sub>/SiC-SiYBC Composites Prepared by Reactive Melt Infiltration at 1300~1500°C**

Binghui Zhang, Yongsheng Liu\*

*Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University*

**17:25 (S7-30) Development of Novel Environmental Barrier Coatings for SiC-based Ceramics to Enable Temperatures above 1450°C**

Zhenya Zhang<sup>1,2</sup>, Shihong Zhang<sup>1,\*</sup>, Eungsun Byon<sup>2,\*</sup>

<sup>1</sup>Key Laboratory of Green Fabrication and Surface Technology of Advanced Metal Materials, Ministry of Education, Anhui University of Technology

<sup>2</sup>Department of Extreme Environmental Coatings, Korea Institute of Materials Science

**17:45 (S7-31) Ablation Behavior of C<sub>f</sub>/ZrB<sub>2</sub>-SiC-ReO<sub>1.5</sub> Based Composites Ultra High Temperature Ceramic Matrix Composites**

Chen Li<sup>1,2</sup>, Ji Zou<sup>1,2,\*</sup>, Zhengyi Fu<sup>1,2</sup>

<sup>1</sup>School of Materials Science and Engineering, Wuhan University of Technology

<sup>2</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

**Symposium 8: Polymer Derived Ceramics (PDCs) and Composites  
(Location: TBD)**

**Session Chair:** Dušan Galusek, *Alexander Dubček University of Trenčín*

**08:30 (S8-11) Polymer-derived Porous Ceramics Prepared via Pickering Emulsions (Keynote)**

Philippe MIELE; *IEM-University of Montpellier*

**09:00 (S8-12) Functional Coatings based on Polymer Derived Ceramics: Preparation and Application (Invited)**

Zongbo Zhang; *Institute of Chemistry, Chinese Academy of Sciences*

**09:25 (S8-13) Precursor-derived Nearly Stoichiometric Polycrystalline SiC Fibers and their High-temperature Properties (Invited)**

Yanzi Gou; Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology

**09:50 (S8-14) Synthesis of Polyborocarbosilane and Investigation of its Pyrolysis Process**

Gaoming Mo; Engineering Laboratory of Advanced Energy Materials, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

**10:10 Break**

**Session Chair:** Philippe Miele, *University of Montpellier*

**10:30 (S8-15) Molecular Design towards SiC/(Ti,Zr,Hf,Ta)C-based Ultrahigh Temperature Ceramic Nanocomposites with Multi-principal Elements (Invited)**

Qingbo Wen<sup>1,\*</sup>, Li Lu<sup>1</sup>, Zhaoju Yu<sup>2</sup>, Yalei Wang<sup>1</sup>, Yi Zeng<sup>1</sup>, Xiang Xiong<sup>1</sup>, Ralf Riedel<sup>3</sup>

<sup>1</sup>State Key Laboratory of Powder Metallurgy, Central South University

<sup>2</sup>College of Materials, Xiamen University

<sup>3</sup>Institut für Materialwissenschaft, Technische Universität Darmstadt

**10:55 (S8-16) Silicate Ceramics from Organosilicon Precursors (Invited)**

Enrico Bernardo<sup>1</sup>, Dušan Galusek<sup>2,\*</sup>

<sup>1</sup>Department of Materials Engineering, University of Padova

<sup>2</sup>Centre for Functional and Surface Functionalized Glass, Alexander Dubček University of Trenčín

**11:20 (S8-17) Effect of Zr on the Solid Sintering Process of SiBCN Ceramics**

Meng Zhang<sup>1</sup>, Dechang Jia<sup>1,\*</sup>

<sup>1</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

**11:40 (S8-18) Fabrication of Polymer-derived SiBCN Ceramic Temperature Sensor with Excellent Sensing Performance**

Qian Chen<sup>1</sup>, Mitsuhiro Saito<sup>2</sup>, Kazuaki Kawahara<sup>2</sup>, Kazutoshi Inoue<sup>1</sup>, Atsutomo Nakamura<sup>3</sup>, Yuichi Ikuhara<sup>1,2,\*</sup>

<sup>1</sup>Advanced Institute for Materials Research, Tohoku University

<sup>2</sup>Institute of Engineering Innovation, The University of Tokyo

<sup>3</sup>Graduate school of Engineering Science, Osaka University

**12:00 Lunch**

**Session Chair:** Gang Shao, *Zhengzhou University*

**13:30 (S8-19) Towards Functional Microstructured Systems via 3D-Printed Photocurable Pre-ceramic Formulations (Keynote)**

Dong-Pyo Kim; POSTECH

**14:00 (S8-20) Fine Processing of Polymer-derived SiAlCN Ceramics and their Application in High-temperature Sensors (Invited)**

Yejie Cao<sup>1,\*</sup>, Yigao Chen<sup>1</sup>, Yiguang Wang<sup>2</sup>

<sup>1</sup>Northwestern Polytechnical University

<sup>2</sup>Beijing Institute of Technology

**14:25 (S8-21) Characteristics of the Decomposition and Deformation Behavior of Polycarbosilane while the Organic-inorganic Consersion Process with Different Polymer Properties (Invited)**

Yoonjoo LEE; Korea Institute of Ceramic Engineering and Technology

**14:50 (S8-22) Functionalized Boron Nitride Nanosheets Modified SiBNO Fibers with Enhanced High-temperature Stability**

Quzhi Song<sup>1</sup>, Xin Long<sup>1</sup>, Bing Wang<sup>1</sup>, Yingde Wang<sup>1,\*</sup>

<sup>1</sup>Science and Technology on Advanced Ceramic Fiber and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology

**15:10 (S8-23) Preparation of SiN<sub>x</sub> Film via Room-temperature Photochemical Conversion**

Pengfei Li<sup>1</sup>, Zongbo Zhang<sup>1,\*</sup>, Caihong Xu<sup>1</sup>

<sup>1</sup>Laboratory of High-tech Polymer Materials, Institute of Chemistry, Chinese Academy of Sciences

**15:30 Break**

**Session Chair:** Dong-Pyo Kim, *Pohang University of Science and Technology*

**16:00 (S8-24) Harsh Environment Sensing Properties of Polymer-derived Ceramics (Invited)**

Gang Shao<sup>\*</sup>, Daoyang Han, Chao Ma  
*School of Materials Science and Engineering, Zhengzhou University*

**16:25 (S8-25) Designing Functional Inorganic Materials through Molecular Precursor Approach for Small Molecule Activation Catalysts (Invited)**

Shotaro Tada<sup>1,\*</sup>, Samuel Bernard<sup>3</sup>, Ravi Kumar N V<sup>1</sup>, Yuji Iwamoto<sup>2</sup>  
<sup>1</sup>*Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras*  
<sup>2</sup>*Department of Life Science and Applied Chemistry, Graduate School of Engineering, Nagoya Institute of Technology*  
<sup>3</sup>*University of Limoges*

**16:50 (S8-26) High-strength Boron Nitride Fibers Derived from Novel Polyborazine Precursor (Invited)**

Bing Wang<sup>\*</sup>, Yi'ang Du, Yingde Wang  
*National University of Defense Technology*

**17:15 (S8-27) Refractory Metal Polymer-derived Ultra-high Temperature Ceramic Fibers**

Cheng Han<sup>\*</sup>, Xiaozhou Wang, Yingde Wang  
*Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, National University of Defense Technology*

**17:35 (S8-28) Single-source Precursor Synthesis, Mechanical Properties and Oxidation Behavior of SiCN/(Hf, Zr, Ti, Ta)<sub>x</sub>N<sub>1-x</sub> High Entropy Ceramic Nanocomposite**

Tianxing Jiang, Qingbo Wen<sup>\*</sup>, Li Lu, Yi Zeng, Xiang Xiong  
*State Key Laboratory of Powder Metallurgy, Central South University*

**Symposium 9: Novel Ceramic Coatings and Technology  
(Location: TBD)**

**Session Chair:** Hongbo Guo, *Beihang University*

**08:30 (S9-13) TBD (Keynote)**

Robert Vassen; *Forschungszentrum Jülich GmbH*

**09:00 (S9-14) Strategies for Improving the Lifetime of Air-plasma Sprayed Thermal Barrier Coatings (Invited)**

Xiaofeng Zhao; *Shanghai Jiao Tong University*

**09:25 (S9-15) Tailoring the Surface Structures of Functional Coatings Deposited via Liquid Plasma Spray (Invited)**

Pengyun Xu<sup>\*</sup>, Xiaomu Sui, Guijie Liu  
*Department of Mechanical and Electrical Engineering, Ocean University of China*

**09:50 (S9-16) High Temperature Corrosion Behavior and Degradation Mechanism of Yb<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> Environmental Barrier Coatings (Invited)**

Jian Wu<sup>1</sup>, Siqin Yan<sup>2</sup>, Xi Tan<sup>1</sup>, Xiaofeng Zhang<sup>1,\*</sup>  
<sup>1</sup>*National Engineering Laboratory for Modern Materials Surface Engineering Technology & The Key Lab of Guangdong for Modern Surface Engineering Technology, Institute of New Materials, Guangdong Academy of Science*  
<sup>2</sup>*School of Materials Science and Chemical Engineering, State Key Laboratory Base of Novel Functional Materials and Preparation Science, Ningbo University*

**10:15 Break**

**Session Chair:** Robert Vassen, *Forschungszentrum Jülich GmbH*

**10:30 (S9-17) TBD (Keynote)**

Hongbo Guo  
*Beihang University*

**11:00 (S9-18) High-temperature Corrosion Behaviors of Rare-earth Monosilicate Ceramic for Environmental Barrier Coatings Applications**

Shuqi Wang<sup>1,2</sup>, Jiahu Ouyang<sup>1,2,\*</sup>, Guoliang Chen<sup>1,2</sup>, Yongchun Zou<sup>1,2</sup>, Yaming Wang<sup>1,2</sup>, Dechang Jia<sup>1,2</sup>, Yu Zhou<sup>1,2</sup>  
<sup>1</sup>*Institute for Advanced Ceramics, Harbin Institute of Technology (HIT)*  
<sup>2</sup>*Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, HIT*

**11:20 (S9-19) High Temperature Properties of High-entropy Rare-Earth Monosilicate Environmental Barrier Coatings**

Xin Zhong\*, Yaran Niu, Xuebin Zheng, Chuanxian Ding

Key Laboratory of Inorganic Coating Materials CAS, Shanghai Institute of Ceramics, Chinese Academy of Sciences

**11:40 (S9-20) Study on HfB<sub>2</sub>-SiC Oxidation and Ablation Protective Coating for Carbon/Carbon Composites**

Jiaping Zhang\*, Jiaqi Hou, Lei Zhou

Shaanxi Key Laboratory of Fiber Reinforced Light-Weight Composites, Northwestern Polytechnical University

**12:00 Lunch**

Session Chair: Mikhail Zheludkevich, Helmholtz-Zentrum Hereon

**13:30 (S9-21) Surface Engineering and Study of Coatings for High Temperature Applications (Keynote)**

Ping Xiao

Department of Materials and Henry Royce Institute, University of Manchester

**14:00 (S9-22) Design, Fabrication and Heat Dissipation Performance of PEO High Emissivity Ceramic Coatings for Thermal Management Application (Invited)**

Yaming Wang<sup>1,2,\*</sup>, Shuqi Wang<sup>1,2</sup>, Yongchun Zou<sup>1,2</sup>, Guoliang Chen<sup>1,2</sup>, Yu Zhou<sup>1,2</sup>

<sup>1</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>2</sup>Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, Harbin Institute of Technology

**14:25 (S9-23) Photoactive Aerosol Coatings for Green Hydrogen Generation (Invited)**

Thomas Klassen<sup>1,2,\*</sup>, Andreas Elsenberg<sup>2</sup>, Frank Gärtner<sup>2</sup>, Mauricio Schieda<sup>1</sup>, Alessia Bruera<sup>3</sup>, Giovanni Bolelli<sup>3</sup>, Luca Lusvardi<sup>3</sup>

<sup>1</sup>Helmholtz-Zentrum Hereon GmbH

<sup>2</sup>Helmut Schmidt University, University of the Federal Armed Forces Hamburg

<sup>3</sup>Universita di Modena e Reggio Emilia - UNIMORE

**14:50 (S9-24) Research on Thermal Expansion Coefficient and Dielectric Breakdown Strength of CaO-ZnO-B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> Coating for High Temperature Resistant Electrical Wire**

Minglu Feng, Haomin Li\*, Yingsan Geng, Jianhua Wang

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

**15:10 (S9-25) Anisotropic Thin Films/coatings from Restacking of Electrochemically Produced Monolayer Two-dimensional Materials**

Jianyun Cao; School of Materials and Energy, Yunnan University

**15:30 (S9-26) Preparation of Blue Near-infrared Reflective Pigment with Excellent Optical Properties through Doping Ti in Hironite with Low Cobalt Content**

Kai Lv, Yanfeng Gao\*; School of Materials Science and Engineering, Shanghai University

**15:50 Break**

Session Chair: Yaming Wang, Harbin Institute of Technology

**16:00 (S9-27) Functionalization of PEO Coatings via Conversion Post-treatments (Keynote)**

Mikhail Zheludkevich\*, Carsten Blawert, Maria Serdechnova, Valeryia Kasneryk, Bahram Vaghefinazari, Sviatlana Lamaka  
Institute of Surface Science, Helmholtz-Zentrum Hereon

**16:30 (S9-28) Applications of Acidity Ratio to the Design of Plasma Electrolytic Oxidation Coatings on Mg Alloys (Invited)**

Tao Zhang; Northeastern university

**16:55 (S9-29) "Smart" Nano Container-based Self-healing Micro-arc Oxidation Coatings on Magnesium Alloys (Invited)**

Liang Wu<sup>1,2,\*</sup>, Wenhui Yao<sup>1,2</sup>, Fusheng Pan<sup>1,2</sup>

<sup>1</sup>College of Materials Science and Engineering, Chongqing University

<sup>2</sup>National Engineering Research Center for Magnesium Alloys, Chongqing University

**17:20 (S9-30) Tuning Corrosion Performance of Mg Alloy by Inhibitor and PEO Coating (Invited)**

Xiaopeng Lu; Northeastern university



**17:45 (S9-31) Initial Microstructure and Composition Evolution of Ceramic Coatings Fabricated by Cathode Plasma Electrolytic Deposition**

Yanpeng Xue<sup>\*</sup>, Man Zheng, Tengfei Yu, Benli Luan  
University of Science and Technology Beijing

**18:05 (S9-32) The Fabrication of Functional Coatings by Microarc Oxidation**

Hui Tang; School of Materials and Energy, University of Electronic Science and Technology of China

**Symposium 10: Nano-laminated Ternary Carbides, Nitrides, Borides, and MXenes/MBenes  
(Location: TBD)**

**Session Chair:** Yi Liu, Shaanxi University of Science and Technology  
Shuai Lin, Hefei Institutes of Physical Science, CAS

**08:30 (S10-13) Crystal-defect Engineering in MAX and Mxene (Invited)**

Hui Zhang<sup>1,2</sup>  
<sup>1</sup>Electron Microscopy Center, South China University of Technology  
<sup>2</sup>School of Emergent Soft Matter, South China University of Technology

**08:50 (S10-14) Entropy-driven Morphology Regulation of MAX Phase Solid Solutions with Enhanced Microwave Absorption and Thermal Insulation Performance (Invited)**

Wei Luo<sup>1</sup>, Yi Liu<sup>2</sup>  
<sup>1</sup>School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University  
<sup>2</sup>School of Material Science and Engineering, Shaanxi University of Science and Technology

**09:10 (S10-15) Synthesis, Characterization, and Applications of Few-layer M<sub>4</sub>C<sub>3</sub>T<sub>x</sub> (M=V, Nb, Ta) MXenes (Invited)**

Shuai Lin; Institute of Solid State Physics, Hefei Institutes of Physical Science, Chinese Academy of Sciences

**09:30 (S10-16) New Layered Ternary Selenide Synthesis in Nb-C-Se System**

Junchao Wang, Renfei Cheng, Tao Hu, Xiaohui Wang<sup>\*</sup>  
<sup>1</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences  
<sup>2</sup>School of Materials Science and Engineering, University of Science and Technology of China  
<sup>3</sup>School of Materials Science and Engineering, Suzhou University of Science and Technology

**09:45 (S10-17) Enhancing the Oxidation Resistance of MoAlB: Exploring Anisotropic Oxidation Mechanisms and Doping Strategies**

Hanchao Zhang<sup>1</sup>, Guoliang Ren<sup>2</sup>, Lin Li<sup>2</sup>, Yinchun Shi<sup>2</sup>, Xiaofeng Zhao<sup>2</sup>, Na Ni<sup>1,\*</sup>  
<sup>1</sup>School of Mechanical Engineering, Shanghai Jiao Tong University  
<sup>2</sup>Shanghai Key Laboratory of High Temperature Materials and Precision Forming, Shanghai Jiao Tong University

**10:00 (S10-18) High Concentration Alkali Solution Optimizes the Environmental Stability of MXenes for Long Time Storage**

Xudong Liu<sup>1</sup>, Yong Liu<sup>1,\*</sup>, Shangli Dong<sup>1</sup>, Xuefeng Zhang<sup>2</sup>, Lu Lv<sup>1</sup>  
<sup>1</sup>School of Material Science and Engineering, Harbin Institute of Technology  
<sup>2</sup>Huizhou University, Guangdong

**10:15 Break**

**Session Chair:** Jun Yan, Harbin Engineering University;  
Cheng-Yan Xu, Harbin Institute of Technology (Shenzhen)

**10:30 (S10-19) X-ray Exploring the Evolution in Mxenes (Keynote)**

Changda Wang, Shiqiang Wei, Li Song<sup>\*</sup>  
National Synchrotron Radiation Laboratory, University of Science and Technology of China

**11:00 (S10-20) MXene-Based Composites for Energy Storage Applications (Invited)**

Jun Yan  
College of Material Science and Chemical Engineering, Harbin Engineering University

**11:20 (S10-21) MXenes: A Promising Electrode Materials for Sodium-ion Battery (Invited)**

Kun Liang  
Engineering Laboratory of Advanced Energy Materials, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

**11:40 (S10-22) The Pillar-structured Design of MXene for Electrochemical Energy Storage Applications (Invited)**

Jianmin Luo

*College of Materials Science and Engineering, Zhejiang University of Technology*

**12:00 Lunch**

**Session Chair:** Aiguo Zhou, *Henan Polytechnic University*

Gui-Gen Wang, *Harbin Institute of Technology (Shenzhen)*

**13:30 (S10-23) Coupling CO<sub>2</sub>/N<sub>2</sub> for Urea Electrocatalyze Synthesis on Dual Metal Mxene (Invited)**

Yufei Yang, Neng Li\*

*State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology, Wuhan, China*

**13:50 (S10-24) Construction of Mo<sub>2</sub>C MXene Heterostructures as Photocatalysts for H<sub>2</sub> Production (Invited)**

Aiguo Zhou\*, Sen Jin

*School of Materials Science and Engineering, Henan Polytechnic University*

**14:10 (S10-25) Anti-oxidant to Pro-oxidant Activity of MXenes for Biological Applications (Invited)**

Weiwei He\*

*Institute of Surface Micro and Nano Materials, College of Chemical and Materials Engineering, Xuchang University*

**14:30 (S10-26) Study on the Lithium Storage Properties of Submicron Ti<sub>2</sub>AlC, Ti<sub>2</sub>CT<sub>x</sub>, and Super P Carbon Black**

Cong Cui, Xiaohui Wang\*

*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences*

**14:45 (S10-27) Design and Performance of Electrolyte and Electrode Materials for Aqueous Iodine-Based Batteries**

Zishuai Zhang, Yan Huang\*

*School of Materials Science and Engineering, Harbin Institute of Technology (Shenzhen)*

**15:00 (S10-28) Mn-based MXene with High Lithium-ion Storage Capacity**

Xingke Cai\*

*Institute for Advanced study/Shenzhen University*

**15:15 (S10-29) Synthesis of Mo<sub>2</sub>C MXene with High Electrochemical Performance by Alkali Hydrothermal Etching**

Yitong Guo, Aiguo Zhou\*

*School of Materials Science and Engineering, Henan Polytechnic University*

**Symposium 11: High Entropy Ceramics and Composites**

(Location: TBD)

**Session Chair:** Yanhui Chu, *South China University of Technology*

**08:30 (S11-011) From High-entropy Ceramics (HECs) to Compositionally Complex Ceramics (CCCs) (Keynote)**

Jian Luo

*University of California San Diego*

**09:00 (S11-012) Structural and Defect Properties in High-entropy Carbide Ceramics (Invited)**

Shijun Zhao

*City University of Hong Kong*

**09:25 (S11-013) Application of Machine Learning Potential in High-entropy Ceramics (Invited)**

Fuzhi Dai

*AI for Science Institute*

**09:50 (S11-014) Atomic-scale Fine Structure Characterization and Property Tuning in High-entropy Oxides (Invited)**

Ning Guo, Hanbin Gao, Yue Gong, Dongwei Wang, Qiang Zheng\*

*National Center for Nanoscience and Technology*

**10:15 Break**

Session Chair: Shijun Zhao, *City University of Hong Kong*

- 10:30 (S11-015) Formation Ability Descriptors for High-entropy Diborides Established through High-throughput Experiments and Machine Learning (Invited)**  
Yanhui Chu  
*School of Materials Science and Engineering, South China University of Technology*
- 10:55 (S11-016) Understanding the Microstructure Features and Formation Mechanisms of High Entropy Oxides at the Atomic Scale (Invited)**  
Lei Su; *Xi'an Jiaotong University*
- 11:20 (S11-017) Point Defect Properties in High Entropy MAX Phases from First-principles Calculations**  
Hao Xiao, Chenxu Wang\*  
*State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University*
- 11:40 (S11-018) Atomic-level Insights into the Initial Oxidation Mechanism of High-entropy Diborides by First-principles Calculations**  
Yiwen Liu, Yanhui Chu\*; *School of Materials Science and Engineering, South China University of Technology*

**12:00 Lunch**

Session Chair: Ji Zou, *Wuhan University of Technology*

- 13:30 (S11-019) Preparation and Superhard Properties of High-entropy Monoborides (Keynote)**  
Hailong Wang  
*Materials Science and Engineering of Zhengzhou University*
- 14:00 (S11-20) Ionic Transport in a Site High Entropy AMnO<sub>3</sub> and ACoO<sub>3</sub> Oxides: Implications for Sintering and Electrochemical Properties (Invited)**  
Na Ni\*, Yinchun Shi, Yue Shui, Lei Zhu, Zhen Huang  
<sup>1</sup>*School of Mechanical Engineering, Shanghai Jiao Tong University*  
<sup>2</sup>*School of Materials Science and Engineering, Shanghai Jiao Tong University*
- 14:25 (S11-21) Thermodynamics Aided Design of hBN-Capsulated Diboride Powders from Novel Nitrate Precursors for High Entropy Ceramics**  
Hailing Yang, Ji Zou\*, Weimin Wang, Zhengyi Fu  
*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*
- 14:45 (S11-22) The Effect of Carbon Content on Phase Decomposition and Mechanical Properties of (Ti<sub>0.25</sub>Zr<sub>0.25</sub>V<sub>0.25</sub>Nb<sub>0.25</sub>)C<sub>x</sub> High-entropy Carbides**  
Qingyi Kong<sup>1,2</sup>, Yujin Wang<sup>1,2,\*</sup>, Lei Chen<sup>1,2</sup>, Sijia Huo<sup>1,2</sup>  
<sup>1</sup>*Institute for Advanced Ceramics, School of Mater Sci & Eng, Harbin Institute of Technology (HIT)*  
<sup>2</sup>*Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, HIT*
- 15:05 (S11-23) Nonstoichiometric High-entropy Carbides: Preparation, Microstructures and Properties**  
Yuan Qin<sup>1,2</sup>, Jixuan Liu<sup>2,\*</sup>, Yongcheng Liang<sup>3</sup>, Guojun Zhang<sup>1,2,\*</sup>  
<sup>1</sup>*State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University*  
<sup>2</sup>*Institute of Functional Materials, Donghua University*  
<sup>3</sup>*College of Science, Donghua University*
- 15:25 (S11-24) The Phase, Microstructure and Mechanical Properties of High-entropy Carbonitride Ceramics**  
Lei Chen\*, Yujin Wang\*, Longhao Yang  
*School of Materials Science and Engineering, Harbin Institute of Technology*

**15:45 Break**

Session Chair: Hailong Wang, *Zhengzhou University*

- 16:00 (S11-25) Optimization Design, Microstructure Evolution and Performance Improvement of High-entropy Carbide (Keynote)**  
Yujin Wang<sup>1,2</sup>  
<sup>1</sup>*Institute for Advanced Ceramics, School of Mater Sci and Eng, Harbin Institute of Technology (HIT)*  
<sup>2</sup>*Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, HIT*

**16:30 (S11-26) Processing and Properties of (VNbTaMoW)C and Al<sub>2</sub>O<sub>3</sub>/(NbTaMoW)C High Entropy Ceramic Matrix Composites (Invited)**

Junhu Meng<sup>1,\*</sup>, Diqiang Liu<sup>2,\*</sup>

<sup>1</sup>State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences

<sup>2</sup>School of Materials Science and Engineering, Lanzhou University of Technology

**16:55 (S11-27) Grain Growth Behavior of High-entropy Ceramics (Invited)**

Jixuan Liu<sup>1,\*</sup>, Yongcheng Liang<sup>2</sup>, Guojun Zhang<sup>1</sup>

<sup>1</sup>Institute of Functional Materials, Donghua University

<sup>2</sup>College of Sciences, Donghua University

**17:20 (S11-28) The Phase Composition and Microstructure Evolution of Non-equimolar (ZrHf<sub>x</sub>VNbMoW)C High-entropy Carbide Ceramics**

Wen Zhang, Lei Chen\*, Yujin Wang\*

School of Materials Science and Engineering, Harbin Institute of Technology

**17:40 (S11-29) Influence of Carbon Content on Microstructure evolution and Mechanical property of High-entropy Carbide Ceramics**

Kunxuan Li, Lei Chen\*, Yujin Wang\*

School of Materials Science and Engineering, Harbin Institute of Technology

**Symposium 12: Microwave Dielectric Ceramics and Applications  
(Location: TBD)**

**Session Chair:** Zhenxing Yue, Tsinghua University

Akinori Kan, Meijo University

**08:30 (S12-01) Effects of Complex Ion Substitution on the Quality Factor of MgTiO<sub>3</sub>-and Mg<sub>4</sub>Nb<sub>2</sub>O-based Ceramics at Microwave Frequencies (Keynote)**

Eung Soo Kim

Department of Advanced Materials Engineering, Kyonggi University

**09:00 (S12-02) BiVO<sub>4</sub> based Microwave Dielectric Ceramics (Invited)**

Di Zhou

Xi'an Jiaotong University

**09:25 (S12-03) Temperature-dependent Temperature Coefficient of Resonant Frequency in MgTiO<sub>3</sub>-CaTiO<sub>3</sub>-based Microwave Dielectric Composites (Invited)**

Lei Li\*, Shuang Yang, Shuya Wu, Xiangming Chen

Laboratory of Dielectric Materials, School of Materials Science & Engineering, Zhejiang University

**09:50 (S12-04) Influence Mechanism of τ<sub>f</sub> in Microwave Dielectric Ceramics with Low ε<sub>r</sub> (Invited)**

Jie Li, Ying Tang, Liang Fang<sup>1,\*</sup>

<sup>1</sup>Guangxi Key Laboratory of Optical and Electronic Materials and Devices, College of Material Science and Engineering, Guilin University of Technology

<sup>2</sup>Key Laboratory of New Processing Technology for Nonferrous Metal & Materials, Ministry of Education, Guilin University of Technology

**10:10 Break**

**Session Chair:** Di Zhou, Xi'an Jiaotong University

Lei Li, Zhejiang University

**10:30 (S12-05) Effects of the Addition of SiO<sub>2</sub> and B<sub>2</sub>O<sub>3</sub> on the Electrical Properties of Low-Temperature Sintered ZnO-Bi<sub>2</sub>O<sub>3</sub> System Varistors (Invited)**

Hsing-I Hsiang

Department of Resources Engineering, National Cheng Kung University

**10:55 (S12-06) Research on the Construction and Application of Quasi-homogeneous Material System of Embedded Capacitors for LTCC Passive Integration (Invited)**

Weijun Zhang\*, Fenglin Wang, Xingyu Chen, Wei Li

Department of Material Science and Engineering, College of Aerospace Science and Engineering, National University of Defense Technology

**11:20 (S12-07) Structure, Defects, and Dielectric Properties of  $\text{Ca}_{1-x}\text{Sm}_{2x/3}\text{TiO}_3$  Ceramics in the Microwave-terahertz Bands**

Weijia Guo, Yutian Lu, Zhiyu Ma, Zhenxing Yue\*  
School of Materials Science and Engineering, Tsinghua University

**11:40 (S12-08) Microstructure, Bonding Characteristics, Far-Infrared Spectra and Microwave Dielectric Properties of Co-Substituted  $\text{Ce}_2\text{Zr}_3(\text{MoO}_4)_9$  Ceramics**

Xiangyu Xu, Haitao Wu\*  
School of Environmental and Material Engineering, Yantai University

**12:00 Lunch**

**Session Chair:** Hsing-I Hsiang, National Cheng Kung University  
Jobin Varghese, Fraunhofer IKTS

**13:30 (S12-09) Low-loss Porous Dielectric Ceramics for Sub-terahertz Frequency Applications (Invited)**

Zhenxing Yue\*, Yugu Chen, Weijia Guo, Yutian Lu, Zhiyu Ma  
State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University

**13:55 (S12-10) Development of Low Dielectric Loss Materials:  $\text{Y}_2\text{BaCuO}_5$  (Green Phase),  $\text{MgAl}_2\text{O}_4$  (Spinel), and  $\text{Mg}_4\text{Nb}_2\text{O}_9$  (Corundum) (Invited)**

Akinori Kan<sup>1,\*</sup>, Susum Takahashi<sup>2</sup>, Hirotaoka Ogawa<sup>3</sup>  
<sup>1</sup>Department of Vehicle and Mechanical Engineering, Meijo University  
<sup>2</sup>Department of Mechanical Engineering, National Institute of Technology  
<sup>3</sup>Department of Research, Nagoya Industrial Science Research Institute

**14:20 (S12-11) Phase Composition, Chemical Bond Features, and Dielectric Response at Microwave and Terahertz Frequencies of  $\text{Na}_5\text{La}(\text{MoO}_4)_4$  (Ln=Lu, Tm) Ceramics (Invited)**

Haitao Wu; Yantai university

**14:45 (S12-12) Microwave Dielectric Properties of  $(\text{Mg}_{1-x}\text{Ni}_x)(\text{Ti}_{0.95}(\text{Mg}_{1/3}\text{B}_{2/3})_{0.05})\text{O}_3$  (B = Ta, Nb) ( $0.00 \leq x \leq 0.05$ ) Ceramics**

Ju Hye Kim, Eung Soo Kim\*  
Department of Advanced Materials Engineering, Kyonggi University

**15:05 (S12-13) Influence of Microstructure on Microwave Dielectric Properties of  $(\text{Ca}_{1+x}\text{Sm}_{1-x})(\text{Al}_{1-x}\text{Ti}_x)\text{O}_4$  Ceramics**

Mingyu Kim<sup>1</sup>, Tauseef Ahmed<sup>1</sup>, Jung Hyun Lee<sup>1</sup>, Hyo Tae Kim<sup>1</sup>, Ga-Yeon Lee<sup>2</sup>, Dong-Hun Yeo<sup>3</sup>, Soonil Lee<sup>1,\*</sup>  
<sup>1</sup>School of Materials Science and Engineering / Department of materials Convergence and System Engineering, Changwon National University  
<sup>2</sup>Nano Composite Materials Center, Korea Institute of Ceramic Engineering and Technology  
<sup>3</sup>Ceramic Total Solutions Center, Icheon Branch of Korea Institute of Ceramic Engineering and Technology

**15:25 (S12-14) Phase Composition, Sinterability, Phonon vibration, and Microwave Dielectric Properties of  $\text{Pr}_2\text{Zr}_3(\text{Mo}_{1-x}\text{W}_x\text{O}_4)_9$  Ceramics**

Zhanbai Feng, Haitao Wu\*; School of Environmental and Materials Engineering, Yantai University

**15:45 Break**

**Session Chair:** Eung Soo Kim, Kyonggi University  
Haitao Wu, Yantai university

**16:00 (S12-15) New LTCC Dielectrics with Ultralow Dielectric Loss for Passive Integration (Keynote)**

Hong Wang  
Department of Materials Science and Engineering, Southern University of Science and Technology

**16:30 (S12-16) Microwave Dielectric Ceramics Focused for LTCC and ULTCC Applications (Invited)**

Jobin Varghese\*, Steffen Ziesche, Uwe Partsch  
Department of Hybrid Microsystems, Microsystems LTCC and HTCC, Fraunhofer IKTS

**16:55 (S12-17) Microwave Dielectric Properties of MgO -  $\text{Mg}_2\text{SiO}_4$  Ceramics for LTCC Application**

SiHyun Kim, EungSoo Kim\*  
Department of Advanced Materials Engineering, Kyonggi University, Suwon

**17:15 (S12-18) Sintering Behavior and Mechanism of Bi-Zn-Nb-O Microwave Dielectric Ceramics**

Youran Zhang<sup>1,2</sup>, Jingjing Feng<sup>1</sup>, Faqiang Zhang<sup>1</sup>, Mingsheng Ma<sup>1</sup>, Zhifu Liu<sup>1,2,\*</sup>

<sup>1</sup>Shanghai Institute of Ceramics

<sup>2</sup>University of Chinese Academy of Sciences

**17:35 (S12-19) Microstructure and Dielectric Properties of Novel Alkali Metal Molybdate NaEr(MoO<sub>4</sub>)<sub>2</sub> Ceramics**

Yiyun Zhang, Haitao Wu\*

School of Environmental and Materials Engineering, Yantai University

**Symposium 13: Piezoelectric, Ferroelectric/Multiferroic Materials & Components  
(Location: TBD)**

**Session Chair:** Jiangyu Li, Southern University of Science and Technology

Yang Liu, Nanyang Technological University

**08:30 (S13-15) What Do Halide Perovskites Have to Do with Ferroelectricity? (Keynote)**

Zuo-Guang Ye

Department of Chemistry, Simon Fraser University

**09:00 (S13-16) Growth and Characterisation of Alkali Niobate Lead-free Piezoelectric Single Crystals (Invited)**

John G. Fisher<sup>1,\*</sup>, Trung Thành Đoàn<sup>1</sup>, Eugenie Uwiragiye<sup>1</sup>, Tran Thi Lan<sup>1</sup>, Sang-Baek Ma<sup>1</sup>, Yeon-Ji Shin<sup>1</sup>, Yoon-Sang Jeong<sup>1</sup>,

Mi-Na Wi<sup>1</sup>, Jong-Sook Lee<sup>1</sup>, Jungwi Mok<sup>2</sup>, Junseong Lee<sup>2</sup>, Jie Gao<sup>1,3</sup>, Furqan Ul Hassan Naqvi<sup>4</sup>, Jae-Hyeon Ko<sup>4</sup>

<sup>1</sup>School of Materials Science and Engineering, Chonnam National University

<sup>2</sup>Department of Chemistry, Chonnam National University

<sup>3</sup>School of Materials Science and Engineering, Shandong University of Science and Technology

<sup>4</sup>School of Nano Convergence Technology, Hallym University

**09:25 (S13-17) Magnetolectric Phase Transition Artificially Designed by Non-equivalent Superlattices (Invited)**

Jinxing Zhang<sup>1,2,\*</sup>

<sup>1</sup>Key Laboratory of Multiscale Spin Physics, Ministry of Education

<sup>2</sup>Department of Physics, Beijing Normal University

**09:50 (S13-18) Study on Fabrication and Energy Harvesting of Piezoelectric Transducer**

Shengchao Cui, Leicai Lin, Huishuang Zhao, Qingna Ma, Feng Sun, Guangzheng Wang\*

Field Engineering College, Army Engineering University of PLA

**10:05 (S13-19) Spark Plasma Sintering of Ferroelectric Ceramics**

Hua Tan<sup>1,\*</sup>, Haibo Zhang<sup>1</sup>, David Salamon<sup>3</sup>

<sup>1</sup>State Key Laboratory of Material Processing and Die and Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology

<sup>2</sup>Guangdong HUST Industrial Technology Research Institute

<sup>3</sup>Central European Institute of Technology (CEITEC) Brno University of Technology

**10:20 Break**

**Session Chair:** John G. Fisher, Chonnam National University

Jinxing Zhang, Beijing Normal University

**10:30 (S13-20) Ferroelectric Materials and Emerging Applications (Keynote)**

Yun Liu

Research School of Chemistry, The Australian National University

**10:55 (S13-21) Flexoelectric Effect: from Scientific Curiosity to Prototype Devices (Invited)**

Jiangyu Li

Department of Materials Science and Engineering, Southern University of Science and Technology

**11:20 (S13-22) Ferroelectric Polymer and Nanocomposites: New Structural Insights and Recent Development (Invited)**

Yang Liu

State Key Laboratory of Material Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology

**11:45 (S13-23) Two-Dimensional Interfacial Nanocoatings Enable Layered Polymer Nanocomposites with High-performance Energy Storage at Elevated Temperatures**

Yifei Wang

State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University

**12:00 (S13-24) Decode Intrinsic and Extrinsic Contributions for High Piezoelectricity of CBT-based Piezoelectric Ceramics**

Hao Chen\*, Jingwen Xi, Zhi Tan, Fei Wang, Xu Li, Jie Xing\*, Jianguo Zhu\*

College of Material Science and Engineering, Sichuan University

**12:15 (S13-25) Lead-free BiFeO<sub>3</sub>-BaTiO<sub>3</sub> Based High-Tc Ferroelectric Ceramics: Antiferroelectric Chemical Modification Leading to High Energy Storage Performance**

Hongliang Wang, Jing-Feng Li\*

School of Materials Science and Engineering, Tsinghua University

**12:30 Lunch**

Session Chair: Jianguo Zhu, *The University of Sydney*

Ke Wang, *Tsinghua University*

**13:30 (S13-26) Alkali Niobate-based Lead-free Piezoelectric Thin Films and Thermal-sprayed Coatings (Keynote)**

Kui Yao

Institute of Materials Research and Engineering (IMRE), Agency for Science, Technology and Research (A\*STAR)

**14:00 (S13-27) Interfacial Coupling in (K,Na)NbO<sub>3</sub> Ferroelectric Epitaxial Thin Films (Invited)**

Jin Luo\*, Yinong Lv, Yunfei Liu

The State Key Laboratory of Materials-Oriented Chemical Engineering, College of Materials Science and Engineering, Nanjing Tech University

**14:25 (S13-28) Scanning Probe Microscopic Technique for Probing and Manipulating Ferroic Topological Domains and their Associated Physical Properties (Invited)**

Xingsen Gao

Institute of Advanced Materials, South China Normal University

**14:50 (S13-29) Characteristics of Piezoelectric LiNbO<sub>3</sub> Epitaxial Thin Films Grown on Off-angle Al<sub>2</sub>O<sub>3</sub> Substrate (Invited)**

Zitai Feng<sup>1,2</sup>, Hiroki Uchida<sup>1,2,\*</sup>, Junjun Jia<sup>1,\*</sup>, Takahiko Yanagitani<sup>1,2,3,4,\*</sup>

<sup>1</sup>Waseda University

<sup>2</sup>ZAIKEN

<sup>3</sup>JST-CREST

<sup>4</sup>JST-FOREST

**15:05 (S13-30) Shear Mode Electromechanical Coupling Coefficient of C-axis Tilted PbTiO<sub>3</sub> Epitaxial Thin Film/Off-Angle La-SrTiO<sub>3</sub> Substrate**

Sota Kuninobu<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4,\*</sup>

<sup>1</sup>Waseda University

<sup>2</sup>ZAIKEN

<sup>3</sup>JST-CREST

<sup>4</sup>JST-FOREST

**15:20 (S13-31) Arrayed Multi-layer Piezoelectric Sensor Based on Electrospun with Enhanced Piezoelectricity**

Yu Chen, Chu Qin, Min Wang\*

School of Microelectronics, Southern University of Science and Technology

**15:35 (S13-32) BiAlO<sub>3</sub>-modified BiFeO<sub>3</sub>-BaTiO<sub>3</sub> High Curie Temperature Lead-free Piezoelectric Ceramics**

Xiaoxiao Zhou, Xiaoyan Peng, Boping Zhang\*

School of Materials Science and Engineering, University of Science and Technology Beijing

**15:45 Break**

**Session Chair:** Xingsen Gao, *South China Normal University*  
Jin Luo, *Nanjing Tech University*

- 16:00 (S13-33) Defect Engineering in Lead-free Potassium Sodium Niobate Piezoceramics (Invited)**  
Yi-Xuan Liu, Ze Xu, Ke Wang\*  
*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*
- 16:25 (S13-34) Design of AgNbO<sub>3</sub> and NaNbO<sub>3</sub> Antiferroelectrics (Invited)**  
Nengneng Luo\*, Li Ma, Gengguang Luo  
*School of Resources, Environment and Materials, Guangxi University*
- 16:50 (S13-35) Simultaneously Improving Piezoelectric Properties and Temperature Stability of Na<sub>0.5</sub>K<sub>0.5</sub>NbO<sub>3</sub> (KNN)-based Ceramics Sintered in Reducing Atmosphere**  
Zhenyong Cen<sup>1,2,\*</sup>, Ke Wang<sup>1</sup>, Ze Xu<sup>1</sup>, Longtu Li<sup>1</sup>, Xiaohui Wang<sup>1,\*</sup>  
<sup>1</sup>*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*  
<sup>2</sup>*School of Resources, Environment and Materials, Guangxi University*
- 17:05 (S13-36) Simultaneously Improving Piezoelectric Strain and Temperature Stability of KNN-Based Ceramics via Defect Design**  
Zhenyong Cen<sup>1,2,\*</sup>, Fuzhi Cao<sup>2</sup>  
<sup>1</sup>*School of Civil Engineering and Architecture, Guangxi University*  
<sup>2</sup>*School of Resources, Environment and Materials, Guangxi University*
- 17:20 (S13-37) Full Epitaxial ZnO, MgZnO and ScAlN Piezoelectric thin Film BAW Resonators Based on Epitaxial Acoustic Bragg Reflector**  
Satoshi Tokai<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4,\*</sup>  
<sup>1</sup>*Waseda University*  
<sup>2</sup>ZAIKEN  
<sup>3</sup>JST-CREST  
<sup>4</sup>JST-FOREST
- 17:35 (S13-38) Structure Control and Electrical Behavior of Multiferroic BiFeO<sub>3</sub>-based Ceramics with Morphotropic Phase Boundary**  
Jingxin Tian, Hua Ke\*  
*School of Materials Science and Engineering, Harbin Institute of Technology*
- 17:50 (S13-39) Polarization-inverted C-axis Zigzag ScAlN Multilayers for Transversal Type BAW Filter**  
Saneyuki Shibata<sup>1,2</sup>, Takahiko Yanagitani<sup>1,2,3,4,\*</sup>  
<sup>1</sup>*Waseda University*  
<sup>2</sup>ZAIKEN  
<sup>3</sup>JST-CREST  
<sup>4</sup>JST-FOREST
- 18:05 (S13-40) Effect of BaZrO<sub>3</sub> Doping on the Structure and Piezoelectricity of KNN-based Ceramics**  
Huan Liu<sup>1,2</sup>, Jing-Feng Li<sup>2,\*</sup>, Bo-Ping Zhang<sup>1,\*</sup>  
<sup>1</sup>*School of Materials Science and Engineering, University of Science and Technology Beijing*  
<sup>2</sup>*School of Materials Science and Engineering, Tsinghua University*

**Symposium 14: Thermoelectric Materials and Devices for Sustainable Energy Utilization  
(Location: TBD)**

**Session Chair:** Qian Zhang, *Harbin Institute of Technology (Shenzhen)*

- 08:30 (S14-10) Lattice Defect Engineering to Develop Highly-efficient Thermoelectric Single Crystals (Invited)**  
Kei Hayashi  
*Department of Applied Physics, Graduate School of Engineering, Tohoku University*
- 08:50 (S14-11) Advanced Energy Materials and Devices for Low-grade Heat Harvesting and Flexible Thermal Sensing (Invited)**  
Dongyan Xu  
*Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong*



**09:10 (S14-12) Tuning Electron Transport via Localized Spin Moment Induced by Magnetic Nanoprecipitates (Invited)**

Junphil Hwang<sup>1,\*</sup>, Jae Hyun Yun<sup>2</sup>, Jong-Soo Rhyee<sup>2</sup>, Woochul Kim<sup>3</sup>, Sung-Jin Kim<sup>4,\*</sup>

<sup>1</sup>Green Energy R&D Division, Korea Construction Equipment Technology Institute (KOCETI)

<sup>2</sup>Department of Applied Physics, Kyung Hee University

<sup>3</sup>School of Mechanical Engineering, Yonsei University

<sup>4</sup>Department of Chemistry and Nano Science, Ewha Womans University

**09:30 (S14-13) Planar-type Thermoelectric Generators for IoT Applications**

Masahiro Nomura<sup>\*</sup>, Ryoto Yanagisawa

Institute of Industrial Science, The University of Tokyo

**09:45 (S14-14) Enhanced Thermoelectric Properties of SiGe-based Film via Energy Filtering Effect Combined with Modulation Doping Effect**

Ying Peng<sup>1</sup>, Lei Miao<sup>2,\*</sup>, Chengyan Liu<sup>1</sup>, JongSoo Rhyee<sup>3</sup>, Takao Mori<sup>4,\*</sup>

<sup>1</sup>Guilin University of Electronic Technology

<sup>2</sup>Guangxi University

<sup>3</sup>Kyung Hee University

<sup>4</sup>National Institute for Materials Science

**10:00 (S14-15) Achieving High Thermoelectric Performance by NaSbTe<sub>2</sub> Alloying in GeTe for Simultaneous Suppression of Ge Vacancies and Band Tailoring**

Sichen Duan, Qian Zhang<sup>\*</sup>

School of Materials Science and Engineering, Institute of Materials Genome & Big Data, Harbin Institute of Technology (Shenzhen)

**10:15 Break**

**Session Chair:** Yue Lin, Fujian Institute of Research on The Structure, CAS

**10:30 (S14-16) P-type Inorganic Ductile Thermoelectric Materials (Invited)**

Pengfei Qiu

Shanghai Institute of Ceramics, Chinese Academy of Sciences

**10:50 (S14-17) Computational Survey of the Charge Carrier Scattering Mechanisms in Semiconductors for Thermoelectric Applications (Invited)**

Tianqi Deng

Hangzhou Innovation Center & School of Materials Science and Engineering, Zhejiang University

**11:10 (S14-18) Understanding the Chemical Instability of Mg<sub>3</sub>Sb<sub>2-x</sub>Bi<sub>x</sub>-based Thermoelectric Materials (Invited)**

Jun Mao, Harbin Institute of Technology, Shenzhen

**11:30 (S14-19) Achieving N-type Conduction in AMg<sub>2</sub>Sb<sub>2</sub> (A = Yb, Eu, Ca, Sr, Ba) Zintl Phases**

Xin Zheng<sup>1</sup>, Airan Li<sup>1</sup>, Zhongkang Han<sup>1</sup>, Chenguang Fu<sup>1,\*</sup>, Tiejun Zhu<sup>1,2,\*</sup>

<sup>1</sup>State Key Laboratory of Silicon and Advanced Semiconductor Materials, School of Materials Science and Engineering, Zhejiang University

<sup>2</sup>Shanxi-Zheda Institute of Advanced Materials and Chemical Engineering

**11:45 (S14-20) Synthesis and Physical Properties of Ba<sub>x</sub>CoO<sub>2</sub> Single Crystal**

Qian Yang<sup>1,2</sup>, Yucen Liu<sup>1</sup>, Jun Zhi<sup>1</sup>, Wannuo Li<sup>1</sup>, Yugiao Zhang<sup>1,\*</sup>

<sup>1</sup>Institute of Quantum and Sustainable Technology (IQST) School of Chemistry and Chemical Engineering Jiangsu University

<sup>2</sup>Foshan (Southern China) Institute for New Materials

**12:00 Lunch**

**Session Chair:** Lei Miao, Guangxi University

**13:30 (S14-21) High Performance Thermoelectric Devices towards Compact and Local Cooling Applications (Invited)**

Sunmi Shin

Department of Mechanical Engineering, National University of Singapore

**13:50 (S14-22) Strong Phonon Softening and Avoided Crossing in Aliovalence-doped Heavy-band Thermoelectrics (Invited)**

Chenguang Fu<sup>\*</sup>, Shen Han, Tiejun Zhu; Zhejiang University

- 14:10 (S14-23) Probing Structural Disorder and Anharmonic Phonons in a Chain-like Thermoelectric using Synchrotron and Neutron Techniques (Invited)**  
Jiawei Zhang<sup>1,2,\*</sup>, Bo B. Iversen<sup>2,\*</sup>  
<sup>1</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences  
<sup>2</sup>Department of Chemistry and iNANO, Aarhus University
- 14:30 (S14-24) Solution-synthesized Thermoelectric Materials and Devices (Invited)**  
Biao Xu, Nanjing University of Science and Technology
- 14:50 (S14-25) Synthesis Influence on Digenite (Cu<sub>1.8</sub>S) Thermal Stability and its Thermoelectric Performance**  
Xinyuan Wang<sup>1,2</sup>, Cédric Bourgès<sup>3,\*</sup>, Takao Mori<sup>1,2,\*</sup>  
<sup>1</sup>International Center for Materials Nanoarchitectonics (WPI-MANA)  
<sup>2</sup>Graduate School of Pure and Applied Sciences, University of Tsukuba  
<sup>3</sup>International Center for Young Scientists (ICYS), National Institute for Materials Science
- 15:05 (S14-26) High-performance Thermoelectrics: from Materials to Devices**  
Weidi Liu<sup>1,2</sup>, Lianzhou Wang<sup>1,\*</sup>, Zhi-Gang Chen<sup>2,\*</sup>  
<sup>1</sup>Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, Australia  
<sup>2</sup>Queensland University of Technology
- 15:20 (S14-27) Enhanced Thermoelectric Performance of Cu<sub>1.95</sub>S<sub>1-y</sub>Se<sub>y</sub> via Phase Regulation**  
Zhihang Shan<sup>1</sup>, Hezhang Li<sup>2,\*</sup>, Shikuo Lu<sup>1</sup>, Xingyuan Qi<sup>1</sup>, Jun Pei<sup>1,\*</sup>, Bo-Ping Zhang<sup>1,\*</sup>  
<sup>1</sup>School of Materials Science and Engineering, University of Science and Technology Beijing  
<sup>2</sup>Department of Precision Instrument, Tsinghua University
- 15:35 Break**
- Session Chair: Chenguang Fu, Zhejiang University**
- 15:50 (S14-28) Persistently Self-powered Wearable Thermoelectric Generator (Invited)**  
Lei Miao<sup>1,\*</sup>, Sijing Zhu<sup>2</sup>, Jie Gao<sup>2</sup>  
<sup>1</sup>School of Physical Science and Technology, Guangxi University  
<sup>2</sup>School of Material Science and Engineering, Guilin University of Electronic Technology
- 16:10 (S14-29) Non-equilibrium Strategy for Enhancing Thermoelectric Properties and Improving Stability of AgSbTe<sub>2</sub> (Invited)**  
Ady Suwardi<sup>1,2,\*</sup>  
<sup>1</sup>Institute of Materials Research and Engineering, Agency for Science, Technology and Research  
<sup>2</sup>Department of Materials Science and Engineering, National University of Singapore.
- 16:30 (S14-30) Highly Efficient Thermoelectric Cooling Performance of Ultrafine-Grained and Nanoporous Materials (Invited)**  
Zihang Liu<sup>\*</sup>, Liangjun Xie, Jiehe Sui<sup>\*</sup>  
 State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology
- 16:50 (S14-31) Reinforcing Phonon Scatterings to Enhance zT (Invited)**  
Min Hong; Centre for Future Materials & School of Engineering, University of Southern Queensland
- 17:10 (S14-32) Selective Scatterings of Phonons and Electrons in Defective Half-heusler Nb<sub>1-δ</sub>CoSb for the Figure of Merit zT > 1**  
Ziheng Gao, Chenguang Fu<sup>\*</sup>, Tiejun Zhu<sup>\*</sup>  
 State Key Laboratory of Silicon and Advanced Semiconductor Materials, School of Materials Science and Engineering, Zhejiang University
- 17:25 (S14-33) Large Transverse Thermoelectric Effect in Polycrystalline Mg<sub>3</sub>Bi<sub>2</sub>-based Materials**  
Tao Feng, Wenqing Zhang<sup>\*</sup>, Weishu Liu<sup>\*</sup>  
 Department of Materials Science and Engineering, Southern University of Science and Technology
- 17:40 (S14-34) Charge Transfer Engineering to Achieve Extraordinary Power Generation in GeTe-based Thermoelectric Materials**  
Chengyan Liu<sup>1</sup>, Ying Peng<sup>2</sup>, Lei Miao<sup>3,\*</sup>, Takao Mori<sup>4</sup>  
<sup>1</sup> School of Materials Science and Engineering, Guilin University of Electronic Technology  
<sup>2</sup> School of Information and Communication, Guilin University of Electronic Technology  
<sup>3</sup> School of Physical Science and Technology, Guangxi University  
<sup>4</sup> International Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS)

**Symposium 15: Perovskites for Solar Cells, LEDs, and Other Applications  
(Location: TBD)**

**Session Chair:** Jingbi You, *Chinese Academy of Sciences*

**08:30 (S15-11) Perovskite Quantum Dots for Solar Cells and Beyond (Keynote)**

Lianzhou Wang; *The University of Queensland*

**09:00 (S15-12) Perovskite: A Wonder Material for Solar Cells (Keynote)**

Minyong Du, Dexu Zheng\*, Lianjie Duan, Lei Peng, Hui Wang, Sajian Wu, Kai Wang, Jishuang Liu, Yuexian Cao, Shizhen Wang, Yuxiao Jiao, Zhipeng Li, Xiao Jiang, Likun Wang, Youming Sun, Shengzhong Frank Liu

<sup>1</sup>Dalian Institute of Chemical Physics, Chinese Academy of Sciences

<sup>2</sup>China National Nuclear Power Co., Ltd.

<sup>3</sup>Shaanxi Normal University

**09:30 (S15-13) Efficient and Stable Large-area Inverted Perovskite Solar Cells (Invited)**

Wei Chen<sup>1, 2, \*</sup>

<sup>1</sup>Huazhong University of Science and Technology

<sup>2</sup>Optics Valley Laboratory

**09:55 (S15-14) Unlocking the Potential of Inverted Perovskite Solar Cells: Innovative Designs and Enhanced Performance (Invited)**

Yi Hou<sup>1, 2, \*</sup>

<sup>1</sup>Department of Chemical and Biomolecular Engineering, National University of Singapore

<sup>2</sup>Solar Energy Research Institute of Singapore (SERIS), National University of Singapore

**10:20 Break**

**Session Chair:** Shuzi Hayase, *The University of Electro-Communications*

**10:30 (S15-15) Issues on Industrialization of Perovskite Photovoltaic Technology**

Bin Fan\*, Qingyong Tian, Weizhong Chen

*Kunshan GCL Optoelectronic Material Co., Ltd.*

**10:50 (S15-16) High-performance Perovskite-CIGS Thin-film Tandem Solar Cells and Mini-modules (Invited)**

Fan Fu\*

*Swiss Federal Laboratories for Materials Science and Technology*

**11:15 (S15-17) Perovskite Module Upscaling towards Industrialization Based on Efficient Cell Architectures and Scalable Processes (Invited)**

Yinghuan Kuang<sup>1, 2, 3, \*</sup>, Merve Tutundzic<sup>1, 2, 3</sup>, Xin Zhang<sup>1, 2, 3, 4, 5, 6</sup>, Tamara Merckx<sup>1, 2, 3</sup>, Aranzazu Aguirre<sup>1, 2, 3</sup>,

Anurag Krishna<sup>1, 2, 3</sup>, Yiqiang Zhan<sup>5, 6</sup>, Jef Poortmans<sup>1, 2, 3, 4</sup>, Bart Vermang<sup>1, 2, 3</sup>, Tom Aernouts<sup>1, 2, 3</sup>

<sup>1</sup>Imec, imo-imomec

<sup>2</sup>EnergyVille, imo-imomec

<sup>3</sup>Hasselt University, imo-imomec

<sup>4</sup>Department of Electrical Engineering (ESAT), KU Leuven

<sup>5</sup>Center for Micro Nano Systems, School of Information Science and Technology (SIST), Fudan University

<sup>6</sup>Academy for Engineering & Technology (FAET), Fudan University

**11:40 (S15-18) Advancements and Prospects of Large-scale Perovskite-silicon Tandem Solar Cells (Invited)**

Yiliang Wu

*Auner Technology*

**12:05 Lunch**

**Session Chair:** Lianzhou Wang, *The University of Queensland*

**13:30 (S15-19) Heterointerface Modification of Tin Perovskite Solar Cell (Keynote)**

Shuzi Hayase

*The University of Electro-Communications*

**14:00 (S15-20) High-performance Perovskite LEDs and their Applications (Invited)**

Feng Gao

*Linköping University*

**14:25 (S15-21) Technical and Economic Analysis for Perovskite Tandem Solar Modules (Invited)**

Yun Zhang\*, Xinlian Li, Mengjie Li, Zihai Cai, Zhengjing Zhao, Zizhen Lin, Xiongfei Chen, Zhiguo Zhao\*  
Huaneng Clean Energy Research Institute

**14:50 (S15-22) Emergent of Developing Perovskite/CIGS Tandem Solar Cells**

Yong Peng  
Wuhan University of Technology

**15:10 (S15-23) Stabilizing Strategies for Efficient Perovskite Solar Cells**

Yanbo Wang  
Shanghai Jiao Tong University

**15:30 Break**

**Session Chair:** Shihe Yang, *Peking University Shenzhen Institute*

**15:45 (S15-24) High Color-purity Perovskite LEDs Based on Strongly-confined Quantum Dots (Invited)**

Jianjun Tian  
*University of Science and Technology Beijing*

**16:10 (S15-25) Advanced Manufacturing of Cesium Lead Halide Quantum Dot Luminescent Materials (Invited)**

Jizhong Song  
*School of Physics and Microelectronics, Zhengzhou University*

**16:35 (S15-26) Emerging Perovskite X-ray Detectors: the Timing Property and Modulation Method (Invited)**

Guangda Niu  
*Huazhong University of Science and Technology*

**17:00 (S15-27) Reactive Crystallization of Halide Perovskites**

Shuang Xiao; *Shenzhen Technology University*

**17:20 (S15-28) High-performance Cubic PbS Nanosheet-Perovskite Solar Cells via Interface Utilization**

Xuanling Liu, Hong Lin\*; *School of Materials Science and Engineering, Tsinghua University*

**17:40 (S15-29) Unlocking the Potential of Tin-based Perovskites: Properties, Progress, and Applications in New-Era Electronics**

Shuzhang Yang<sup>1,2</sup>, Junhao Chu<sup>1,2,\*</sup>, Wenwu Li<sup>1,2,\*</sup>

<sup>1</sup>State Key Laboratory of Photovoltaic Science and Technology, Department of Materials Science, Fudan University

<sup>2</sup>Shanghai Frontiers Science Research Base of Intelligent Optoelectronics and Perception, Institute of Optoelectronics, Department of Materials Science, Fudan University

**Symposium 16: Transparent Ceramics and Luminescent Materials  
(Location: TBD)**

**Session Chair:** Rong-Jun Xie, *Xiamen University*

**08:30 (S16-13) Large Size Transparent Ceramics for Extreme Applications (Keynote)**

Jian Zhang<sup>1,2,3,\*</sup>, Xiaojian Mao<sup>3</sup>, Shiwei Wang<sup>3</sup>

<sup>1</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences

<sup>3</sup>Research Center for Transparent Ceramics, Shanghai Institute of Ceramics, Chinese Academy of Sciences

**09:00 (S16-14) What Happened during Fs Laser Irradiation in Transparent Materials? (Keynote)**

Jianrong Qiu

*State Key Laboratory of Modern Optical Instrumentation, Zhejiang University*

**09:30 (S16-15) Solvothermal Synthesis and Broadband NIR Luminescence of Cr<sup>3+</sup>-doped Scandium Fluoride Nanocrystals**

Sihan Feng<sup>1</sup>, Xuejiao Wang<sup>2</sup>, Qi Zhu<sup>1</sup>, Ji-Guang Li<sup>3,\*</sup>

<sup>1</sup>Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education) and School of Materials Science and Engineering, Northeastern University

<sup>2</sup>College of Chemistry and Materials Engineering, Bohai University

<sup>3</sup>Research Center for Electronic and Optical Materials, National Institute for Materials Science

**09:45 (S16-16) Vertically Aligned Gd<sub>2</sub>O<sub>2</sub>SO<sub>4</sub>: Ln and Gd<sub>2</sub>O<sub>2</sub>S: Ln Luminescent Films via a Novel Precursor Route (Ln = Pr, Eu, Tb)**

Fan Li<sup>1</sup>, Xuejiao Wang<sup>2</sup>, Qi Zhu<sup>1</sup>, Ji-Guang Li<sup>3</sup>

<sup>1</sup>Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education) and School of Materials Science and Engineering, Northeastern University

<sup>2</sup>College of Chemistry and Materials Engineering, Bohai University

<sup>3</sup>Research Center for Electronic and Optical Materials, National Institute for Materials Science

**10:00 (S16-17) Photoluminescence Evolution of Functional Silicon Quantum Dots Assembled in Sustainable Mechanochemical Process**

Yuping Xu<sup>1</sup>, Yunzi Xin<sup>1</sup>, Takashi Shirai<sup>1,2,\*</sup>

<sup>1</sup>Advanced Ceramics Research Center, Nagoya Institute of Technology

<sup>2</sup>Department of Life Science and Applied Chemistry, Graduate School of Engineering, Nagoya Institute of Technology

**10:15 Break**

**Session Chair:** Akio Ikesue, World Lab. Co.

**10:30 (S16-18) Coupling Ferroelectrics and Piezoelectrics to Luminescent and Optoelectronic Materials (Keynote)**

Jianhua Hao<sup>1,2</sup>

<sup>1</sup>Department of Applied Physics and Photonics Research Institute, The Hong Kong Polytechnic University

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute

**11:00 (S16-19) Preparation of High-performance Magnesium Aluminate Spinel Transparent Ceramics via Particle Grading of Pre-sintered Powder Based on Isobam Gelcasting**

Junyan Mao, Shiwei Wang\*

Shanghai Institute of Ceramics, Chinese Academy of Sciences

**11:15 (S16-20) Elaboration of Ce: (Lu, Gd)<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>-Al<sub>2</sub>O<sub>3</sub> Transparent Nanoceramics Through Full Glass Crystallization for High-power Warm White LED/LD Lighting**

Jie Fu<sup>1,2</sup>, Jianqiang Li<sup>1,2</sup>

<sup>1</sup>School of Materials Science and Engineering, University of Science and Technology Beijing

<sup>2</sup>State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences

**11:30 (S16-21) Fabrication, Microstructure Evolution and Optical Properties of Sm: YAG Transparent Ceramics for Cladding**

Yanqiu Jing<sup>1,2</sup>, Feng Tian<sup>1,2</sup>, Lihao Guo<sup>1,2</sup>, Tingsong Li<sup>1,3</sup>, Junlin Wu<sup>1,2</sup>, Maxim Ivanov<sup>4</sup>, Dariusz Hreniak<sup>5</sup>, Jiang Li<sup>1,2,\*</sup>

<sup>1</sup>Transparent Ceramics Research Center, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences

<sup>3</sup>School of Material Science and Engineering, Jiangsu University

<sup>4</sup>Institute of Electrophysics Ural branch of Russian Academy of Science

<sup>5</sup>Institute of Low Temperature and Structure Research, Polish Academy of Sciences

**11:45 (S16-22) Ultrafine-grained Al<sub>2</sub>O<sub>3</sub>-RE: YAG (RE = Ce; Ce/Gd) Composite Ceramics as Color Converters for High-power White LEDs/LDs**

Anastasia A. Vornovskikh<sup>1,\*</sup>, Denis Yu. Kosyanov<sup>1,2</sup>, Oleg O. Shichalin<sup>1</sup>, Evgeniy K. Papynov<sup>1</sup>, Andrei A.

Leonov<sup>2</sup>, Alexey P. Zavjalov<sup>1,3</sup>, Yanbin Wang<sup>4</sup>, Ziqiu Cheng<sup>4</sup>, Xin Liu<sup>4,5</sup>, Jiang Li<sup>4,5</sup>

<sup>1</sup>Far Eastern Federal University

<sup>2</sup>Institute of Automation and Control Processes, Far Eastern Branch of the Russian Academy of Sciences

<sup>3</sup>Institute of Solid State Chemistry and Mechanochemistry, Siberian Branch of the Russian Academy of Sciences

<sup>4</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>5</sup>University of Chinese Academy of Sciences

**12:00 Lunch**

**Session Chair:** Shiwei Wang, Shanghai Institute of Ceramics, Chinese Academy of Sciences

**13:30 (S16-23) Fabrication of Ho<sup>3+</sup>: Y<sub>2</sub>O<sub>3</sub> Laser Ceramics and Demonstration of Over-Hundred-Watt Operation of a 2.1um Ceramic Laser (Keynote)**

J. Wang<sup>1</sup>, C. Y. Ren<sup>2</sup>, K. Zhou<sup>1</sup>, C. H. Zhang<sup>1</sup>, D. Y. Tang<sup>1,3,\*</sup>

<sup>1</sup>College of New Materials and New Energies, Shenzhen Technology University

<sup>2</sup>School of Physics and Electronic Engineering, Jiangsu Normal University

<sup>3</sup>Julong College, Shenzhen Technology University

- 14:00 (S16-24) Non-resonant Directional Random Laser using a Scattering Cavity in Porous Nd: YAG Ceramics (Invited)**  
Do Kyung Kim<sup>1,\*</sup>, Hojin Ma<sup>2</sup>, KyeoReh Lee<sup>1</sup>, YongKeun Park<sup>1</sup>  
<sup>1</sup>Korea Advanced Institute of Science and Technology (KAIST)  
<sup>2</sup>Korea Institute Materials Science
- 14:20 (S16-25) Microstructure Control in Transparent Ceramics by Various Sintering Techniques (Invited)**  
Rémy Boulesteix<sup>1,\*</sup>, Louis Cornet<sup>1,2</sup>, Alexandre Maitre<sup>1</sup>, Jean-Marc Heintz<sup>2</sup>, Véronique Jubéra<sup>2</sup>  
<sup>1</sup>IRCER, Université de Limoges  
<sup>2</sup>ICMCB, Université de Bordeaux
- 14:40 (S16-26) Microstructure Control of Y<sub>2</sub>O<sub>3</sub>-MgO Transparent Ceramics (Invited)**  
 Ze Luo<sup>1,2</sup>, Xi Zhang<sup>1,2</sup>, Yongzhi Luo<sup>1,2</sup>, Shengquan Yu<sup>1,2,\*</sup>, Bin Kang<sup>1,2</sup>  
<sup>1</sup>Sichuan Research Center of New Materials  
<sup>2</sup>Institute of Chemical Materials
- 15:00 (S16-27) Fluorescence Properties and Microstructure of Er<sup>3+</sup>(/Yb<sup>3+</sup>)-doped MgAlON Transparent Ceramics with Functionalized Grain Boundaries**  
Bowen Chen, Hao Wang\*, Bingtian Tu  
 State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology
- 15:15 (S16-28) Component Regulation and Performance Optimization of Al<sub>2</sub>O<sub>3</sub>-YAG: Ce Composite Ceramic Phosphors for High-power Laser Lighting**  
Ziqiu Cheng<sup>1,2</sup>, Yanbin Wang<sup>1,3</sup>, Xin Liu<sup>1,2</sup>, Zhengfa Dai<sup>1,2</sup>, Haohong Chen<sup>1,2</sup>, Feng Tian<sup>1,2</sup>, Penghui Chen<sup>1,2</sup>, Jiang Li<sup>1,2,\*</sup>  
<sup>1</sup>Key Laboratory of Transparent Opto-functional Inorganic Materials, Shanghai Institute of Ceramics, Chinese Academy of Sciences  
<sup>2</sup>Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences  
<sup>3</sup>School of Material Science and Engineering, Jiangsu University
- 15:30 (S16-29) Additives Doped AlON Ceramics for Simultaneously Enhanced Transparency and Luminescent Functionalization**  
Kailei Lu, Xiaolan Zhou, Xu Huang, Bing He, Wenxin Du, Jianqi Qi\*, Tiecheng Lu\*  
 School of Physics, Sichuan University
- 15:45 Break**
- Session Chair: Mathieu Allix, CEMHTI, CNRS**
- 16:00 (S16-30) Grain Boundary Mobility Transition Underlying Pressureless Two-step Sintering (Invited)**  
Yanhao Dong  
 Tsinghua University
- 16:20 (S16-31) High-pressure Regulation of Luminescent Metal Halides (Invited)**  
Zewei Quan  
 Department of Chemistry, Southern University of Science and Technology
- 16:40 (S16-32) Construction of High-Performance Perovskite Quantum Dots for LED Displays (Invited)**  
Tongtong Xuan\*, Rong-Jun Xie  
 College of Materials, Xiamen University
- 17:00 (S16-33) Microstructure Control in Transparent Ceramics by Colloidal Processing (Invited)**  
Tohru S. Suzuki  
 National Institute for Materials Science
- 17:20 (S16-34) High-performance Perovskite Optoelectronic Devices via Grain Boundary Defect Passivation (Invited)**  
Zhanhua Wei  
 Institute of Luminescent Materials and Information Displays, College of Materials Science and Engineering, Huaqiao University
- 17:40 (S16-35) YAG based Ceramics as Color Converter for High-power LEDs (Invited)**  
Youfu Zhou<sup>1,2,\*</sup>, Maochun Hong<sup>2</sup>  
<sup>1</sup>Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences  
<sup>2</sup>Fujian Science & Technology Innovation Laboratory for Optoelectronic Information of China

**Symposium 17: Materials for Advanced Nuclear Energy Systems and Nuclear Waste Management  
(Location: TBD)**

**Session Chair:** Shi-Kuan Sun, *Foshan University*

**08:30 (S17-12) Ultrafast Low-temperature Near-seamless Joining of SiC Ceramic Matrix Composites using a Sacrificial  $RE_3Si_2C_2$  Filler via Electric Current Field-assisted Sintering Technique for Nuclear Applications (Invited)**

Xiaobing Zhou

*Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences*

**08:55 (S17-13) Structure and Performance Optimization of Advanced  $UO_2$ -based Ceramic Nuclear Fuel (Invited)**

Rui Gao\*, Zhenliang Yang, Bingqing Li, Liang Cheng, Biaojie Yan, Jingkun Xu, Yi Zhong, Liang Xie, Pengcheng Zhang, Bin Bai

*Institute of Materials, China Academy of Engineering Physics*

**09:20 (S17-14) Process Informatics for CVD Ceramics Coating on SiC/SiC for Nuclear Applications (Keynote)**

Sosuke Kondo<sup>1,\*</sup>, Hirokazu Katsui<sup>2</sup>, Kazuya Shimoda<sup>3</sup>, Kiyohiro Yabuuchi<sup>4</sup>

<sup>1</sup>*Institute for Materials Research, Tohoku University*

<sup>2</sup>*National Institute of Advanced Industrial Science and Technology*

<sup>3</sup>*National Institute for Materials Science*

<sup>4</sup>*Institute of Advanced Energy, Kyoto University*

**09:50 (S17-15) Correlation between Microstructure Evolution and Mechanical Degradation of SiC/SiC under Ion Irradiation: An In-situ TEM Study (Invited)**

Ce Zheng\*, Xiaoqiang Li, Yichun Bi, Shanshan Xu, Yiming Qin, Cheng Zhang, Chong Wei

*Northwestern Polytechnical University*

**10:15**

**Break**

**Session Chair:** Kai Xu, *Wuhan University of Technology*

**10:30 (S17-16) Overview of Metal Hydrides for Nuclear Application (Invited)**

Xunxiang Hu

*Sichuan University*

**10:55 (S17-17) Design and Fabrication of High-performance Ceramic Coating as Tritium Permeation Barrier (Invited)**

Heping Li

*School of Materials Science and Engineering, Huazhong University of Science and Technology*

**11:20 (S17-18) Fabrication and Microstructure Investigation of The Li-rich  $Li_2TiO_3$  Tritium Breeder Ceramic**

Yanli Shi\*, Hao Guo, Jianqi Qi, Tiecheng Lu

*College of Physics, Sichuan University*

**11:40 (S17-19) Fabrication and Mechanical Properties of the Tritium Breeder  $Li_4SiO_4$  Pebbles for Nuclear Fusion Blanket**

Baoping Gong<sup>1,\*</sup>, Hao Chen<sup>1</sup>, Juemin Yan<sup>1</sup>, Yongjin Feng<sup>1,2</sup>, Xiaoyu Wang<sup>1</sup>

<sup>1</sup>*Southwestern Institute of Physics*

<sup>2</sup>*Nuclear Power Institute of China*

**12:00 (S17-20) Joining of SiC Ceramics by Combining NITE-SiC Interlayer and its Thickness Control**

Chuang-Tian Zhan<sup>1</sup>, Sheng-Jin He<sup>1</sup>, Weiming Guo<sup>1,\*</sup>, Yuan-Bin Chen<sup>1</sup>, Shi-Kuan Sun<sup>2</sup>, Hua-Tay Lin<sup>1,\*</sup>

<sup>1</sup>*School of Electromechanical Engineering, Guangdong University of Technology*

<sup>2</sup>*School of Material Science and Energy Engineering, Foshan University*

**12:20**

**Lunch**

**Session Chair:** Chen Xu, *Institute of Materials, China Academy of Engineering Physics*

**13:30 (S17-21) Structural Evolution in High-entropy Complex Ceramics under Irradiation (Invited)**

Chenxu Wang<sup>1,\*</sup>, Shuang Zhao<sup>1</sup>, Hao Xiao<sup>1</sup>, Jianming Xue<sup>1</sup>, Yugang Wang<sup>1</sup>, Jie Zhang<sup>2</sup>, Jingyang Wang<sup>2</sup>, Qing Huang<sup>3</sup>, Shijun Zhao<sup>4</sup>, Cameron L Tracy<sup>5</sup>, Rodney C Ewing<sup>5</sup>

<sup>1</sup>State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University

<sup>2</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

<sup>3</sup>Ningbo Institute of Material Technology & Engineering, Chinese Academy of Sciences

<sup>4</sup>Department of Mechanical Engineering, City University of Hong Kong

<sup>5</sup>Department of Geological Sciences, Stanford University

**13:55 (S17-22) Volatilization and Precipitation Studies for HLLW Vitrification (Invited)**

Kai Xu<sup>\*</sup>, Chenchen Niu, Wenfeng Song, Ziqiang Jia, Liyan Xu

Wuhan University of Technology State Key Laboratory of Silicate Materials for Architectures (SMART), Wuhan University of Technology

**14:20 (S17-23) Irradiation Effect of Zirconium Compounds (Invited)**

Weichao Bao<sup>1</sup>, Xin-Gang Wang<sup>1</sup>, Ji-Xuan Liu<sup>2</sup>, Guo-Jun Zhang<sup>2,\*</sup>, Houzheng Wu<sup>3,\*</sup>, Fangfang Xu<sup>1,\*</sup>

<sup>1</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics

<sup>2</sup>State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, Institute of Functional Materials, Donghua University

<sup>3</sup>Department of Materials, Loughborough University

**14:45 (S17-24) The Irradiation Effects and Multi-factor Coupling Effect on Behavior of Nuclear Graphite**

Shasha Lv<sup>1,\*</sup>, Zhengcao Li<sup>2</sup>

<sup>1</sup>Beijing Normal University

<sup>2</sup>Tsinghua University

**15:05 (S17-25) Microstructure Evolution and Amorphization Resistance in TiC<sub>x</sub> Ceramics under 3 MeV Au<sup>2+</sup> Ion Irradiation**

Jinyu Shi<sup>1,2</sup>, Lina Chen<sup>1,2</sup>, Yiming Lei<sup>1</sup>, Chenxu Wang<sup>3</sup>, Jie Zhang<sup>1,\*</sup>, Jingyang Wang<sup>1</sup>

<sup>1</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

<sup>2</sup>School of Materials Science and Engineering, University of Science and Technology of China

<sup>3</sup>State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University

**15:25 (S17-26) Effects of Grain Size on the Amorphous Threshold of Irradiated SiC at Room Temperature**

Xinwei Yuan<sup>1,2</sup>, Sosuke Kondo<sup>2,\*</sup>, Kiyohiro Yabuuchi<sup>3</sup>, Hao Yu<sup>2</sup>, Yasuyuki Ogino<sup>2</sup>, Ryuta Kasada<sup>2</sup>

<sup>1</sup>Graduate School of Engineering, Tohoku University

<sup>2</sup>Institute for Materials Research, Tohoku University

<sup>3</sup>Institute of Advanced Energy, Kyoto University

**15:45 Break**

**Session Chair:** Heping Li, *Huazhong University of Science and Technology*

**16:00 (S17-27) Heavy-ion Irradiation Effects of Gd<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> Nanocrystalline Ceramics as Nuclear Waste Immobilization Matrix (Invited)**

Kuibao Zhang

Southwest University of Science and Technology

**16:25 (S17-28) The Effect of Irradiation Damage on the Corrosion Behavior of SiC in the Molten Salt Reactor (Invited)**

Jianjian Li

Shanghai Institute of Applied Physics, Chinese Academy of Science

**16:50 (S17-29) Metallic Copper Decorated Hexagonal Boron Nitride for High-efficient Immobilization of Radioactive Iodine**

Tien-Shee Chee<sup>1</sup>, Sujeong Lee<sup>1</sup>, Ho Jin Ryu<sup>1,2,\*</sup>

<sup>1</sup>Department of Materials Science and Engineering, KAIST

<sup>2</sup>Department of Nuclear and Quantum Engineering, KAIST

**17:10 (S17-30) Design and Synthesis of Radioactive Gaseous Iodine Adsorption Materials for Dissolver Off Gas in Reprocessing Plants**

Sen Chang<sup>1,\*</sup>, Yongguo Li<sup>1</sup>, Kunjun Wang<sup>1</sup>

<sup>1</sup>China Institute for Radiation Protection



**17:30 (S17-31) Effects of Component Variation on a Simulated HLLW Glass Crystallization**

Ruidong Jia, Chenchen Niu, Kai Xu\*

<sup>1</sup>State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology

**17:50 (S17-32) High-temperature Oxidation, Corrosion and Wear Resistance of Cr/Cr<sub>2</sub>AlC Coatings on Zircaloy-4 Alloys for Accident Tolerant Fuel**

Yiming Lei<sup>1</sup>, Hongliang Ming<sup>1</sup>, Jianqiu Wang<sup>1</sup>, Jie Zhang<sup>1,\*</sup>, Jochen M. Schneider<sup>2</sup>, Jingyang Wang<sup>1</sup>

<sup>1</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

<sup>2</sup>Materials Chemistry, RWTH Aachen University

**Symposium 18: Solid Oxide Fuel Cells and Hydrogen Technologies**

(Location: TBD)

**Session Chair:** Naoki Shikazono, *University of Tokyo*

Tenglong Zhu, *Nanjing University of Science and Technology*

**08:30 (S18-12) Tuning the Redox Process of Lattice Oxygen/Hydrogen for Promoted Electro-Catalytic Activity toward Small Molecular Conversion (Keynote)**

Yan Chen

*School of Environment and Energy, South China University of Technology*

**09:00 (S18-13) Protonic Ceramic Electrochemical Cells for High-efficient Hydrogen Production and Electricity Generation (Invited)**

Slhyuk Choi

*Department of Mechanical Engineering, Kumoh National Institute of Technology*

**09:25 (S18-14) Self-recovered Symmetrical Protonic Ceramic Fuel Cell with Smart Reversible Exsolution/Dissolution Electrode (Invited)**

Yuhao Wang<sup>1</sup>, Francesco Ciucci<sup>1, 2, 3, \*</sup>

<sup>1</sup>Department of Mechanical and Aerospace Engineering, The Hong Kong University of Science and Technology

<sup>2</sup>Chair of Electrode Design, Faculty of Engineering Science, University of Bayreuth

<sup>3</sup>Bavarian Center for Battery Technology

**09:50 (S18-15) Perovskite-RP Phase 3D Heterostructured Electrode with Local Engineering Proton Channel for Protonic Ceramic Fuel Cells**

Tao Hong<sup>\*</sup>, jigui Cheng

*School of Materials Science and Engineering, Hefei University of Technology*

**10:15 Break**

**Session Chair:** Bingtian Tu, *Wuhan University of Technology*

**10:30 (S18-16) Janus-type Substitution for High-performance Reversible Protonic Ceramic Cells (Invited)**

Yufei Song<sup>1</sup>, Francesco Ciucci<sup>2,\*</sup>

<sup>1</sup>Department of Mechanical and Aerospace Engineering, The Hong Kong University of Science and Technology

<sup>2</sup>Chair of Electrode Design for Electrochemical Energy Storage Systems, University of Bayreuth

**10:55 (S18-17) Rational Design of Perovskite Ferrites as High-performance Proton-conducting Fuel Cell Cathodes**

Zheng Wang<sup>\*</sup>, Yuhao Wang, Jian Wang, Yufei Song, Matthew J. Robson, Arim Seong, Meiting Yang, Zhiqi Zhang,

Alessio Belotti, Jiapeng Liu, Guntae Kim, Jongwoo Lim, Zongping Shao, Francesco Ciucci

*Shenzhen University*

**11:15 (S18-18) Enhancing P-SOC Performance via Alkaline Element Doping: Theoretical and Experimental Study**

Kang Zhu, Ranran Peng<sup>\*</sup>, Yalin Lu<sup>\*</sup>

*Department of Materials Science and Engineering, University of Science and Technology of China*

**11:35 (S18-19) La<sub>2</sub>NiO<sub>4+δ</sub> infiltrated with Silver Nitrate as Positrodes for Protonic Ceramic Electrochemical Cells**

Yuwen Zhu, Shihang Guo, Donglin Han<sup>\*</sup>

*College of Energy, Soochow University*

**11:55 Lunch**

**Session Chair:** Francesco Ciucci, *University of Bayreuth*  
Yongliang Zhang, *Tsinghua University*

- 13:30 (S18-20) Differences in Reaction Process of Large Cells and Button Cells in SOFC and SOEC Modes (Keynote)**  
Minfang Han  
*Fuel Cell and Energy Storage Center, Department of Energy and Power Engineering, Tsinghua University*
- 14:00 (S18-21) Performance-uniformity Oriented Current Collector Designing for Industrial-sized Solid Oxide Fuel Cell Stack (Invited)**  
Han Yan, Dong Yan<sup>\*</sup>, Jian Li; *School of Mater Sci & Technol, Huazhong University of Science and Technology*
- 14:25 (S18-22) Long-term Thermo-mechanical Failure Evolution of a 15-Cell Solid Oxide Fuel Cell Stack**  
Meiting Guo, Sanping Jiang<sup>\*</sup>  
*Foshan Xianhu Laboratory of the Advanced Energy Science and Technology Guangdong Laboratory*
- 14:45 (S18-23) To Study the Transient Thermal Stress Distributing Behavior of the Components within a Typical SOFC Stack at the Preheating Stage by 3D Thermomechanical Modeling**  
Yanlong Zhu, Daifen Chen<sup>\*</sup>; *School of Energy and Power, Jiangsu University of Science and Technology*
- 15:05 (S18-24) Improving the Robustness of the Sealant-to-Interconnect Interface by Steel Surface Modification**  
Elisa Zanchi<sup>1,\*</sup>, Devanarayanan Meena Narayana Menon<sup>1</sup>, Simone Anelli<sup>1</sup>, Antonio Gianfranco Sabato<sup>2</sup>, Milena Salvo<sup>1</sup>, Davide Janner<sup>1</sup>, Albert Tarancón<sup>2,3</sup>, Federico Smeacetto<sup>1</sup>  
<sup>1</sup>*Politecnico di Torino, Department of Applied Science and Technology*  
<sup>2</sup>*IREC, Catalonia Institute for Energy Research, Department of Advanced Materials for Energy Applications*  
<sup>3</sup>*ICREA*
- 15:25 (S18-25) In-situ Formed CuFe<sub>2</sub>O<sub>4</sub> Spinel Coating by Electroplating Method for Solid Oxide Fuel Cell Interconnect**  
Yongtao Zhao, Changrong Xia<sup>\*</sup>; *University of Science and Technology of China*

**15:45 Break**

**Session Chair:** Jaroslaw Milewski, *Warsaw University of Technology*  
Dong Yan, *Huazhong University of Science and Technology*

- 16:00 (S18-26) Phase Transition with In-situ Exsolution Nanoparticles in Reduced Pr<sub>0.5</sub>Ba<sub>0.5</sub>FeO<sub>3-δ</sub> based Electrode for Solid Oxide Cells (Invited)**  
Yunfeng Tian; *School of Materials Science and Physics, China University of Mining and Technology*
- 16:25 (S18-27) Decoupling and Predicting Performance Degradation of SOFCs based on Impedance Analysis (Invited)**  
Zewei Lyu<sup>1,\*</sup>, Naoki Shikazono<sup>1</sup>, Minfang Han<sup>2</sup>, Zaihong Sun<sup>3</sup>  
<sup>1</sup>*Institute of Industrial Science, The University of Tokyo*  
<sup>2</sup>*Department of Energy and Power Engineering, Tsinghua University*  
<sup>3</sup>*Xuzhou Huatsing Jingkun Energy Co., Ltd.*
- 16:50 (S18-28) A Combined Ionic Lewis-Acid Descriptor and Machine-Learning Approach to Prediction of Efficient Oxygen Reduction Electrodes for Ceramic Fuel Cells (Invited)**  
Shuo Zhai<sup>1</sup>, Heping Xie<sup>1,\*</sup>, Zongping Shao<sup>3,\*</sup>, Meng Ni<sup>2,\*</sup>  
<sup>1</sup>*Institute of Deep Earth Sciences and Green Energy, Shenzhen University*  
<sup>2</sup>*State Key Laboratory of Materials-Oriented Chemical Engineering, College of Chemical Engineering*  
<sup>3</sup>*Department of Building and Real Estate, Research Institute for Sustainable Urban Development (RISUD) & Research Institute for Smart Energy (RISE), The Hong Kong Polytechnic University*
- 17:15 (S18-29) A Novel Interconnector for SOFC Thermo-Electric Synergistic Enhancement**  
Keqing Zheng<sup>1,2</sup>, Meng Zhu<sup>2</sup>, Meng Ni<sup>2,\*</sup>  
<sup>1</sup>*School of Low-Carbon Energy and Power Engineering, China University of Mining and Technology*  
<sup>2</sup>*Department of Building and Real Estate, Research Institute for Sustainable Urban Development (RISUD) & Research Institute for Smart Energy (RISE), The Hong Kong Polytechnic University*
- 17:35 (S18-30) Experimental Study on Thermal Cycle Stability of Solid Oxide Fuel Cell**  
Meng Zhu, Keqing Zheng, Meng Ni<sup>\*</sup>; *BRE, The Hong Kong Polytechnic University*

**Symposium 19: Ionic and Mixed Conducting Ceramics  
(Location: TBD)**

**Session Chair:** Na Ni, *Shanghai Jiao Tong University*  
Jing-lin Luo, *Shenzhen University*

**08:30 (S19-11) Sr-Fe-Mo-based Perovskite-type Electrocatalyst Materials for SOFC/SOEC (Keynote)**

Xiu-An Xi<sup>1</sup>, Bowen Zhang<sup>2</sup>, Jianwen Liu<sup>1</sup>, Xianzhu Fu<sup>1</sup>, Jing-Li Luo<sup>1,\*</sup>

<sup>1</sup>College of Materials Science and Engineering, Shenzhen University

<sup>2</sup>Dept. Chemical and Materials Engineering, University of Alberta

**09:00 (S19-12) Development of High Performance Composite Mixed Conducting Electrodes for Solid Oxide Cells (Keynote)**

Zheng Xie, Chen-Yu Tsai, Stephen Skinner\*

Department of Materials, Imperial College London

**09:30 (S19-13) Experimental Characterization and Phase-field Modelling of Microstructure Evolution in Solid Oxide Cells (Keynote)**

Yijing Shang, Miao Yu, Hua Liu, Ming Chen\*

Department of Energy Conversion and Storage, Technical University of Denmark

**10:00 (S19-14) Unveiling the Structural Foundations for Enhanced Oxygen Ion Conductivity in High-Entropy Perovskite Oxides**

Yue Shui<sup>1</sup>, Hanchao Zhang<sup>1</sup>, Hairui Han<sup>2</sup>, Changrong Xia<sup>2</sup>, Lei Zhu<sup>3</sup>, Zhen Huang<sup>3</sup>, Na Ni<sup>1,\*</sup>

<sup>1</sup>Gas Turbine Research Institute, School of Mechanical Engineering, Shanghai Jiao Tong University

<sup>2</sup>CAS Key Laboratory of Materials for Energy Conversion, Department of Materials Science and Engineering, University of Science and Technology of China

<sup>3</sup>New Energy Power Research Institute, School of Mechanical Engineering, Shanghai Jiao Tong University

**10:15 Break**

**Session Chair:** Isao Kagomiya, *Nagoya Institute of Technology*  
Ming Chen, *Technical University of Denmark*

**10:30 (S19-15) Solid Oxide Fuel Cells Technologies - Challenges and Future Prospects (Keynote)**

San Ping Jiang

Foshan Xianhu Laboratory

**11:00 (S19-16) Dual-metal Exsolution of Doped Ferrite Anode for Solid Oxide Fuel Cells (Invited)**

Zhe Lv\*, Yujie Wu, Shuai Wang

School of Physics, Harbin Institute of Technology

**11:25 (S19-17) Oxygen Permeation Mechanism of Fe Based Mixed Conductive Oxides Used for Cathodes of Solid Oxide Fuel Cells (Invited)**

Isao Kagomiya; Department of Life Science and Applied Chemistry, Nagoya Institute of Technology

**11:50 (S19-18) Mixed Conducting Oxides for Solid Oxide Photoelectrochemical Cells**

Luyao Wang, Nan Yang\*; School of physical science and technology, ShanghaiTech University

**12:05 Lunch**

**Session Chair:** Yan Chen, *South China University of Technology*  
Truls Norby, *University of Oslu*

**13:30 (S19-19) Mixed Anion Perovskite Catalysis for Ammonia Synthesis (Keynote)**

Masaaki Kitano; Tokyo Institute of Technology

**14:00 (S19-20) High Performance Protonic Ceramic Fuel Cells with Fuel Flexibility (Invited)**

Donguk Kim<sup>1</sup>, Tae Kyeong Lee<sup>1</sup>, Seungwoo Han<sup>1</sup>, Yuhan Jung<sup>1</sup>, Dong Gyu Lee<sup>1</sup>, Mingi Choi<sup>2</sup>, Wonyoung Lee<sup>1,3,\*</sup>

<sup>1</sup>Department of Mechanical Engineering, Sungkyunkwan University

<sup>2</sup>Department of Future Energy Convergence, Seoul National University of Science and Technology

<sup>3</sup>SKKU Institute of Energy Science and Technology (SIEST), Sungkyunkwan University

**14:25 (S19-21) Why Co-doping Y and Yb Leads to High Performance Proton-Conducting Perovskite-type Electrolyte? (Invited)**

Donglin Han

*College of Energy, Soochow University*

**14:50 (S19-22) Triple Conducting Oxides as Positrodes for Proton-Conducting Solid Oxide Electrochemical Devices (Invited)**

Leonard Kwati<sup>1,\*</sup>, Aleksandar Staykov<sup>1</sup>, Paulo Wiff<sup>2</sup>, Yuji Okuyama<sup>3</sup>, Hiroshige Matsumoto<sup>1</sup>

<sup>1</sup>*International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Kyushu University*

<sup>2</sup>*Air Liquid Research and Development Innovation Campus*

<sup>3</sup>*Research Center for Sustainable Energy and Environmental Engineering, Faculty of Engineering University of Miyazaki*

**15:15 (S19-23) Robust Nanocatalysts via Ex-Solution: Latest Research Efforts and Material Strategies (Invited)**

Jung WooChul; *Nanyang Technological University*

**15:40 Break**

**Session Chair:** Donglin Han, *Soochow University*

Wonyoung Lee, *Sungkyunkwan University*

**16:00 (S19-24) Proton Conducting Ceramics - Science and Applications (Keynote)**

Shijun Zhao<sup>\*</sup>, Jun Zhang

*City University of Hong Kong*

**16:30 (S19-25) Research on Proton Ceramic Fuel Cells with Anode Support and its Application using Ammonia Fuel (Keynote)**

Zuzhi Huang, Ting Chen, Shaorong Wang<sup>\*</sup>

*School of Chemical Engineering and Technology, China University of Mining and Technology*

**17:00 (S19-26) Metal Nitrides Are Efficient Hydrogen-Diffusive Cathode for Protonic Solid Oxide Electrolysis Cells (Keynote)**

Yoshitaka Aoki<sup>1,\*</sup>, Naoki Kamitani<sup>2</sup>, SeongWoo Jeong<sup>3</sup>

<sup>1</sup>*Faculty of Engineering, Hokkaido University*

<sup>2</sup>*Graduate school of Chemical Sciences and Engineering, Hokkaido University*

<sup>3</sup>*Hydrogen & C1 Gas Research Center, Korea Research Institute of Chemical Technology*

**17:30 (S19-27) Machine Learning Guided Dopant Selection of  $A_{1-x}A'_xCoO_3$  Air Electrodes for Reversible Protonic Ceramic Cells**

Chunmei Tang<sup>1,\*</sup>, Ning Wang<sup>1</sup>, Baoyin Yuan<sup>2</sup>, Yoshitaka Aoki<sup>3</sup>, Siyu Ye<sup>1</sup>

<sup>1</sup>*Huangpu Hydrogen Energy Innovation Center, Guangzhou University*

<sup>2</sup>*School of Mathematics, South China University of Technology*

<sup>3</sup>*Faculty of Engineering, Hokkaido University*

**17:45 (S19-28) Proton-conducting Oxides for the Air Electrodes of Protonic Ceramic Cells**

Ning Wang<sup>1,\*</sup>, Baoyin Yuan<sup>2</sup>, Chumei Tang<sup>1</sup>, Yoshitaka Aoki<sup>3</sup>, Siyu Ye<sup>1</sup>

<sup>1</sup>*Huangpu Hydrogen Innovation Center, Guangzhou University*

<sup>2</sup>*School of Mathematics, South China University of Technology*

<sup>3</sup>*Faculty of Engineering, Hokkaido University*

**Symposium 20: Multifunctional Nanomaterials and Heterostructures for Sensing Devices  
(Location: TBD)**

**Session Chair:** Wangyang Fu, *Tsinghua University*

**08:30 (S20-12) Trace-level Quantification by Surface-enhanced Raman Scattering (Keynote)**

Zhengjun Zhang

*School of Materials Science and Engineering, Tsinghua University*

**09:00 (S20-13) Clinical Diagnosis of Asthma and Lung Cancer Using Chemiresistive Gas Sensor (Keynote)**

Qiang Jing

*Laboratory of Functional Molecules and Materials, School of Physics and Optoelectronic Engineering, Shandong University of Technology*

**09:25 (S20-14) Advanced Smart Integrated Chips for Zenithal Environmental Universal Sensing (ASIC-ZEUS) (Invited)**

Chen Wang; *Tsinghua University*

**09:50 (S20-15) Single-atom Cu Stabilized on Ultrathin WO<sub>2.72</sub> Nanowire for Highly Selective and Ultrasensitive PPB-level Toluene**

Hua-Yao Li<sup>\*</sup>, Peng Wang, Shisong Guo, Huan Liu  
School of Integrated Circuits, Huazhong University of Science and Technology

**10:10 Break**

**Session Chair:** Zhengjun Zhang, *Tsinghua University*

**10:30 (S20-16) From Polycyclic Aromatic Hydrocarbons to Two Dimensional Nanopores, Nanogaps and Energy Devices (Keynote)**

Grégory F. Schneider  
*Leiden University*

**11:00 (S20-17) Pt-SnO<sub>2</sub> Composite Nanoceramics with Ultrastrong Room-temperature CO Responses (Invited)**

Wanping Chen; *School of Physics and Technology, Wuhan University*

**11:25 (S20-18) Atomically Dispersed Pt on MOF Derived In<sub>2</sub>O<sub>3</sub> for High Performance Formaldehyde Gas Sensor**

Weiyi Bu, Xiaohong Chuai<sup>\*</sup>, Geyu Lu<sup>\*</sup>  
*College of Electronic Science and Engineering, Jilin University*

**11:45 (S20-19) High Hydrogen Selectivity SnO<sub>2</sub> Hydrogen Sensor with Hybrid Organosilica Membranes**

Zhonghang Xia, Lu Zhang, Yiwen Zhang<sup>\*</sup>, Huiming Ji<sup>\*</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Tianjin University, Key laboratory of Advanced Ceramics and Machining Technology of Ministry of Education*

**12:05 Lunch**

**Session Chair:** Wanping Chen, *Wuhan University*

**13:30 (S20-20) Functional Nanomaterials for Bacterial Sensing and Elimination (Keynote)**

Yong-Qiang Li  
*Institute of Advanced Interdisciplinary Science, School of Physics, Shandong University*

**14:00 (S20-21) Atomic-scale Modulating of Nanomaterials for Highly Sensitive and Selective Sensors (Invited)**

Zehui Li<sup>1,\*</sup>, Kunchan Wang<sup>1</sup>, Kangrui Zhao<sup>1</sup>, Keyu Chu<sup>1</sup>, Ziyi Wang<sup>2</sup>, Zhan Zhang<sup>2</sup>  
<sup>1</sup>*School of Environmental Science and Engineering, Shanghai Jiao Tong University*  
<sup>2</sup>*TC Air Technology Limited Company*

**14:25 (S20-22) Applications of Heterogeneous Inorganic Nanostructures in Thermal Management and Mechanical Enhancement (Invited)**

Lin Jing  
*Nanyang Technological University*

**14:50 (S20-23) Ferroelectric Polarization and Oxygen Vacancy Synergistically Induced Ultrasensitive and Fast Humidity Sensor for Multifunctional Applications**

Nan Ma; *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**15:10 (S20-24) Strain Dependence of Electronic Band Structure of Graphene Nanoribbons and its Effect on their Physical and Chemical Properties (Keynote)**

Hideo Miura  
*Fracture and Reliability Research Institute, Tohoku University*

**Symposium 21: Ceramics for Environmental Conservation, Energy and Environmental catalysis, Pollution Control, and Critical Materials  
(Location: TBD)**

**Session Chair:** Jianfeng Zhang, *Hohai University*

**08:30 (S21-12) Metal Oxides for Arsenic Removal: from the Proposal of Selection Criteria to Application Oriented Structural Design (Invited)**

Ronghui Li  
*School of Gemology and Materials Science, Hebei GEO University*

**08:55 (S21-13) The Science of Carbene with Its Elusive Bonding Description and Broad Implication Complementary to NHC-carbenes (Keynote)**

Tiow-Gan Ong; *Institute of Chemistry, Academia Sinica*

**09:25 (S21-14) In-situ Grown Metal Oxide Catalysts for Promising Gas-catalysis Applications (Invited)**

Baodan Liu; *Northeastern University*

**09:50 (S21-15) Ni/Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> Nanofibers Synthesized by Blow Spinning for Dry Reforming of Methane**

Kun Wang, Jing Liu<sup>\*</sup>, Peng Zhang<sup>\*</sup>  
*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**10:15 Break**

**Session Chair:** Baodan Liu, *Northeastern University*

**10:30 (S21-16) Synthesis of g-C<sub>3</sub>N<sub>4</sub>/diatomite Photocatalyst for the Degradation of Organic Pollutant (Invited)**

Hongliang Xu<sup>\*</sup>, Mengfan Wang, Zhentao Cui, Mingliang Li, Bo Song  
*School of Materials Science and Engineering, Zhengzhou University*

**10:55 (S21-17) Application of the Bandwidth-controlled Mott-IMT Model to Interpret the Temperature Dependent Insulator (R)-metal (M<sub>1</sub>) Phase Transition Behavior in Aggregated Thermochromic V<sub>1-x</sub>W<sub>x</sub>O<sub>2</sub> (0.0 ≤ x ≤ 0.02) Nanorods (Invited)**

Sakae Tanemura<sup>1, 2, \*</sup>, Lei Miao<sup>2</sup>, Eiji Nishibori<sup>3, 4</sup>  
<sup>1</sup>*Japan Fine Ceramics Center*  
<sup>2</sup>*School of Physical Science and Technology, Guangxi University*  
<sup>3</sup>*Division of Physics, Faculty of Pure and Applied Science, Tsukuba Research Center for Interdisciplinary Materials Science (TIMS) & Center for Integrated Research in Fundamental Science and Engineering (CiRfSE), University of Tsukuba*  
<sup>4</sup>*Structural Materials Science Laboratory, RIKEN Spring-8 Center*

**11:20 (S21-18) Microstructural Modification and Performance Study of Low Pressure Charged Nanofiltration Membranes (Invited)**

Jianfeng Zhang<sup>\*</sup>, Yanan Deng, Gaiye Li  
*College of Mechanics and Materials, Hohai University*

**11:45 (S21-19) Highly Coke Resistant and Thermally Stable Nickel/Oxide Catalysts for Methane Reforming with Carbon Dioxide**

Jing Liu<sup>\*</sup>, Xiaoqian Feng, Qing Zhang, Feng Li, Peng Zhang, Lian Gao  
*School of Materials Science and Engineering, Shanghai Jiao Tong University*

**12:05 Lunch**

**Session Chair:** Xibao Li, *Nanchang Hangkong University*

**13:30 (S21-20) Non-precious-metal Catalysts for Polymer Electrolyte Membrane Fuel Cells (Invited)**

Qiliang Wei<sup>1, \*</sup>, Weiyu Yang<sup>1</sup>  
<sup>1</sup>*Institute of Micro/Nano Materials and Devices, Ningbo University of Technology*

**13:55 (S21-21) A Promoted Photocatalysis System Trade-off between Thermodynamic and Kinetic via Hierarchical Distribution Dual-defects for Efficient H<sub>2</sub> Evolution (Invited)**

Jinbo Xue<sup>1, \*</sup>, Jiaqi Gao<sup>1</sup>, Qianqian Shen<sup>1</sup>  
<sup>1</sup>*Key Laboratory of Interface Science and Engineering in Advanced Materials (Taiyuan University of Technology), Ministry of Education*

**14:20 (S21-22) Two-dimensional SnSe Piezoelectric Nanomaterials for Mechanically Driven Catalytic Applications (Invited)**

Shun Li; *Jiangsu University*

**14:45 (S21-23) Atomic Imaging of Absorbed Guest Species in Beam-sensitive Aluminosilicate Zeolites by Electron Microscopy (Invited)**

Lingmei Liu<sup>1</sup>, Yu Han<sup>2, \*</sup>  
<sup>1</sup>*Multi-Scale Porous Materials Center, Institute of Advanced Interdisciplinary Studies & School of Chemistry and Chemical Engineering, Chongqing University*  
<sup>2</sup>*King Abdullah University of Science and Technology (KAUST), Physical Sciences and Engineering Division, Advanced Membranes and Porous Materials (AMPM) Center, Saudi Arabia*

**15:10 (S21-24) Hexavalent Chromium Removal from Aqueous Media Using Cu<sub>2</sub>O-Au-TiO<sub>2</sub> Photocatalyst**

Sayaka Yanagida<sup>\*</sup>, Shoichi Somekawa

Materials Technology Group, Fundamental Chemical Materials Division, Research and Development Department, Tokyo Metropolitan Industrial Technology Research Institute

**15:30 (S21-25) Boosting Electrochemical Energy Storage Performance by Constructing Hierarchical Three-dimensional Electrode Structures**

Zengyan Wei; School of Materials Science and Engineering, Harbin Institute of Technology

**15:50 Break**

**Session Chair:** Jinbo Xue, Taiyuan University of Technology

**16:00 (S21-26) Rapid and Round-the-clock Degradation of Organic Pollutants over BiFeO<sub>3</sub>@BaTiO<sub>3</sub> Heterojunction via Piezoelectric Effect Assisted Solar Photocatalysis (Invited)**

Mingtong Li<sup>1</sup>, Jianhua Zhou<sup>1,\*</sup>, Lei Miao<sup>1,2,\*</sup>

<sup>1</sup>Guangxi Key Laboratory of Information Materials, Engineering Research Center of Electronic Information Materials and Devices, Ministry of Education, School of Materials Science and Engineering, Guilin University of Electronic Technology

<sup>2</sup>Guangxi Key Laboratory for Relativity Astrophysics, State Key Laboratory of Featured Metal Materials and Life-cycle Safety for Composite Structures, School of Physical Science and Technology, Guangxi University

**16:25 (S21-27) Coatings: An Effective Way to Regulate Tribo-catalysis (Invited)**

Xiaodong Cui, Hua Lei, Xuchao Jia, Wanping Chen<sup>\*</sup>

School of Physics and Technology, Wuhan University

**16:50 (S21-28) Synchronous Anodic Oxidation for Robust Photoelectrocatalytic Hydrogen Production (Invited)**

Xibao Li; Nanchang Hangkong University

**17:15 (S21-29) Micro-/Nano- Structured Metal Oxide Semiconductor Gas Sensors (Invited)**

Fanli Meng<sup>\*</sup>, Zhenyu Yuan

College of Information Science and Engineering, Northeastern University

**17:40 (S21-30) Hydroxyapatite as Green Catalyst for VOC Elimination**

Yunzi Xin, Sohei Nakagawa, Takashi Shirai<sup>\*</sup>

Advanced Ceramics Research Center, Nagoya Institute of Technology

**Symposium 22: Ceramic Integration and Joining Technologies**

(Location: TBD)

**Session Chair:** Lixia Zhang, Harbin Institute of Technology

Fabiana D'Isanto, Politecnico di Torino

**08:30 (S22-15) Joining of Advanced Ceramics using Field Assisted Sintering Technology (Keynote)**

Naser Hosseini<sup>1</sup>, Zdeněk Chlup<sup>2</sup>, Valentina Casalegno<sup>3</sup>, Xiaobing Zhou<sup>4</sup>, Fabrizio Valenza<sup>5</sup>, Alexandra Kovalčíková<sup>6</sup>, Peter Tatarko<sup>1,\*</sup>

<sup>1</sup>Institute of Inorganic Chemistry, Slovak Academy of Sciences

<sup>2</sup>Institute of Physics of Materials, Czech Academy of Sciences

<sup>3</sup>Politecnico di Torino, Applied Science and Technology Department

<sup>4</sup>Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

<sup>5</sup>Institute of Condensed Matter Chemistry and Energy Technologies - ICMATE, National Research Council -CNR

<sup>6</sup>Institute of Materials Research, Slovak Academy of Sciences

**09:00 (S22-16) Investigations on the Water-Jet Guided Laser Machining of Ceramic Coated IC21 Superalloy (Invited)**

Yuan Li<sup>1</sup>, Ye Ding<sup>1,\*</sup>, Shuiwang Wang<sup>1</sup>, Wanda Xie<sup>1</sup>, Wei Zhang<sup>2</sup>, Youqing Lu<sup>2</sup>, Lijun Yang<sup>1,\*</sup>

<sup>1</sup>School of Mechatronics Engineering, Harbin Institute of Technology

<sup>2</sup>National Key Laboratory of Science and Technology on Power Beam Processes, AVIC Manufacturing Technology Institute

**09:20 (S22-17) Additive Manufacturing of a High-Strength ZrC-SiC and TC4 Gradient Structure based on a Combination of Direct Laser Deposition and Brazing (Invited)**

Qian Wang<sup>1,\*</sup>, Ninshu Ma<sup>1,\*</sup>, Junmiao Shi<sup>2,3</sup>, Lixia Zhang<sup>2</sup>, Seiichiro Tsutsumi<sup>1</sup>, Jicai Feng<sup>2</sup>

<sup>1</sup>Joining and Welding Research Institute, Osaka University

<sup>2</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

<sup>3</sup>Key Laboratory of Pressure Systems and Safety, Ministry of Education, East China University of Science and Technology

**09:40 (S22-18) Measurement and Understanding the Residual Stress Distribution in Ceramic/metal Joint**

Chun Li

State key laboratory of advanced welding and joining, Harbin Institute of Technology

**09:55 (S22-19) Brazing SiC Ceramic to Al<sub>0.3</sub>CoCrFeNi High-entropy Alloy using Ag-based Filler Metal**

Xiaoguo Song<sup>1,2,\*</sup>, Jie Sun<sup>1</sup>

<sup>1</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

<sup>2</sup>Shandong Institute of Shipbuilding Technology

**10:10 Break**

**Session Chair:** Peter Tatarko, Institute of Inorganic Chemistry, Slovak Academy of Sciences

Lei Liu, Tsinghua University

**10:25 (S22-20) The Advanced Joining of Ceramics and Ceramic Matrix Composites with Metals (Keynote)**

Lixia Zhang<sup>\*</sup>, Zhan Sun, Qing Chang, Bo Zhang

Department of Materials Science and Engineering, Harbin Institute of Technology

**10:55 (S22-21) Joining and Integration Challenges in Sodium-zinc Molten Salt Batteries (Invited)**

Fabiana D'Isanto<sup>\*</sup>, Andrea Baggio, Milena Salvo, Federico Smeacetto

Politecnico di Torino, Department of Applied Science and Technology

**11:15 (S22-22) New Design of Sapphire Joints Brazed with Bismuth-borate Glass (Invited)**

Wei Guo

School of materials science and engineering, Yanshan University

**11:35 (S22-23) Acquisition of YSZ/Sapphire High-quality Joint based on Nanosecond Laser Pulses**

Shuye Zhang, Tiesong Lin<sup>\*</sup>

State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**11:50 Lunch**

**Session Chair:** Tiesong Lin, Harbin Institute of Technology

Wei Guo, Northwestern Polytechnical University

**13:30 (S22-24) Advanced Routes for Ceramic Brazing: Wetting and Metal-Ceramic Interfaces (Keynote)**

Fabrizio Valenza<sup>1,\*</sup>, Sofia Gambaro<sup>1</sup>, Lorenzo Fenocchio<sup>2</sup>, Gabriele Cacciamani<sup>1,2</sup>

<sup>1</sup>CNR-ICMATE, National Research Council, Institute of Condensed Matter Chemistry and Technologies for Energy

<sup>2</sup>UNIGE-DCCI, University of Genova, Department of Chemistry

**14:00 (S22-25) Vacuum Brazing of Diamond Film with Copper using AgCuSnTi Filler Alloys for Fabrication of Microwave Windows (Invited)**

Haitao Xu, Chuanyang Lu, Huaxin Li, Wenjian Zheng, Yinghe Ma, Zengliang Gao, Jianguo Yang, Yanming He<sup>\*</sup>

Institute of Process Equipment and Control Engineering, Zhejiang University of Technology

**14:20 (S22-26) Research on Brazed Joints Reinforced by Three-dimensional Network Graphene Structure (Invited)**

Zhan Sun, Bo Zhang, Qing Chang, Lixia Zhang<sup>\*</sup>

Harbin Institute of Technology

**14:40 (S22-27) Insights into the Air Reaction Wetting and Brazing of Si<sub>3</sub>N<sub>4</sub> Ceramic by Ag-CuO Filler Metal: From Experiments to DFT Calculations**

Xiangzhao Zhang<sup>\*</sup>, Guiwu Liu, Guanjun Qiao

School of Materials Science and Engineering, Jiangsu University

**14:55 (S22-28) SiC Fiber Strengthened Si-14Ti High-Temperature Filler Alloy for Brazing SiC<sub>f</sub>/SiC and C/C Composites**

Zongjing He<sup>1,\*</sup>, Chun Li<sup>2</sup>, Xiaoping Si<sup>2</sup>, Jian Cao<sup>2</sup>

<sup>1</sup>School of Transportation Science and Engineering, Harbin Institute of Technology

<sup>2</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**15:10 (S22-29) Direct Joining of Quartz Glass and Copper by Nanosecond Laser**

Yinghao Feng, Rui Pan<sup>\*</sup>, Shujun Chen, Taoshuai Zhou

Faculty of Materials and Manufacturing, Beijing University of Technology



**15:25 (S22-30) Probing the Further Yb-doping Strategy Toward Enhancing Ion Conductivity in Li-garnet Solid Electrolyte**

Fugang Lu<sup>\*</sup>, Ce Wang, Panpan Lin, Tiesong Lin, Peng He<sup>\*</sup>

State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**15:40 Break**

**Session Chair:** Fabrizio Valenza, *National Research Council, Institute of Condensed Matter Chemistry and Technologies for Energy*

Xiaobing Zhou, *Ningbo Institute of Materials Technology and Engineering, CAS*

**15:55 (S22-31) Ceramic Bonding by Femtosecond Laser: Technology, Interface and Devices (Keynote)**

Lei Liu<sup>\*</sup>, Guisheng Zou; *Department of Mechanical Engineering, Tsinghua University*

**16:25 (S22-32) Microstructure and Mechanical Properties of ZrC-SiC Composite Ceramic Diffusion Joints by Pulsed Current (Invited)**

Panpan Lin, Peng He, Tiesong Lin<sup>\*</sup>, Ce Wang

State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**16:45 (S22-33) Ultrafast Laser Welding of Transparent Materials (Invited)**

Rui Pan<sup>1,\*</sup>, Peng He<sup>2</sup>, Tiesong Lin<sup>2</sup>, Shujun Chen<sup>1</sup>

<sup>1</sup>Beijing University of Technology

<sup>2</sup>Harbin Institute of Technology

**17:05 (S22-34) Microstructure Evolution and Mechanical Properties of YAG/YAG Joint using Bismuth-borate Glass**

Jiawei Bai, Weiqi Yang<sup>\*</sup>; *Sino-French Institute of Nuclear Engineering and Technology, Sun Yat-sen University*

**17:20 (S22-35) Achieving High-temperature Thermal Evacuation between Dissimilar Materials C<sub>f</sub>/C and Mo30Cu by Forming a Brazed Joint**

Xiaoqing Si<sup>\*</sup>, Pengpeng Xue, Chun Li, Jian Cao

State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**17:35 (S22-36) Polysilazane-based High-temperature Adhesives for the Joints of Amorphous SiBON Ceramic Composites**

Jing Xue<sup>1,\*</sup>, Lijuan Zhang<sup>1,2,\*</sup>, Guangwu Wen<sup>2,\*</sup>, Yongzhao Hou<sup>2,\*</sup>

<sup>1</sup>School of Mechanical Engineering, Shandong University of Technology

<sup>2</sup>School of Materials Science and Engineering, Shandong University of Technology

**17:50 (S22-37) The Joining Mechanism, Residual Stress Regulating and Measurement of Ultra-hard Ceramics/Metals Brazed Joints**

Lei Chen, Chun Li<sup>\*</sup>, Xiaoqing Si, Jian Cao<sup>\*</sup>

State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**Symposium 24: Advanced Refractories and Traditional Ceramics**

(Location: TBD)

**Session Chair:** Weixia Dong, *Jingdezhen Ceramic University*

**08:30 (S24-13) Basic Research on Preparation of High Performance Refractories Based on Magnesium Resources in Qinghai Salt Lakes (Invited)**

Wen Yan

The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**08:55 (S24-14) Green Synthesis, Formation Mechanism and Oxidation of Ti<sub>3</sub>SiC<sub>2</sub> Powder from Bamboo Charcoal, Ti and Si**

Kai Su, Xuekun Tian, Deze Ouyang, Zhenyi Zhao, Fei Zhao, Xinhong Liu<sup>\*</sup>

School of Materials Science and Engineering, Zhengzhou University

**09:15 (S24-15) Oxidation Kinetics of MgAl<sub>2</sub>O<sub>4</sub>-C Refractories and the Effect of Pre-oxidation on the Composition of Low-alloy High-strength Steel**

Zijun Peng<sup>1</sup>, Lei Yuan<sup>1,2,\*</sup>, Jingkun Yu<sup>1</sup>

<sup>1</sup>Key Laboratory for Ecological Metallurgy of Multimetallic Mineral (Ministry of Education), Northeastern University

<sup>2</sup>Institute for Frontier Technologies of Low-Carbon Steelmaking, Northeastern University

**09:35 (S24-16) Effect of Curing Temperature and Firing Atmosphere on Properties of Hydrated Alumina Bonded  $\text{Cr}_2\text{O}_3\text{-Al}_2\text{O}_3$  Castable for Coal Gasifier**

Zixin Liao, Yawei Li\*, Ning Liao\*  
Wuhan University of Science and Technology

**09:55 (S24-17) Microstructural Evolution and Properties Enhancement of SiC Refractory Castables Bonded with the Special CNTs/Calcium Aluminate Cement**

Changkun Lei, Donghai Ding\*, Guoqing Xiao\*  
College of Materials Science and Engineering, Xi'an University of Architecture and Technology

**10:15 Break**

**Session Chair:** Zongqi Guo, Trasteel International SA

**10:30 (S24-18) Recent Development in MgO Castables (Keynote)**

Hong Peng  
Elkem Silicon Materials, Kristiansand, Norway

**11:00 (S24-19) Effect of SiC Addition on the Structural Properties of BN-ZrO<sub>2</sub> Composites**

Minghui Wang<sup>1, 2</sup>, Hongxia Li<sup>1, 2, \*</sup>, Yuanhang He<sup>2</sup>, Guoqi Liu<sup>2</sup>, Fan Qian<sup>2</sup>  
<sup>1</sup>Zhengzhou University  
<sup>2</sup>Sinosteel Luoyang Institute of Refractories Research Co, Ltd., State Key Laboratory of Advanced Refractories

**11:20 (S24-20) Microstructures and Strength of Microporous MgO-Mg(Al, Fe)<sub>2</sub>O<sub>4</sub> Refractory Aggregates**

Qianlin Chen, Wen Yan\*  
The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**11:40 (S24-21) Preparation of In-situ  $\text{Ti}_3\text{Si}(\text{Al})\text{C}_2$  Reaction Bonded Low Carbon  $\text{Al}_2\text{O}_3\text{-C}$  Refractories and Its Abnormal Thermal Shock Behavior**

Yalou Xin, Yunling Jian, Hongfeng Yin\*  
College of Materials Science & Engineering, Xi'an University of Architecture & Technology

**12:00 Lunch**

**Session Chair:** Yawei Li, Wuhan University of Science and Technology

**13:30 (S24-22) Preparation and Densification Behavior of Magnesia Aluminate Spinel Ceramics Doped with Rare Earths (Invited)**

Beiyue Ma\*, Wenyu Zan, Jingkun Yu  
School of Metallurgy, Northeastern University

**13:55 (S24-23) Effect of Magnesia on Oxidation Behavior of MgO-C Refractories in Inert Atmosphere (Invited)**

Yanzhu Huo, Ao Huang\*, Huazhi Gu  
The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**14:20 (S24-24) Effect of  $\text{Zn}(\text{OH})_2$  Addition on the Properties and Microstructure of Alumina-spinel Plugs Materials (Invited)**

Haonan Chen, Xin Qiu, Jing Chen, Yifan Dong, Xinhong Liu, Quanli Jia\*  
Henan Key Laboratory of High Temperature Functional Ceramics, School of Materials Science and Engineering, Zhengzhou University

**14:45 (S24-25) Effects of Addition of ZrO<sub>2</sub> on the Properties of Corundom Based Porous Purging Plugs**

Juncong Wei<sup>1, \*</sup>, Yuqing Su<sup>1</sup>, Weiping Ma<sup>2</sup>, Yilong Wang<sup>2</sup>  
<sup>1</sup>North China University of Science and Technology  
<sup>2</sup>Hebei Guoliang New Materials Co., LTD

**15:05 (S24-26) Effect of Pore Structure and Phase Composition on Thermal Shock Resistance of Zirconia Materials**

Yibo Zhang, Huazhi Gu, Lvping Fu\*, Ao Huang, Meijie Zhang  
The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**15:25 (S24-27) Effect of Combustion Synthesized h-BN on Low Carbon  $\text{Al}_2\text{O}_3\text{-C}$  Refractories**

Xin Zheng, Yanjun Li\*, Guoqing Xiao\*, Donghai Ding  
College of Materials Science and Engineering, Xi'an University of Architecture and Technology

**15:45 Break**

**Session Chair:** Masaaki Tabata, *Saga University*

**16:00 (S24-28) Study on the Flexural Strength and Residual Stress of the Feldspar Ceramics Reinforced by Anorthite Coating (Keynote)**

Yueming Li<sup>1, 2, \*</sup>, Xiaona Zhang<sup>1, 3</sup>, Kai Li<sup>2</sup>, Yi Sun<sup>2</sup>, Detian Wan<sup>2, 4</sup>, Yiwang Bao<sup>2, 4</sup>

<sup>1</sup>National Engineering Research Center for Domestic & Building Ceramics

<sup>2</sup>School of Materials Science and Engineering, Jingdezhen Ceramic University

<sup>3</sup>Ceramic Research Institute of Light Industry of China

<sup>4</sup>China Building Materials Academy

**16:30 (S24-29) Effects of Composition on the Structure and Properties of R<sub>2</sub>O-Bi<sub>2</sub>O<sub>3</sub>-B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> Glass for Automobile Glass Ink (Invited)**

Qifu Bao<sup>\*</sup>, Weixia Dong<sup>\*</sup>

The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**16:55 (S24-30) Materials Design to Realize Both Small Water Absorption and Small Pyroplastic Deformation in Alumina-strengthened Porcelain (Invited)**

Dong Hao<sup>1, \*</sup>, Takashi Akatsu<sup>1, 2</sup>, Nobuaki Kamochi<sup>3</sup>

<sup>1</sup>Ceramic Research Center, Saga University

<sup>2</sup>Katayanagi Advanced Research Institute, Tokyo University of Technology

<sup>3</sup>Saga Ceramics Research Laboratory

**17:20 (S24-31) A Study on the Chemical Composition and Coloring of Celadon from Jin to Five Dynasties Unearthed at the Yue Kiln Site**

Kexin Zhao<sup>\*</sup>, Tian Wang<sup>\*</sup>, Fen Wang, Jianfeng Zhu, Zhao Ren

School of Materials Science and Engineering, Shaanxi University of Science and Technology

**17:40 (S24-32) Improving the Chemical Stability and Mechanical Properties of Over-Glaze Decorated Porcelain by Heat-Treating Lead-Free Alkali Borosilicate Frits: A Kinetic Study of Alkali leaching Mechanisms**

Xilong Lu<sup>1, \*</sup>, Chun'E Cao<sup>2</sup>, Yunxia Chen<sup>2</sup>, Peng Wang<sup>3</sup>, Yunjie Mo<sup>1</sup>, Wei Shi<sup>1</sup>

<sup>1</sup>National Engineering Research Center for Domestic & Building Ceramics, Jingdezhen Ceramic University

<sup>2</sup>School of Materials Science and Engineering, Jingdezhen Ceramic University

<sup>3</sup>School of Ceramic Art, Jingdezhen Ceramic University

**Symposium 26: Bioceramics and Ceramics Coatings for Biomedical Applications  
(Location: TBD)**

**Session Chair:** Mingmin Bai, *Jingdezhen Ceramic University*

Chunxia Zhao, *The University of Adelaide*

**16:00 (S26-01) Bioinspired Materials and Devices (Keynote)**

Chunxia Zhao; School of Chemical Engineering, The University of Adelaide

**16:30 (S26-02) Research on Bone Augmentation Based on Osteoinductivity of Bioactive Glass (Invited)**

Fujian Zhao<sup>1, \*</sup>, Xiaofeng Chen<sup>2</sup>, Longquan Shao<sup>1</sup>

<sup>1</sup>Stomatological Hospital, School of Stomatology, Southern Medical University

<sup>2</sup>Department of Biomedical Engineering, School of Materials Science and Engineering, South China University of Technology

**16:55 (S26-03) Improved Ageing-resistance and Fracture Toughness of Zirconia-toughened Alumina Bioceramics via Composition and Microstructure Design (Invited)**

Mingmin Bai; School of Materials Science and Engineering, Jingdezhen Ceramic University

**17:20 (S26-04) Nanometals and Ceramic Coatings for Advanced Biomedical Implants**

Ruslan Z Valiev<sup>1, 2</sup>; <sup>1</sup>Saint Petersburg State University; <sup>2</sup>Ufa University of Science and Technology

**Symposium 28: PACRIM Young Scholars Forum  
(Location: TBD)**

**Session Chair:** Susumu Fujii, *Osaka University*

**08:30 (S28-11) Numerical Simulations for Functional Materials (Keynote)**

Shuzhou Li;

School of Materials Science and Engineering, Nanyang Technological University

**09:00 (S28-12) Accelerating Exploitation of  $\gamma$ - $\gamma'$  Pt-based Superalloys: From Pt<sub>3</sub>Al<sub>D0'</sub>c to Pt<sub>3</sub>Al<sub>L12</sub> (Invited)**

Wei Yu<sup>1</sup>, Yingxue Liang<sup>1</sup>, Mengdi Gan<sup>1</sup>, Aiming Zhang<sup>2</sup>, Yan Wei<sup>2</sup>, Li Chen<sup>2</sup>, Jing Feng<sup>1</sup>, Xiaoyu Chong<sup>1,\*</sup>  
<sup>1</sup>Kunming University of Science and Technology  
<sup>2</sup>Sino-Precious Metals Holding Co., Ltd

**09:25 (S28-13) Artificial-neural-network Potentials for Accurately Predicting Lattice-defect Properties (Invited)**

Tatsuya Yokoi<sup>1,\*</sup>, Masami Uchida<sup>1</sup>, Yu Ogura<sup>1</sup>, Katsuyuki Matsunaga<sup>1,2</sup>  
<sup>1</sup>Nagoya University  
<sup>2</sup>Japan Fine Ceramics Center

**09:50 (S28-14) Enhancement of Thermoelectric Performance of Cu<sub>1.8</sub>S via Carrier Concentration Optimization (Invited)**

Maryam Batool, Jing Feng, Zhen-hua Ge\*  
 Faculty of Materials Science and Engineering, Kunming University of Science and Technology

**10:15 Break**

**Session Chair:** Shuzhou Li, *Nanyang Technological University*

**10:30 (S28-15) Ferroelastic RETaO<sub>4</sub> Coatings as the Next-generation Thermal Barrier Coatings (Keynote)**

Jing Feng  
 Faculty of Materials Science and Engineering, Kunming University of Science and Technology

**11:00 (S28-16) Thermodynamics of Ceramics for High Temperature Applications (Invited)**

Xiaofeng Guo  
 Department of Chemistry, Washington State University

**11:25 (S28-17) 3D/4D Additive-subtractive Manufacturing of Ceramics (Invited)**

Guo Liu<sup>\*</sup>, Jian Lu  
 City University of Hong Kong

**12:00 Lunch**

**Session Chair:** Zhenhua Ge, *Kunming University of Science and Technology*

**13:30 (S28-18) Investigation of Point Defects and Surfaces in Rare Earth Silicates (Keynote)**

Bin Liu  
 School of Materials Science and Engineering, Shanghai University

**14:00 (S28-19) Study on the Origin of Ultra-low Thermal Conductivity and Thermal Insulation Performance of Rare Earth Tantalate (Invited)**

Mengdi Gan<sup>1</sup>, Xiaoyu Chong<sup>1,\*</sup>, Tianlong Lu<sup>1</sup>, Wei Yu<sup>1</sup>, Bing Xiao<sup>2</sup>, Jing Feng<sup>1</sup>  
<sup>1</sup>Kunming University of Science and Technology  
<sup>2</sup>Xi'an Jiaotong University

**14:25 (S28-20) Synthesis and Thermophysical Properties of ATa<sub>2</sub>O<sub>6</sub> (A= Co, Ni, Mg, Ca) Tantalates with Robust CMAS Resistance (Invited)**

Baihui Li, Lin Chen<sup>\*</sup>, Jing Feng<sup>\*</sup>  
 Faculty of Material Science and Engineering, Kunming University of Science and Technology

**14:50 (S28-21) Effect of Surface Roughness on the Oxidation Behavior of MCrAlY Bond Coat at High Temperature (Invited)**

Nadimullah Hakimi, Peng Song<sup>\*</sup>, Taihong Huang<sup>\*</sup>  
 Materials Science and Engineering, Kunming University of Science and Technology

**15:15 (S28-22) Multilayered Transition Metal MOF/Ni<sub>3</sub>N/NF Composites for Oxygen Evolution Reaction (Invited)**

Xiangyu Meng<sup>1,2,3</sup>, Xiaoming Duan<sup>1,2,3,\*</sup>, Zengyan Wei<sup>3</sup>, Liang Ma<sup>1,2,3</sup>, Xiaoxiao Huang<sup>1,2,3</sup>, Dechang Jia<sup>1,2,3</sup>, Yu Zhou<sup>1,2,3</sup>  
<sup>1</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology  
<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology  
<sup>3</sup>School of Materials Science and Engineering, Harbin Institute of Technology

**15:35 Break**

Session Chair: Bin Liu, *Shanghai University*

**16:00 (S28-23) Synthesis of High-Performance Bismuth Sulfide Thermoelectric Materials Based on Functional Motif Ordering (Keynote)**

Zhenhua Ge

*Faculty of Materials Science and Engineering, Kunming University of Science and Technology*

**16:30 (S28-24) Sintering Behavior of High Entropy  $A_2B_2O_7$  Oxide Nanoparticles Synthesized by Polyol Process (Invited)**

Fei Li

*Joining and Welding Research Institute, Osaka University*

**16:55 (S28-25) MOF-Derived CNFs@CoNi/C Composites for High-Efficient Electromagnetic Wave Absorption (Invited)**

Lin Zhu<sup>1, 2, 3</sup>, Xiaoming Duan<sup>1, 2, 3, \*</sup>, Zengyan Wei<sup>3</sup>, Xiaoxiao Huang<sup>1, 2, 3</sup>, Dechang Jia<sup>1, 2, 3</sup>, Yu Zhou<sup>1, 2, 3</sup>

<sup>1</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>3</sup>School of Materials Science and Engineering, Harbin Institute of Technology

**17:20 (S28-26) Tracking the Grain Size Uniformity during the Sintering of Nano-grained Ceramics (Invited)**

Hongbing Yang<sup>1</sup>, Jiangong Li<sup>2</sup>, Yanhao Dong<sup>1, \*</sup>

<sup>1</sup>State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University

<sup>2</sup>Institute of Materials Science and Engineering, School of Materials and Energy, Lanzhou University

**Symposium 1: Virtual Materials Design and Ceramic Genome  
(Location: TBD)**

**Session Chair:** Yiran Li, *Shanghai University*

**08:30 (S1-27) The Spin Tunes the Ammonia Electrocatalytic Synthesis through Transition Metal Carbide-based Ceramics (Keynote)**

Neng Li; *State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology*

**09:00 (S1-28) Screening MXene-based Single-atom Catalysts for Selective Nitrate-to-ammonia Electroreduction (Invited)**

Tao Hu, Chunxian Guo\*, Chang Ming Li\*

*Institute of Materials Science and Devices, School of Materials Science and Engineering, Suzhou University of Science and Technology*

**09:25 (S1-29) Structural Stability and Optical Properties of RENiO<sub>3</sub> Surface upon Oxygen Vacancy (Invited)**

Yuanyuan Cui, Yanfeng Gao\*; *School of Materials Science and Engineering, Shanghai University*

**09:50 (S1-30) Atomistic Simulation of  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Nanoparticle Plastic Anisotropy under Compression**

Qinqin Xu; *Universite de Poitiers*

**Symposium 2: Advanced Characterization, Testing, and Analysis of Materials  
(Location: TBD)**

**Session Chair:** Yongchun Zou, *Harbin Institute of Technology*

**08:30 (S2-28) Atomic Resolution In-situ S/TEM Probing under Strong Laser, Electrical and Stress Fields (Keynote)**

Yifeng Ren<sup>1</sup>, Jiayi Li<sup>1</sup>, Zhentao Pang<sup>1</sup>, Jie Wu<sup>2</sup>, Zhiyu Liu<sup>1</sup>, Shaojie Fu<sup>2</sup>, Meiyu Wang<sup>1</sup>, Yu Deng<sup>1,\*</sup>

<sup>1</sup>*Department of Materials Science and Engineering, Nanjing University*

<sup>2</sup>*School of Physics, Nanjing University*

**09:00 (S2-29) Microstructure and Bioactivity of the Si-Doped Hydroxyapatite Nanorods In Situ Formed on the Titanium Based Microarc Coating (Invited)**

Qing Du; *Department of Civil Engineering, School of Architecture and Civil Engineering, Harbin University of Sci & Technol*

**09:25 (S2-30) Synergetic Engineering of Sr-O Vacancies and Core-Rim Interfacial Structures in Dielectric Sr<sub>1-x</sub>Ba<sub>x</sub>TiO<sub>3</sub> Ceramics**

Qing-Qiao Fu<sup>1</sup>, Hui Gu<sup>1,\*</sup>, Juan-Juan Xing<sup>1</sup>, Qiang Zheng<sup>2,\*</sup>

<sup>1</sup>*School of Materials Science and Engineering, Shanghai University*

<sup>2</sup>*CAS Key Laboratory of Standardization and Measurement for Nanotechnology, CAS Center for Excellence in Nanoscience, National Center for Nanoscience and Technology*

**09:45 (S2-31) Phase Transformation Microstructure of Doped Tetragonal Zirconia Polycrystalline Ceramics**

Jiutian Liao\*, Hui Gu; *School of Materials Science and Engineering, Shanghai University*

**10:15 Break**

**Session Chair:** Yu Deng, *Nanjing University*

**10:30 (S2-32) Microstructure and Ablation Behavior of TiAl Alloy With ZrC/HfC/HfSi<sub>2</sub> Modified Nanocomposite Ceramic Coating by LPDS (Invited)**

Yongchun Zou<sup>1,2,\*</sup>, Yu Fu<sup>3</sup>, Jiacheng Wang<sup>3</sup>, Liwei Zhang<sup>3</sup>, Yaming Wang<sup>2,\*</sup>, Daqing Wei<sup>1</sup>, Yu Zhou<sup>2</sup>

<sup>1</sup>*Center of Analysis and Measurement, Harbin Institute of Technology*

<sup>2</sup>*Institute for Advanced Ceramics, Harbin Institute of Technology*

<sup>3</sup>*School of Architecture and Civil Engineering, Harbin University of Science and Technology*

**10:50 (S2-33) In Situ Electron Microscopy Characterization of High Performance Ni-Rich Layered Oxide Cathodes**

Jiayi Tang, Meiyu Wang\*, Yu Deng\*; *College of Engineering and Applied Sciences, Nanjing University*

**11:15 (S2-34) Atomic-level Structural Fluctuation and Controllable Magnetism in High-entropy Oxides**

Ning Guo<sup>1</sup>, Hanbin Gao<sup>1</sup>, Yue Gong<sup>1</sup>, Dongwei Wang<sup>1</sup>, Qiang Zheng<sup>1,\*</sup>

<sup>1</sup>*National Centre for Nanoscience and Technology*

**Symposium 3: Advanced Powder Processing and Green Manufacturing Technologies  
(Location: TBD)**

**Session Chair:** Jiangong Li, *Lanzhou University*

**08:30 (S3-30) Towards Tough Al<sub>2</sub>O<sub>3</sub> Ceramics (Keynote)**

Jiangong Li  
*School of Materials and Energy, Lanzhou University*

**09:00 (S3-31) Fabrication of AlN Powder with High Purity and Excellent Sinterability (Keynote)**

Jiujun Xu<sup>1,\*</sup>, Jinhai Xu<sup>1</sup>, Yingchun Shan<sup>1,\*</sup>, Jiangtao Li<sup>2</sup>  
<sup>1</sup>*Department of Materials Science and Engineering, Dalian Maritime University*  
<sup>2</sup>*Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**09:30 (S3-32) High-specific Surface-area  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Nanoparticles Synthesised by High-energy Ball-milling Method and Applications in Nanocrystalline Ceramics (Invited)**

Lu Li<sup>1</sup>, Hongbing Yang<sup>2</sup>, Ji Ma<sup>2</sup>, Jiangong Li<sup>2,\*</sup>  
<sup>1</sup>*School of Mechanical and Electrical Engineering, Gansu Agricultural University*  
<sup>2</sup>*Institute of Materials Science and Engineering, School of Materials and Energy, Lanzhou University*

**09:55 (S3-33) The Role of Carbon in the Synthesis of AlN Powder by Carbothermal Reduction and Nitridation Technique**

Sang-Min Lee, Dang-Hyok Yoon\*  
*School of Materials Science and Engineering, Yeungnam University*

**10:15 Break**

**Session Chair:** Wen Lei, *Wuhan University of Science and Technology*

**10:30 (S3-34) Design, Regulation and Lithium Storage Properties of SiOC Ceramics**

Wen Lei  
*Wuhan University of Science and Technology*

**10:50 (S3-35) Flash Synthesis of Dirt-cheap SiC Aerogel Over Liter Scale**

Lujia Han<sup>1</sup>, Shile Chen<sup>2</sup>, Honghua Li<sup>1</sup>, Qing Meng<sup>1</sup>, Gang He<sup>3</sup>, Yanhao Dong<sup>2</sup>, Jiangtao Li<sup>1,\*</sup>  
<sup>1</sup>*CAS Key Laboratory of Cryogenics, Technical Institute of Physics and Chemistry, China Academy of Sciences*  
<sup>2</sup>*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*  
<sup>3</sup>*Tianjin Key Laboratory of Functional Crystal Materials, Institute of Functional Crystal, College of Material Science and Engineering, Tianjin University of Technology*

**11:10 (S3-36) Effect of Lattice Oxygen and Microstructure Control on Thermal Conductivity of Reductive-sintered Si<sub>3</sub>N<sub>4</sub> Ceramics**

Wenxuan Dai<sup>1</sup>, Hui Gu<sup>1,\*</sup>, Yuping Zeng<sup>2</sup>, Jingxian Zhang<sup>2</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Shanghai University*  
<sup>2</sup>*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**11:30 (S3-37) In Situ Combustion Synthesis of SiC@BN Ceramic Powders with Hierarchical Structure**

Qing Meng, Yong Li\*, TaoJiang Li\*  
*Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**11:50 Lunch**

**Session Chair:** Qinghu Wang, *Wuhan University of Science & Technology*

**13:30 (S3-38) Enhanced Infrared Radiation of LaAlO<sub>3</sub> Ceramics via Co<sup>2+</sup> Doping**

Qinghu Wang<sup>1,\*</sup>, Yawei Li<sup>1</sup>, Jiangtao Li<sup>2</sup>  
<sup>1</sup>*The State Key Laboratory of Refractories and Metallurgy, National-provincial Joint Engineering Research Center of High Temperature Materials and Lining Technology, Wuhan University of Science & Technology*  
<sup>2</sup>*Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**13:50 (S3-39) Effects of Y<sub>2</sub>O<sub>3</sub> Characteristic on Transmittance of Pressureless Sintered AlON Ceramics**

Haoran Guo<sup>1</sup>, Liya Ma<sup>1</sup>, Yingchun Shan<sup>1,\*</sup>, Jiangtao Li<sup>2</sup>, Jiujun Xu<sup>1,\*</sup>  
<sup>1</sup>*Department of Materials Science and Engineering, Dalian Maritime University*  
<sup>2</sup>*Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**14:10 (S3-40) Preparation of Unidirectional Porous AlN Ceramics via the Combination of Freeze Casting and Combustion Synthesis**

Zhilei Wei, Tao Li, Jiabin Hu, Zhongqi Shi\*

State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University

**14:30 (S3-41) On the Process and Mechanism for Fabrication of  $(Y_{1/5}Gd_{1/5}Er_{1/5}Yb_{1/5}Lu_{1/5})_2Zr_2O_7$  High-entropy Ceramic Powder through Solid-state Reaction**

Wen-Kai Fan\*, Xiao Yang\*, Jiangtao Li\*; Technical Institute of Physics & Chemistry, Chinese Academy of Science

**Symposium 4: Novel and Strategic Processing and Manufacturing Technologies for Ceramics  
(Location: TBD)**

**Session Chair:** Duan Li, National University of Defense Technology

**08:30 (S4-29) Advances of Cold Sintering in Ceramic Processing (Keynote)**

Yuchi Fan; Donghua University

**09:00 (S4-30) Crystallization Behavior and Structure-Property Correlation of  $CaO-Al_2O_3-Ta_2O_5$  Transparent IR Glass-Ceramics with High Microhardness (Invited)**

Jian Ruan<sup>1,\*</sup>, Chen Tian<sup>1,2</sup>, Xiujuan Zhao<sup>1</sup>, Chao Liu<sup>1</sup>

<sup>1</sup>State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology

<sup>2</sup>International School of Materials Science and Engineering, Wuhan University of Technology

**09:25 (S4-31) Thermodynamic Reaction Mechanism of In Situ Catalytic Growth of SiC Whiskers**

Chen Chen, Qiang Zhen\*; Shanghai University

**09:45 (S4-32) Formation of Single-phase Multicomponent Zirconate with Colossal Atomic Radius Difference via Reactive Flash Sintering**

Ziting Niu, Ke Ren\*, Yiguang Wang\*; Institute of Advanced Structure Technology, Beijing Institute of Technology

**10:05 Break**

**Session Chair:** Yuchi Fan, Donghua University

**10:20 (S4-33) Rapid Fabrication of Perovskite-Type Oxynitride Ceramics with Multi-Functionality (Invited)**

Duan Li<sup>1,\*</sup>

<sup>1</sup>Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, National University of Defense Technology

**10:45 (S4-34) Microstructural Tailoring, Mechanical and Thermal Properties of SiC Composites Fabricated by Selective Laser Sintering and Reactive Melt Infiltration**

Xiao Chen<sup>1</sup>, Jie Yin<sup>1,\*</sup>, Xuejian Liu<sup>1,\*</sup>, ZhengRen Huang<sup>1,\*</sup>

<sup>1</sup>State Key Lab of High Performance Ceramics and Superfine Microstructures, Shanghai Institute of Ceramics, Chinese Academy of Sciences

**11:05 (S4-35) Transforming  $Na_2O-CaO-SiO_2$  Glasses into Transparent Ceramics: A Novel Method to Prepare Large-Sized Transparent Ceramics**

Weifan Liao<sup>1</sup>, Chao Liu<sup>1</sup>, Yunlan Guo<sup>1</sup>, Yadong Lu<sup>1</sup>

<sup>1</sup>State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology

**11:25 (S4-36) Fabricating Luminescent Ceramics Derived from Mesoporous Powders by Spark Plasma Sintering**

Beiyong Zhou, Lianjun Wang\*, Wan Jiang

<sup>1</sup>Institute of Functional Materials, Donghua University

<sup>2</sup>College of Materials Science and Technology, Donghua University

**11:45 Lunch**

**Session Chair:** Heng Wang, Wuhan University of Science and Technology

**13:30 (S4-37) A New Wire-Electrical Discharge Machinable Silicon Nitride-based Ceramic (Invited)**

Lujie Wang<sup>1</sup>, Zhuhui Qiao<sup>1,\*</sup>, Xuejian Liu<sup>2,\*</sup>

<sup>1</sup>Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences

<sup>2</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences



- 13:55 (S4-38) Enhanced Toughness and Strength of Boron Carbide Ceramics with Reduced Graphene Oxide Fabricated by Hot Pressing**  
Aiyang Wang, Qianglong He, Weimin Wang\*, Zhengyi Fu  
*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*
- 14:15 (S4-39) Low Temperature Synthesis of NASICON NaZr<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> Powders with the Assistance of In Situ Formed Mineralizer**  
 Min Jian Liu\*, Tao Wang  
<sup>1</sup>National Engineering Research Center for Domestic and Building Ceramics  
<sup>2</sup>School of Material Science and Engineering, Jingdezhen Ceramic University
- 14:35 (S4-40) Sintering and Mechanical Properties of Carbon Bulks using Ordered Mesoporous Carbon and Nano Diamond by SPS**  
Shijia Gu\*, Lianjun Wang, Wan Jiang; *Donghua University*

**14:55 Break**

**Session Chair:** Lujie Wang, *Lanzhou Institute of Chemical Physics*

- 15:10 (S4-41) Research Progress on Structure and Properties of Boron Nitride Nanostructure-Boron Carbide Ceramic Composites (Invited)**  
Heng Wang<sup>1,\*</sup>, Tianbin Zhu<sup>1</sup>, Xiong Liang<sup>1</sup>, Qinghu Wang<sup>1</sup>, Yawei Li<sup>1</sup>  
<sup>1</sup>The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology
- 15:35 (S4-42) Densification Mechanism, Microstructure and Mechanical Properties of ZrC Ceramics Prepared by High-pressure Spark Plasma Sintering**  
Boren Ke<sup>1,2</sup>, Wei Ji<sup>1,2,\*</sup>, Zhengyi Fu<sup>1,2,\*</sup>  
<sup>1</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology  
<sup>2</sup>Hubei Longzhong Laboratory
- 15:55 (S4-43) Preparation and Oxidation Resistance Optimization of In-situ TiC/Ni Composites based on the Application of IT-SOFC Interconnect**  
Ziyan Zhao<sup>1</sup>, Qian Qi<sup>2</sup>, Yan Liu<sup>1,\*</sup>, Xuejian Liu<sup>1</sup>  
<sup>1</sup>State Key Laboratory of High-Performance Ceramics and Superfine Microstructures, Shanghai Institute of Ceramics, Chinese Academy of Sciences  
<sup>2</sup>School of Materials Science and Engineering, Shandong University of Science and Technology
- 16:15 (S4-44) Study on Precise and Efficient Laser Processing Technology and Mechanism of SiC/SiC Composites**  
Jing Wang, Yongsheng Liu\*, Hui Fang; *Northwestern Polytechnical University*

**Symposium 5: Advanced Additive Manufacturing Technologies: Materials, Processes, and Systems (Location: TBD)**

**Session Chair:** Rongzhen Liu, *National innovation institute of additive manufacturing*

- 08:30 (S5-27) Additive Manufacturing of Large Size Engineering Ceramic Parts by FDM (Invited)**  
Xianfeng Yang<sup>1,2,\*</sup>, Feng Hu<sup>1,2</sup>, Haolin Dong<sup>1,2</sup>, Zhipeng Xie<sup>1,2</sup>  
<sup>1</sup>College of Materials Science and Engineering, Changsha University of Science & Technology  
<sup>2</sup>China State Key Laboratory of New Ceramics and Fine Processing, Tsinghua University
- 08:55 (S5-28) Thermal Insulation Properties of Zirconia Ceramics based on DLP 3D-printed (Invited)**  
Yongsheng Liu<sup>1,2,\*</sup>, Yansong Liu<sup>1</sup>  
<sup>1</sup>Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University  
<sup>2</sup>NPU-SAS Joint Research Center of Advanced Ceramics, Northwestern Polytechnical University
- 09:20 (S5-29) Additive Manufacturing Porous Ceramics with Multi-scale Pores using Feedstock Containing Soft Template (Invited)**  
Xiaoyan Zhang; *Institute for Advanced Materials and Technology, University of Science and Technology Beijing*
- 09:45 (S5-30) Study on Preparation Technology of Si<sub>3</sub>N<sub>4</sub> Ceramic based on Digital Light Processing 3D Printing (Invited)**  
Wenyan Duan; *Key Laboratory of Space Manufacturing Technology (SMT), Technology and Engineering Centre of Space Utilization, Chinese Academy of Sciences*

10:05

Break

Session Chair: Yongsheng Liu, *Northwestern Polytechnical University*

**10:30 (S5-31) Additive Manufacturing of Ceramic-based Electronic Circuits: Material Design and Applications (Invited)**

Guoxiang Zhou<sup>1,2</sup>, Zhihua Yang<sup>1,2,\*</sup>, Dechang Jia<sup>2</sup>, Yu Zhou<sup>2</sup>  
<sup>1</sup>Chongqing Institute of HIT  
<sup>2</sup>Harbin Institute of Technology

**10:55 (S5-32) Preparation and Performance Study of Anisotropic Aluminum Nitride Ceramics Fabricated by Light Curing (Invited)**

Haiman Xu<sup>1</sup>, Rongzhen Liu<sup>1,2,\*</sup>, Hao Li<sup>1</sup>  
<sup>1</sup>National innovation institute of additive manufacturing  
<sup>2</sup>School of materials science and technology, Xi'an jiaotong university

**11:20 (S5-33) 3D Fabrication of Highly Transparent Yttria by DLP-based Additive Manufacturing**

Sinuo Zhang<sup>1,2</sup>, Chang Woo Gal<sup>1,2</sup>, Young-jin Choi<sup>1,2</sup>, Ha-Neul Kim<sup>1,2</sup>, Young-Jo Park<sup>1,2</sup>, Hui-suk Yun<sup>1,2,\*</sup>  
<sup>1</sup>Department of Advanced Materials Engineering, University of Science and Technology (UST)  
<sup>2</sup>Department of Advanced Biomaterials Research, Korea Institute of Materials Science (KIMS)

**11:40 (S5-34) 3D-printed Bioinspired Al<sub>2</sub>O<sub>3</sub>/polyurea Dual-phase Architecture with High Robustness, Energy Absorption, and Cyclic Life**

Xueqin Zhang, Rujie He\*  
State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology

12:00

Lunch

Session Chair: Lijin Cheng, *Hebei University of Technology*

**13:30 (S5-35) DLP 3D Printing of Ceramic Heat Sink with Mini-channels for Thermal Management (Invited)**

Song Hu\*, Yuxin Tang, Guohong Zhou, Shiwei Wang  
Shanghai Institute of Ceramics, Chinese Academy of Sciences

**13:55 (S5-36) Minimal Sintering Shrinkage Aluminum-based Ceramic Core Fabricated by Stereolithography (Invited)**

Kehui Hu<sup>1,2,\*</sup>, Haoyuan Wang<sup>2</sup>, Zhigang Lv<sup>1,2</sup>  
<sup>1</sup>State Key Laboratory of Tribology, Tsinghua University  
<sup>2</sup>Department of Mechanical Engineering, Tsinghua University

**14:20 (S5-37) TBD (Invited)**

Kehui Hu<sup>1,2,\*</sup>, Haoyuan Wang<sup>2</sup>, Zhigang Lv<sup>1,2</sup>  
<sup>1</sup>State Key Laboratory of Tribology, Tsinghua University  
<sup>2</sup>Department of Mechanical Engineering, Tsinghua University

**14:45 (S5-38) Fabrication of Polymer-derived Ceramics Based on 3D/4D Printed Reconfigurable Precursor**

Siyao Chen\*, Jinping Li, Songhe Meng\*, Jian Lu\*; Harbin Institute of Technology

**15:05 (S5-39) Reaction Kinetics and Mechanical Evolution of 3D Printed Geopolymers Via Extrusion-based Additive Manufacturing**

Binghuan Gao<sup>1,2</sup>, Seongwan Jang<sup>1</sup>, Yangyang Li<sup>1,2</sup>, Hyeonjin Son<sup>1</sup>, Sujin Park<sup>1</sup>, Chang-Jun Bae<sup>1,\*</sup>  
<sup>1</sup>3D Printing Materials Center, Korea Institute of Materials Science (KIMS)  
<sup>2</sup>School of Materials Science and Engineering, Pusan National University

**15:25 (S5-40) Large-scale Carbon Fiber Reinforced Silicon Carbide Ceramic Matrix Composites Fabricated by Material Extrusion based Additive Manufacturing**

Wengqing Wang\*, Rujie He\*; Institute of Advanced Structure Technology, Beijing Institute of Technology

15:45

Break

Session Chair: Song Hu, Shanghai Institute of Ceramics, *Chinese Academy of Sciences*

**16:00 (S5-41) The Process and Mechanism of Enhancing the Properties of Photocured Ceramics (Invited)**

Li-Jin Cheng<sup>1,\*</sup>, Fei Liu<sup>2</sup>, Chong Dong<sup>1</sup>, Shao-Jun Liu<sup>2</sup>, Li-Bin Zhao<sup>1</sup>, Ning Hu<sup>1</sup>  
<sup>1</sup>School of Mechanical Engineering, Hebei University of Technology  
<sup>2</sup>State Key Laboratory for Powder Metallurgy, Central South University

**16:25 (S5-42) 3D Printed Cross-scale Structured Ceramics and Catalysts for Continuous Scale-up Reactions**

Cunbao Huo, Xiaoyong Tian\*, Lingling Wu, Tengfei Liu, Kai Miao\*  
*Xi'an Jiaotong University*

**16:45 (S5-43) Design Strategies to Enhance Li-ion Transport Through Extrusion-based Additive Manufacturing**

Yangyang Li<sup>1,2</sup>, Binghuan Gao<sup>1,2,\*</sup>, Sujin Park<sup>1</sup>, Chang-Jun Bae<sup>1,\*</sup>  
<sup>1</sup>*Department of 3D Printing Materials, Korea Institute of Materials Science (KIMS)*  
<sup>2</sup>*Department of Materials Science and Engineering, Pusan National University*

**17:05 (S5-44) 3D Printed SiOC Terahertz Electromagnetic Shielding Devices**

Ruyue Su\*, Rujie He\*; *Advanced Structural Technology Research Institute, Beijing Institute of Technology*

**17:25 (S5-45) 3D Printing of BaTiO<sub>3</sub> Piezoelectric Ceramics and Modulation of their Mechanical and Electrical Properties**

Yinghong Sun<sup>1,2</sup>, Yong Zeng<sup>1,2,\*</sup>, Jimin Chen<sup>1,2,\*</sup>  
<sup>1</sup>*Faculty of Materials and Manufacturing, Beijing University of Technology*  
<sup>2</sup>*Beijing Digital Medical 3D Printing Engineering Technology Research Center*

**17:45 (S5-46) Rotationally Printed Bone-Mimetic Cu-DIO/BCP Bioceramic Scaffolds with Ultra-strength**

Shumin Pang<sup>1,2,\*</sup>, Dongwei Wu<sup>1,2</sup>, Dorian A.H. Hanaor<sup>1,2</sup>, Jens Kurreck<sup>1,2</sup>, Aleksander Gurlo<sup>1,2</sup>  
<sup>1</sup>*Chair of Advanced Ceramic Materials, Technische Universität Berlin*  
<sup>2</sup>*Chair of Applied Biochemistry, Technische Universität Berlin*

**Symposium 6: Engineering Ceramics and Ceramic Matrix Composites (CMCs):  
Processing, Design, Development, and Applications  
(Location: TBD)**

**Session Chair:** Jinshan Yang, *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**08:30 (S6-30) Density Inhomogeneity Appearing during Sintering of Alumina Green Body Visualized by Operando OCT Observation (Keynote)**

Junichi Tatami<sup>1,\*</sup>, Mitsuki Tajima<sup>1</sup>, Motoyuki Iijima<sup>1</sup>, Takuma Takahashi<sup>2</sup>  
<sup>1</sup>*Yokohama National University*  
<sup>2</sup>*Kanagawa Institute of Industrial Science and Technology*

**09:00 (S6-31) Multifunctional Structure and Performance of Ceramic Matrix Composites (Invited)**

Jinshan Yang; *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**09:25 (S6-32) Development of New Photothermal Agents and Their Applications in Theragnosis of Cancers (Invited)**

Junqing Hu; *Shenzhen Technology University*

**09:50 (S6-33) Multifunctional Hierarchical Metamaterial for Thermal Insulation and Electromagnetic Interference Shielding at Elevated Temperatures**

Li Tian, Jinshan Yang, Shaoming Dong<sup>1,\*</sup>  
*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**10:10 Break**

**Session Chair:** Songlin Ran, *Anhui University of Technology*

**10:30 (S6-34) Conceptual Design and Strength Assessment of SiC/SiC Ceramic Matrix Composite Turbine Blade for Advanced Aeroengines (Invited)**

Changqi Liu\*, Duoqi Shi, Zhenyu Wang, Xiaoguang Yang  
*School of Energy and Power Engineering, Beihang University*

**10:55 (S6-35) Enhanced Electrical Conductivity of B<sub>4</sub>C-TiB<sub>2</sub> Composite Fabricated by Reactive Sintering Combined with Selective Matrix Grain Growth (Invited)**

Songlin Ran\*, Jun Zhao; *School of Materials Science and Engineering, Anhui University of Technology*

**11:20 (S6-36) Long-term Ablative Behavior of Al<sub>4</sub>SiC<sub>4</sub> and YB<sub>4</sub> Modified C<sub>f</sub>/ZrB<sub>2</sub>-SiC Composites at 2600°C**

Fuchen Liu<sup>1</sup>, Bowen Chen<sup>2,\*</sup>, Shaoming Dong<sup>2,\*</sup>  
<sup>1</sup>*University of Chinese Academy of Sciences*  
<sup>2</sup>*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**11:40 (S6-37) Effect of High-temperature Water Vapor Corrosion on the Structure and Properties of SiC<sub>f</sub>/SiC ATF Cladding**

Mengli Xiao<sup>1, 2, 3</sup>, Han Luo<sup>1, 2, \*</sup>, Shaoming Dong<sup>1, 2, \*</sup>

<sup>1</sup>State Key Laboratory of High Performance Ceramics & Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>Structural Ceramics and Composites Engineering Research Center, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>3</sup>University of Chinese Academy of Sciences

**12:00 Lunch**

**Session Chair:** Yihua Huang, *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**13:30 (S6-38) Microstructure and Mechanical Properties of B<sub>4</sub>C-TiB<sub>2</sub>-SiC Composites Fabricated by Spark Plasma Sintering (Invited)**

Yihua Huang<sup>\*</sup>, Yingying Liu, Zhengren Huang; *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**13:55 (S6-39) Advanced Bond Layer for Environmental Barrier Coatings (Invited)**

Guifang Han; *School of Materials Science and Engineering, Shandong University*

**14:20 (S6-40) Microstructure and Mechanical Properties of Pressure-less Sintered B<sub>4</sub>C-SiC-ZrB<sub>2</sub>-LaB<sub>6</sub> Ceramic Composites**

Dong Wang<sup>1, \*</sup>, Yaning Zhang<sup>1</sup>, Kai Xu<sup>1</sup>, Boxin Wei<sup>2</sup>, Yujin Wang<sup>3</sup>, Xiang Ding<sup>4</sup>, Xing Jin<sup>4</sup>, Songlin Ran<sup>1, \*</sup>

<sup>1</sup>School of Materials Science and Engineering, Anhui University of Technology

<sup>2</sup>School of Materials Science and Chemical Engineering, Harbin University of Science and Technology

<sup>3</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

<sup>4</sup>Anhui Province Key Laboratory of Metallurgical Engineering & Resources Recycling (Anhui University of Technology)

**14:40 (S6-41) Three-dimensional Porous Graphene/BN/SiC Aerogels with Hierarchical Structure for Broadband and High-temperature Electromagnetic Wave Absorption**

Xiao You, Qiuqi Zhang, Jinshan Yang<sup>\*</sup>, Shaoming Dong<sup>\*</sup>

*Shanghai Institute of Ceramic, Chinese Academy of Sciences*

**15:00 (S6-42) Improved Wet-oxidation Resistance of SiC<sub>f</sub>/SiC Composites Modified with Y<sub>2</sub>O<sub>3</sub>**

Junmin Zhang, Xiaowu Chen<sup>\*</sup>, Shaoming Dong

*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**15:20 (S6-43) Oxidation Behaviors and Mechanisms of Yb<sub>2</sub>SiO<sub>5</sub>-Yb<sub>2</sub>O<sub>3</sub>-Si-SiC Ceramic Fabricated by Tape Casting and Reactive Melt Infiltration**

Liang Zhou, Jianbao Hu<sup>\*</sup>, Shaoming Dong<sup>\*</sup>

*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**15:40 (S6-44) Oxidation Behavior and Corrosion Mechanism of SiC Ceramics at High Temperatures in H<sub>2</sub>O Containing Atmospheres**

Shuaibin Yan<sup>1, 2, 3</sup>, Xiaoming Duan<sup>1, 2, 3, \*</sup>, Dechang Jia<sup>1, 2, 3, \*</sup>, Yu Zhou<sup>1, 2, 3</sup>

<sup>1</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>3</sup>School of Materials Science and Engineering, Harbin Institute of Technology

**Symposium 7: Advanced Structural Ceramics and CMCs for Ultra Extreme Environments (Location: TBD)**

**Session Chair:** Fan Wan, *National University of Defense Technology*

Cheng Fang, *Zhengzhou University*

**08:30 (S7-32) Excellent Electromagnetic Wave Absorbing Properties of Ultralight B<sub>4</sub>C-based Hybrid Nanowires (Invited)**

Wenwen Wu<sup>\*</sup>, Yuan Liu, Lulu Han, Peng Liu

*School of Physics and Information Technology, Shaanxi Normal University*

**08:55 (S7-33) Tungsten Doped ZrB<sub>2</sub> Powder Synergistically Synthesized from both Co-precipitation and Solid-state Reduction Reactions (Invited)**

Ruixing Li; *School of Materials Science and Engineering, Beihang University*

The underlined author indicates the presenter. \* Indicates the corresponding author.

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**09:20 (S7-34) Mechanical Properties of Lightweight  $B_4C-(Ti_{0.9}Cr_{0.1})B_2$  Composites with Different Boride Additions**

Yuxiao Li<sup>1</sup>, Jingjing Liu<sup>1,\*</sup>, Ji Zou<sup>2</sup>

<sup>1</sup>School of Materials Science and Engineering, Wuhan University of Technology

<sup>2</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

**09:40 (S7-35) Improving CMAS Resistance of Environmental Barrier Coatings through RE Constituent Modification**

Guangheng Zhang<sup>1,2</sup>, Jie Zhang<sup>1</sup>, Jingyang Wang<sup>1</sup>

<sup>1</sup>Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

<sup>2</sup>School of Materials Science and Engineering, University of Science and Technology of China

**10:00 (S7-36) Mechanical Properties and Ablation Resistance of HfC-HfB<sub>2</sub> Composites Fabricated by One-step Reactive Sintering with a SiB<sub>6</sub> Additive**

Wei Hao<sup>1,\*</sup>, Na Ni<sup>2</sup>, Guoliang Ren<sup>3</sup>, Xiaofeng Zhao<sup>3</sup>, Dongyun Wang<sup>1</sup>

<sup>1</sup>College of Engineering, Zhejiang Normal University

<sup>2</sup>School of Mechanical Engineering, Shanghai Jiao Tong University

<sup>3</sup>School of Materials Science and Engineering, Shanghai Jiao Tong University

**10:20 Break**

**Session Chair:** Ruixing Li, *Beihang University*

Delong Cai, *Harbin Engineering University, China*

**10:30 (S7-37) Densification Mechanism and Properties of Rock-salt-structured Ta-Hf-C Carbides (Invited)**

Jie Yin<sup>\*</sup>, Buhao Zhang, Xuejian Liu, Zhengren Huang

*Shanghai Institute of Ceramics Chinese Academy of Sciences*

**10:55 (S7-38) Processing and Properties of Reactively Densified TiB<sub>2</sub>-AlN-hBN Conductive Ceramics with Tunable Compositions (Invited)**

Ji Zou<sup>\*</sup>, Huayue Liang, Zhengyi Fu

*Wuhan University of Technology*

**11:20 (S7-39) The Degassing, Microstructural Evolution, Grain Growth and Densification Behaviour of Vacuum Sintered Ti(C, N)-based Cermets**

Shengjian Zhou, Jiahu Ouyang<sup>\*</sup>, Yujin Wang, Lei Chen, Zhanguo Liu

*School of Materials Science and Engineering, Harbin Institute of Technology*

**11:40 (S7-40) Mechanical Properties and Ablation Resistance of HfC-HfB<sub>2</sub> Composites Fabricated by One-step Reactive Sintering with a SiB<sub>6</sub> Additive**

Wei Hao<sup>1,\*</sup>, Na Ni<sup>2</sup>, Guoliang Ren<sup>3</sup>, Xiaofeng Zhao<sup>3</sup>, Dongyun Wang<sup>1</sup>

<sup>1</sup>College of Engineering, Zhejiang Normal University

<sup>2</sup>School of Mechanical Engineering, Shanghai Jiao Tong University

<sup>3</sup>School of Materials Science and Engineering, Shanghai Jiao Tong University

**12:00 Lunch**

**Session Chair:** Jie Yin, *Shanghai Institute of Ceramics Chinese Academy of Sciences*

**13:30 (S7-41) Structural Designs of Silkworm Cocoon-like Complex-phase Ceramic Fiber Felts and their Composites (Invited)**

Chao Wang

*Harbin Institute of Technology*

**13:55 (S7-42) Lightweight Surface Toughened Thermal Protection Composites (Invited)**

Shun Dong<sup>1,\*</sup>

*National Key Laboratory of Science and Technology for National Defense on Advanced Composites in Special Environments, Harbin Institute of Technology*

**14:20 (S7-43) The Current Situation and Expectation of Ceramic Material Application in Pulverized Coal Burners of Coal-fired Power Station of China (Invited)**

Wanchun Feng

*Chairman, Huludao Huaneng Industrial Ceramic Co., Ltd.*

- 14:45 (S7-44) Preparation and Properties of Aerogel Composite Materials with Integrated Heterogeneous Structure for Thermal Protection and Insulation**  
Xiang Li, Wenxia Zhu, Zhonghang Xia, Wenpu Zhao, Dong Su\*, Huiming Ji\*  
*Key Laboratory of Advanced Ceramics and Machining Technology of Ministry of Education, School of Materials Science and Engineering, Tianjin University*
- 15:05 (S7-45) Water-Oxygen Corrosion Behavior and Mechanism of Si-Y Eutectic Alloy in Water-Oxygen Environment**  
 Yongsheng Liu\*, Jingxin Li  
*Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University*
- 15:25 (S7-46) Tailoring of the Electrical Properties of Silicon Carbide Ceramics**  
Ming Zhu, Jian Chen\*, Zhengren Huang\*  
*State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**Symposium 8: Polymer Derived Ceramics (PDCs) and Composites  
 (Location: TBD)**

**Session Chair:** Qingbo Wen, *Central South University*

- 08:30 (S8-29) Additive Manufacturing of Ceramics from Pre ceramic Polymers (Keynote)**  
Paolo Colombo<sup>1,2,\*</sup>  
<sup>1</sup>*Department of Industrial Engineering, University of Padova*  
<sup>2</sup>*Department of Materials Science and Engineering, The Pennsylvania State University*
- 09:00 (S8-30) Two-component Polyborosilazanes for SiBCN(O) Ceramic Precursors (Invited)**  
 Tianhao Li, Yanpei Dang, Jiaqi Sun, Yujie Song\*  
*Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences*
- 09:25 (S8-31) Polymer-derived Ceramic Composites for Energy Storage and Conversion (Invited)**  
 Maged F. Bekheet, Aleksander Gurlo\*; *Technische Universitaet Berlin, Chair of Advanced Ceramic Materials*
- 09:50 (S8-32) Significant Improvement of Ultra-high Temperature Oxidation Resistance of C/SiC Composites upon Matrix Modification by SiHfBCN Ceramics**  
Xinming Xu<sup>1</sup>, Xingang Luan<sup>1,3,\*</sup>, Jiahao Zhang<sup>1</sup>, Xinxin Cao<sup>1</sup>, Donglin Zhao<sup>1</sup>, Laifei Cheng<sup>1</sup>, Ralf Riedel<sup>1,2,3</sup>  
<sup>1</sup>*Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University (NPU)*  
<sup>2</sup>*Technische Universität Darmstadt, Institut für Materialwissenschaft*  
<sup>3</sup>*NPU-TU Darmstadt Joint International Research Laboratory of Ultrahigh Ceramic Matrix Composites, NPU*

**10:10 Break**

**Session Chair:** Paolo Colombo, *University of Padova*

- 10:30 (S8-33) Structural and Molecular Engineering of Ceramic Composites: From Precursors to Integration in Devices (Invited)**  
Chrystelle Salameh; *Institut Européen des Membranes, IEM, UMR 5635, Université Montpellier*
- 10:55 (S8-34) Metastable Si-B-C-N Ceramics and their Composites for High-temperature Applications: Challenges and Relevant Basic Scientific Issues (Invited)**  
Daxin Li\*, Zhihua Yang, Dechang Jia, Yu Zhou; *Institute for Advanced Ceramics, Harbin Institute of Technology*
- 11:20 (S8-35) Regulation of Electrical Properties of SiHfBCN Ceramics with Cu-catalyzed via Polymer-derived Ceramic Method**  
Xichao Dong<sup>1</sup>, Xingang Luan<sup>1,2,\*</sup>, Shaomin Gu<sup>1</sup>  
<sup>1</sup>*Science and Technology on Thermo-structural Composite Materials Laboratory, Northwestern Polytechnical University*  
<sup>2</sup>*NPU-TU Darmstadt Joint International Research Laboratory of Ultrahigh Ceramic Matrix Composites, Northwestern Polytechnical University*
- 11:40 (S8-36) Synthesis, Structural Evolution and Ablation Performance of (Ti,Zr,Hf)C/SiTiZrHfC Ultrahigh-temperature Ceramic Nano-micro Composites**  
Li Lu, Qingbo Wen\*, Yalei Wang, Yi Zeng, Xiang Xiong  
*State Key Laboratory of Powder Metallurgy, Central South University*

**12:00 Lunch**

**Session Chair:** Xingang Luan, *Northwestern Polytechnical University*

- 13:30 (S8-37) Metal Modified Silicon-based Polymer-derived Ceramics: Synthesis of Single-source-precursor, Microstructure Characterization and Application Performance Exploration (Invited)**  
Cong Zhou  
*Center for Advanced Ceramics, School of Materials Science and Engineering, Anhui Polytechnic University*
- 13:55 (S8-38) Role of Heterointerfaces in Polymer-derived Ceramics (Invited)**  
Gaofeng Shao  
*Nanjing University of Information Science and Technology*
- 14:20 (S8-39) Borazine-derived Boron Nitride Ceramic and its Composites (Invited)**  
Fan Wan\*, Junsheng Li\*  
*College of Aerospace Science and Engineering, National University of Defense Technology*
- 14:45 (S8-40) Microstructure and Ablation Resistance Properties of Coatings Modified by Polymer-derived Ceramic Nanocomposites**  
Yuqi Wang, Yuyu Zhang, Jia Sun\*  
*State Key Laboratory of Solidification Processing, Shaanxi Key Laboratory of Fiber Reinforced Light-Weight Composites, Northwestern Polytechnical University*
- 15:05 (S8-41) Microstructure Evolution and High-temperature Oxidation Mechanism of C<sub>sf</sub>/SiBCN**  
Wenhao Dou<sup>1, 2</sup>, Daxin Li<sup>1, 2, \*</sup>, Zihua Yang<sup>1, 2, 3</sup>, Dechang Jia<sup>1, 2</sup>, Yu Zhou<sup>1, 2</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Harbin Institute of Technology (HIT)*  
<sup>2</sup>*Key Laboratory of Advanced Structural-Functional Integration Materials and Green Manufacturing Technology, Harbin Institute of Technology*  
<sup>3</sup>*Chongqing Research Institute of HIT*
- 15:25 (S8-42) Lightweight SiBCN/SiC Nanowire Composite Aerogel with Adjustable EMW Absorption Property and Superior Thermal Insulation Performance**  
Junpeng Jiang, Liwen Yan, Anran Guo, Haiyan Du\* Jiachen Liu  
*School of Materials Science and Engineering, Tianjin University*

**15:45 Break**

**Session Chair:** Daxin Li, *Harbin Institute of Technology*

- 16:00 (S8-43) Single-source-precursor Synthesis of SiC-based Nanocomposites as Electrocatalysts for Hydrogen Evolution Reaction (Invited)**  
Yao Feng<sup>1, \*</sup>, Zhaoju Yu<sup>2, \*</sup>  
<sup>1</sup>*Shenzhen Kunpeng Equity Investment Management Co., Ltd.*  
<sup>2</sup>*College of Materials, Key Laboratory of High-performance Ceramic Fibers, Xiamen University*
- 16:25 (S8-44) Single-source-precursor Derived SiHfN Ceramic Nanocomposites: Synthesis and Mechanical Properties (Invited)**  
Wei Li<sup>1</sup>, Zhaoju Yu<sup>2, \*</sup>, Ralf Riedel<sup>1</sup>  
<sup>1</sup>*Department of Materials and Earth Sciences, Technical University of Darmstadt*  
<sup>2</sup>*College of Materials, Key Laboratory of High-performance Ceramic Fibers, Xiamen University*
- 16:50 (S8-45) Preparation and Properties of the Al<sub>2</sub>O<sub>3f</sub>/Al<sub>2</sub>O<sub>3</sub> Composites by Polymer Infiltration Polysis Process**  
Chen Mo, Yang Xiang\*  
*Key Laboratory of New Ceramic Fibers and Composites, National University of Defense Technology*
- 17:10 (S8-46) New Strategy to Prepare Lanthanum Zirconate Nanofiber Membranes with Superior Flexibility and Thermal Resistance**  
Nana Xu<sup>1</sup>, Haiyan Liu<sup>1</sup>, Hui Xu<sup>1</sup>, Xiaoshan Zhang<sup>1</sup>, Bing Wang<sup>1, \*</sup>, Yingde Wang<sup>1, \*</sup>  
*Science and Technology on Advanced Ceramic Fiber and Composites Laboratory, College of Aerospace Science and Engineering, National University of Defense Technology*
- 17:30 (S8-47) Fabrication of Polymer-derived SiBCN Ceramic Temperature Sensor with Excellent Sensing Performance**  
Qiang Yan, Jinping Li\*  
*National Key Laboratory of Science and Technology on Advanced Composites in Special Environments, Harbin Institute of Technology*

**Symposium 9: Novel Ceramic Coatings and Technology**  
(Location: TBD)

**Session Chair:** Khor Khiam Aik, *Nanyang Technological University*

**08:30 (S9-33) The Strategy of Plasma Spray Ceramic Coating Microstructure Control Towards the Advanced Applications Based on the Critical Bonding Temperature Concept (Keynote)**

Chang-Jiu Li<sup>\*</sup>, Xiao-Tao Luo, Cheng-Xin Li, Guan-Jun Yang  
*School of Materials Science and Engineering, Xi'an Jiaotong University*

**09:00 (S9-34) Microstructure of Alumina Coatings Formed on Patterned Si Substrates by Aerosol Deposition (Invited)**

Zhenying Yang<sup>1</sup>, Ali Dolatabadi<sup>2</sup>, Thomas W Coyle<sup>1,\*</sup>  
<sup>1</sup>*Department of Materials Science and Engineering, University of Toronto*  
<sup>2</sup>*Department of Mechanical and Industrial Engineering, University of Toronto*

**09:25 (S9-35) Ultrafast High Temperature Sintering of Ceramic Materials for High Temperature Applications (Invited)**

Hua Xie<sup>1,\*</sup>, Ji-Cheng Zhao<sup>2</sup>, David Clarke<sup>3</sup>, Jian Luo<sup>4</sup>, Liangbing Hu<sup>2</sup>  
<sup>1</sup>*Institute of Frontier and Interdisciplinary Science, Shandong University*  
<sup>2</sup>*Department of Materials Science and Engineering, University of Maryland*  
<sup>3</sup>*John A. Paulson School of Engineering and Applied Sciences, Harvard University*  
<sup>4</sup>*Department of NanoEngineering, University of California San Diego*

**09:50 (S9-36) In-situ Observation and Mechanism of Calcium-Magnesium-Alumina-Silicates (CMAS) Melts-induced Degradation of RE<sub>2</sub>SiO<sub>5</sub> Ceramics at 1500 °C (Invited)**

Zhilin Tian<sup>1,\*</sup>, Liya Zheng, Bin Li, Jingyang Wang  
<sup>1</sup>*School of Materials, Shenzhen Campus of Sun Yat-sen University*  
<sup>2</sup>*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences*

**10:15 Break**

**Session Chair:** ChangJiu Li, *Xi'an Jiaotong University*

**10:30 (S9-37) TBD (Keynote) (Not submitted yet)**

Khor Khiam Aik  
*Nanyang Technological University*

**11:00 (S9-38) The Strategy to Improve the Toughness and Anti-oxidation Performance of SiC Coating**

Bing Liu, Jia Sun<sup>\*</sup>, Lingxiang Guo, Tianyu Liu, Dou Hu, Qiangang Fu<sup>\*</sup>  
*School of Materials Science and Engineering, Northwestern Polytechnical University*

**11:20 (S9-39) La<sub>2</sub>Hf<sub>2</sub>O<sub>7</sub>/NiFe<sub>2</sub>O<sub>4</sub> Thermal Barrier Ceramic with High Infrared Emissivity for Thermal Radiation Blocking at the High Temperature**

Qingyuan Zhao<sup>1,2</sup>, Yaming Wang<sup>1,2,\*</sup>, Shuqi Wang<sup>1,2</sup>, Guoliang Chen<sup>1,2</sup>, Yongchun Zou<sup>1,2</sup>, Ouyang Jiahu<sup>1,2</sup>, Dechang Jia<sup>1,2</sup>, Yu Zhou<sup>1,2</sup>  
<sup>1</sup>*Institute for Advanced Ceramics, Harbin Institute of Technology*  
<sup>2</sup>*Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, Harbin Institute of Technology*

**11:40 (S9-40) Ytterbium Silicate Coatings with In-situ Formed strong/Ductile Laminated Structure for Improved Thermal Cycling Durability**

Haoyu Wang<sup>1,2</sup>, Jie Zhang<sup>1,\*</sup>, Jingyang Wang<sup>1</sup>  
<sup>1</sup>*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences*  
<sup>2</sup>*Institute of Coating Technology for Hydrogen Gas Turbines, Liaoning Academy of Materials*

**12:00 Lunch**

**Session Chair:** Meijun Liu, *Xi'an Jiaotong University*

**13:30 (S9-41) Artifacts in Thermal Spray Coatings: Leveraging Defective Microstructures (Keynote)**

Christopher C. Berndt<sup>1,\*</sup>, Surinder Singh<sup>1</sup>, Ashok Meghwal<sup>1</sup>, Andrew S.M. Ang<sup>1</sup>  
<sup>1</sup>*Surface Engineering for Advanced Materials (SEAM), Swinburne University of Technology*



- 14:00 (S9-42) Oxidation Protective Coatings for Carbon/Carbon Composites Prepared by Gaseous Silicon Infiltration (Invited)**  
Qiangang Fu  
*Northwestern Polytechnical University*
- 14:25 (S9-43) YSZ/Ni Double-Shell Powder via Surface Electroless Deposition Tuned by an Active Kinetic Model**  
Yan Kang, Mei-Jun Liu, Lin Chen, Guan-Jun Yang\*, Chang-Jiu Li  
*School of Materials Science and Engineering, Xi'an Jiaotong University*
- 14:45 (S9-44) Preparation of Glass/Ceramic Gradient Coating on the Surface of Flexible Fiber Fabrics**  
Jiangtao Li, Haiyan Du, Feng Hou, Jiachen Liu\*  
*Tianjin University*
- 15:05 (S9-45) Research on the Ablative Behaviors and Synergistic Effect of CVD-TaC/SiC Alternate Coatings Prepared on C/C Composites**  
Jingan Kong\*, Hejun Li\*, Yulei Zhang\*  
*School of Materials Science and Engineering, Northwestern Polytechnical University,*
- 15:25 (S9-46) High-throughput Preparation and Intrinsic Properties of High Entropy Rare-earth Disilicates**  
Yuhong Du, Zhilin Tian\*  
*School of Materials, Shenzhen Campus of Sun Yat-sen University*
- 15:45 Break**
- Session Chair:** Qiangang Fu, *Northwestern Polytechnical University*
- 16:00 (S9-47) Transport and Deposition of Material in Plasma Spray-Physical Vapor Deposition (Invited)**  
Meijun Liu, Guanjun Yang\*, Changjiu Li  
*School of Materials Science and Engineering, Xi'an Jiaotong University*
- 16:25 (S9-48) R&D of Durable Lcephobic Coatings and Surface (Invited)**  
Xianghui Hou\*, Deyu Yang, Hejun Li  
*State Key Laboratory of Solidification Processing, Shaanxi Key Laboratory of Fiber Reinforced Light Composite Materials, Northwestern Polytechnical University*
- 16:50 (S9-49) Infrared Radiation Shielding Behaviour of Gd<sub>3</sub>TaO<sub>7</sub>-based Thermal Barrier Ceramic**  
Enyu Xie<sup>1,2</sup>, Yaming Wang<sup>1,2,\*</sup>, Guoliang Chen<sup>1,2</sup>, Shuqi Wang<sup>1,2</sup>, Yongchun Zou<sup>1,2</sup>, Ouyang Jiahu<sup>1,2</sup>, Dechang Jia<sup>1,2</sup>, Yu Zhou<sup>1,2</sup>  
<sup>1</sup>*Institute for Advanced Ceramics, Harbin Institute of Technology (HIT)*  
<sup>2</sup>*Key Laboratory of Advanced Structure-Function Integrated Materials and Green Manufacturing Technology, HIT*
- 17:10 (S9-50) Transverse Cracking of PS-PVD Ceramic Coatings: Heterogeneous Layered Structure by Transient Temperature**  
Lu Huang, Yanhong Lu, Meijun Liu, Guanjun Yang\*, Changjiu Li  
*Xi'an Jiaotong University*
- 17:30 (S9-51) Microstructure and High-temperature Oxidation Resistance of TiB<sub>2</sub>/SiC Composite Coatings Synthesized via In-situ Reaction**  
Fengyuan Shu<sup>1</sup>, Xiongbo Zhang<sup>1</sup>, Huipeng Wang<sup>2,\*</sup>, Xin Zhang<sup>3</sup>  
<sup>1</sup>*School of Chemical Engineering and Technology, Sun Yat-sen University*  
<sup>2</sup>*School of Mechanical and Electrical Engineering, Jiangxi University of Science and Technology*  
<sup>3</sup>*Institute of New Energy Technology, State Power Investment Corporation Central Research Institute*
- 17:50 (S9-52) Microstructure and Ablation Properties of SiC/ZrB<sub>2</sub>-SiC/ZrB<sub>2</sub>/SiC Multilayer Coating on Graphite**  
Peng Wang<sup>1, 2, 3, 4,\*</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Shandong University of Technology*  
<sup>2</sup>*Science and Technology on Advanced Ceramic Fibers and Composites Laboratory, National University of Defense Technology*  
<sup>3</sup>*Shandong Industrial Ceramics Research & Design Institute CO.*  
<sup>4</sup>*Institute of Engineering Ceramics, Shandong University of Technology*

**Symposium 11: High Entropy Ceramics and Composites**  
(Location: TBD)

Session Chair: Feng Gao, *Northwestern Polytechnical University*

**08:30 (S11-30) High Entropy and Entropy-stabilized Oxides: Recent Developments and Physical Properties (Keynote)**

Nita Dragoe\*, David Beraradan  
*Univ Paris-Saclay, ICMMO*

**09:00 (S11-31) Preparation and Properties of High-entropy Pyrochlore  $A_2Ti_2O_7$  with Multi-elements at a Site (Invited)**

Kuibao Zhang\*, Haiyan Guo  
*Southwest University of Science and Technology*

**09:25 (S11-32) Radiation Effects in High Entropy  $A_2B_2O_7$  Ceramics (Invited)**

Min Niu, Hongjie Wang\*, Liang Xu, Lei Su  
*State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University*

**09:50 (S1-33) Irradiation Effect of High-entropy MAX Ceramics (Invited)**

Weichao Bao<sup>1</sup>, Xingang Wang<sup>1</sup>, Jixuan Liu<sup>2</sup>, Guojun Zhang<sup>2\*</sup>, Fangfang Xu<sup>1\*</sup>  
<sup>1</sup>State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics  
<sup>2</sup>State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, Institute of Functional

**10:15 Break**

Session Chair: Nita Dragoe, *Univ Paris-Saclay*

**10:30 (S11-34) High-entropy  $MeTiO_3$  Perovskite Thermoelectric Ceramics with Glass-like Thermal Conductivity (Invited)**

Ping Zhang, Zhihao Lou, Jie Xu, Feng Gao\*  
*State Key Laboratory of Solidification Processing, MIT Key Laboratory of Radiation Detection Materials and Devices, USI Institute of Intelligence Materials and Structure, NPU-QMUL Joint Research Institute of Advanced Materials and Structure, School of Materials Science and Engineering, Northwestern Polytechnical University*

**10:55 (S11-35) High Entropy  $La(Cr_{0.2}Mn_{0.2}Fe_{0.2}Co_{0.2}Ni_{0.2})O_3$  with Tunable Eg Occupancy and TM-O Bond Property for ORR Electrocatalyst (Invited)**

Wenyi Li, Jinyu Zhao, Zhenxin Zhao, Xiaomin Wang\*  
*College of Materials Science and Engineering, Taiyuan University of Technology*

**11:20 (S11-36)  $(MgCoNiCuZn)O$  with Particular Microstructure and Distinctive Electrochemical Performance Prepared using Ultrafast High-temperature Sintering**

Yipeng Zhao, Guoqing Chen\*  
*School of Materials Science and Engineering, Dalian University of Technology*

**11:40 (S11-37) Design of Co-free High-entropy Perovskite Oxide used as Air Electrode in SOEC for High-efficient  $CO_2$  Electrolysis**

Zhengrong Liu, Jun Zhou\*, Yueyue Sun, Jiaming Yang, Lei Fu, Qinyuan Deng, Hongfei Zhao, Chaofan Yin, Kai Wu  
*Center of Nanomaterials for Renewable Energy, State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University*

**12:00 Lunch**

Session Chair: Jixuan Liu, *Donghua University*

**13:30 (S11-38) Preparation Optimization and CMAS Corrosion Behavior of Fluorite Structured High Entropy Oxides (Invited)**

Yang Miao\*, Fuhao Cheng, Xiaomin Wang  
*Taiyuan university of technology*

**13:55 (S11-39) Air Plasma-Sprayed High-entropy  $(Y_{0.2}Yb_{0.2}Lu_{0.2}Eu_{0.2}Er_{0.2})_3Al_5O_{12}$  Coating with High Thermal Protection Performance (Invited)**

Jinpeng Zhu  
*School of Materials Science and Engineering, Zhengzhou University*

**14:20 (S11-40) High Entropy Design and Critical Properties Optimization of Rare Earth Silicates for Environmental Barrier Coating (Invited)**

Luchao Sun, Jingyang Wang\*

Advanced Ceramics and Composites Division, Shenyang National Laboratory for Materials Science Institute of Metal Research, Chinese Academy of Sciences

**14:45 (S11-41) Thermal Properties of High-entropy RE-disilicates Controlled by High Throughput Composition Design and Optimization**

Yuhan Wang, Jinpeng Zhu\*

School of Materials Science and Engineering, Zhengzhou University

**15:05 (S11-42) Thermosensitive Properties of a Novel High-entropy Pyrochlore-structured Stannate Ceramic**

Xiaohui Li\*, Xiaoyi Chen, Wenwen Kong, Aimin Chang, Bo Gao\*

Key Laboratory of Functional Materials & Devices for Special Environments of CAS, Xinjiang Key Laboratory of Electronic Information Materials & Devices, Xinjiang Technical Institute of Physics & Chemistry of CAS

**15:25 (S11-43) Exploring Fluorite-structured High Entropy Oxides: Synthesis, Phase Transition Mechanisms, and Ionic Conducting Properties**

Yixuan Hu, Kolan Madhav Reddy\*

School of Materials Science and Engineering, Shanghai Jiao Tong University

**15:45 Break**

**Session Chair:** Junhu Meng, Lanzhou Institute of Chemical Physics

**16:00 (S11-44) Polyol-derived Layered High-entropy Nanomaterials and their Applications (Invited)**

Fei Li\*, Hiroya Abe

Joining and Welding Research Institute, Osaka University

**16:25 (S11-45) Study on Preparation and Properties of High Entropy Boride Ceramics (Invited)**

Yan Zhang<sup>1,2</sup>, Weiming Guo<sup>2,\*</sup>, Hua-Tay Lin<sup>2,\*</sup>

<sup>1</sup>School of Mechanical and Electrical Engineering, Shaoxing University

<sup>2</sup>School of Electromechanical Engineering, Guangdong University of Technology

**16:50 (S11-46) Synthesis of (Hf<sub>0.2</sub>Zr<sub>0.2</sub>Ti<sub>0.2</sub>Nb<sub>0.2</sub>Ta<sub>0.2</sub>)N Powders via Nitride Thermal Reduction with Soft Mechano-chemical Assistance (Invited)**

Youjun Lu\*, Xiang Liu, Lutong Yang, Chuyun Wang, Wuyang Song

North Minzu University

**17:15 (S11-47) Low-temperature Synthesis of High-entropy Carbide (Hf<sub>0.2</sub>Zr<sub>0.2</sub>Ti<sub>0.2</sub>Ce<sub>0.2</sub>La<sub>0.2</sub>)C<sub>1-δ</sub> via Organic Chemistry**

Wenchen Zhang<sup>1</sup>, Fangwei Guo<sup>1,2</sup>, Ruiji Zhang<sup>1,2</sup>, Desheng Liu<sup>1</sup>, Xin Wang<sup>3</sup>, Xiaofeng Zhao<sup>1</sup>

<sup>1</sup>Shanghai Key Laboratory of Advanced High-temperature Materials and Precision Forming, School of Materials Science and Engineering, Shanghai Jiao Tong University

<sup>2</sup>Shanghai Key Laboratory of Spacecraft Mechanism

<sup>3</sup>Konca Solar Cell Co., Ltd.

**Symposium 12: Microwave Dielectric Ceramics and Applications**

(Location: TBD)

**Session Chair:** Xiangming Chen, Zhejiang University

Enzhu Li, University of Electronic Science and Technology of China

**08:30 (S12-20) Some Critical Issue in Synthesis of Selected High-Q and Low-Permittivity LTCC Ceramic Materials (Keynote)**

Danilo Suvorov

Advanced materials department, Jožef Stefan Institute

**09:00 (S12-21) Cold Sintering Assisted Densification of High-performance Microwave Dielectric Ceramics (Invited)**

Jing Guo<sup>1,\*</sup>, Xiaomeng Li<sup>1</sup>, Weichen Xu<sup>1</sup>, Xinyi Li<sup>1</sup>, Xian Xue<sup>1</sup>, Hong Wang<sup>2</sup>

<sup>1</sup>Xi'an Jiaotong University

<sup>2</sup>Southern University of Science and Technology

**09:25 (S12-22) Low Temperature Sintering of ZnAl<sub>2</sub>O<sub>4</sub> Ceramics with CuO-TiO<sub>2</sub>-Nb<sub>2</sub>O<sub>5</sub> Composite Oxide Sintering Aid (Invited)**

Mingsheng Ma<sup>\*</sup>, Yan Yang, Zhifu Liu, Yongxiang Li  
*Shanghai Institute of Ceramics of the Chinese Academy of Sciences*

**09:50 (S12-23) Fabrication of Low Sintering Temperature and Low Shrinkage MgTiO<sub>3</sub>-CaTiO<sub>3</sub> Microwave Dielectric Ceramics through Fluoride**

Xinyan Liu, Yuanxun Li<sup>\*</sup>, Fuyu Li  
*State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China*

**10:10 Break**

**Session Chair:** XiaoXiao Huang, *Harbin Institute of Technology*  
Bo Zhong, *Harbin Institute of Technology (Weihai)*

**10:30 (S12-24) Research on High Temperature Potting Compound for SiC Power Module (Invited)**

Luying Lv, Wei Wang, Zhengtao Wang, Hai Yao, Huatao Wang<sup>\*</sup>  
<sup>1</sup>*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology (Weihai)*  
<sup>2</sup>*School of Materials Science and Engineering, Harbin Institute of Technology (Weihai)*

**10:55 (S12-25) Porous NFG/SiCnw Composites Fabricated by SLS for Structural Load-bearing and Functionally Integrated Electromagnetic Absorption (Invited)**

Haihua Wu<sup>1, 2, \*</sup>  
<sup>1</sup>*School of Mechanical and Power Engineering, China Three Gorges University*  
<sup>2</sup>*Hubei Engineering Research Center for Graphite Additive Manufacturing Technology and Equipment, China Three Gorges University*

**11:20 (S12-26) Multi-interfacial SnO<sub>2</sub> for Augmented Electromagnetic Wave Absorption Research**

Xueqian Zhang<sup>1, \*</sup>, Xiaoxiao Huang<sup>2</sup>, Guangwu Wen<sup>1</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Shandong University of Technology*  
<sup>2</sup>*School of Materials Science and Engineering, Harbin Institute of Technology*

**11:40 (S12-27) Study on Doping Modification and Electromagnetic Wave Absorption Performance of 2D Materials**

Dongdong Liu, Bo Zhong<sup>\*</sup>  
*School of Materials Science and Engineering, Harbin Institute of Technology (Weihai)*

**12:00 Lunch**

**Session Chair:** Danilo Suvorov, *Jožef Stefan Institute*  
Jing Guo, *Xi'an Jiaotong University*

**13:30 (S12-28) Synergistic Modification of Microwave Dielectric Characteristics by Ordered Domain Engineering for Ba-based Complex Perovskite Ceramics (Keynote)**

Xiangming Chen; *School of Materials Science and Engineering, Zhejiang University*

**14:00 (S12-29) P-V-L Theory and First Principle Density of States Calculation for Chemical Bond Evaluation of Microwave Dielectric Ceramics (Invited)**

Enzhu Li<sup>1, \*</sup>, Hongcheng Yang<sup>2</sup>, Hongyu Yang<sup>3</sup>  
<sup>1</sup>*University of electronic science and technology of China*  
<sup>2</sup>*Southwest petroleum University*  
<sup>3</sup>*Xidian University*

**14:25 (S12-30) Microwave Dielectric Properties of (Mg<sub>1-x</sub>A<sub>x</sub>)<sub>2</sub>TiO<sub>4</sub> (A= Ni<sup>2+</sup>, Mn<sup>2+</sup>) Ceramics Prepared by Citrate-gelation**

Jae Hoon Park, Eung Soo Kim  
*Department of Advanced Materials Engineering, Kyonggi University*

**14:45 (S12-31) Structural Analysis and Microwave Dielectric Properties of Ge-doped Cordierite for Millimeter-wave Applications**

Millicent Appiah Appiah<sup>\*</sup>, Yixing Yang, Burhan Ullah, Yuting Xiao, Daniel Qi Tan<sup>\*</sup>  
<sup>1</sup>*Department of Materials Science and Engineering, Guangdong Technion-Israel Institute of Technology*  
<sup>2</sup>*Guangdong Provincial Key Laboratory of Materials and Technologies for Energy Conversion*  
<sup>3</sup>*Department of Materials Science and Engineering, Technion-Israel Institute of Technology*

**15:05 (S12-32) Synergistic Microwave Absorption Effect of Graphene-BN-Fe<sub>3</sub>O<sub>4</sub> Composite**

Lan Wang<sup>1,2</sup>, Xiaoming Duan<sup>1,2,3,\*</sup>, Xinyuan Zhang<sup>1,2</sup>, Xiaoxiao Huang<sup>1,2</sup>, Dechang Jia<sup>1,2,3</sup>, Yu Zhou<sup>1,2</sup>

<sup>1</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

<sup>3</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology

**15:25 (S12-33) Intermetallic Compound M<sub>x</sub>Si Modified SiCO Ceramic Microspheres Derived from Precursor Emulsion Forelectromagnetic Wave Absorption**

Yongzhao Hou<sup>\*</sup>, Cheng Zhong; School of Materials Science and Engineering, Shandong University of Technology

**15:45**

**Break**

**Session Chair:** Huatao Wang, Harbin Institute of Technology (Weihai)  
Haihua Wu, China Three Gorges University

**16:00 (S12-34) Modulating Dielectric Properties via Carrier Injection for Highly Efficient Electromagnetic Wave Absorption of Graphene (Invited)**

Xiaoxiao Huang<sup>1,2,\*</sup>, Kaili Zhang<sup>1,2</sup>

<sup>1</sup>School of Materials Science and Engineering, Harbin Institute of Technology

<sup>2</sup>MIIT Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

**16:25 (S12-35) Electromagnetic Parameter Regulation and Microwave Absorption Mechanism of Carbon Materials by Wave-transmitting Ceramics (Invited)**

Qiang Su, Yunfei He, Bo Zhong<sup>\*</sup>

School of Materials Science and Engineering, Harbin Institute of Technology (Weihai)

**16:50 (S12-36) Design Strategy and Microwave Absorbing Mechanism of Low-dimensional Carbon Microwave Absorbing Materials**

Chunyan Ding<sup>1</sup>, Yu Ma<sup>1</sup>, Songsong Wu<sup>1</sup>, Lijuan Zhang<sup>1</sup>, Guangwu Wen<sup>1</sup>, Xiaoxiao Huang<sup>2,\*</sup>

<sup>1</sup>School of Materials Science and Engineering, Shandong University of Technology

<sup>2</sup>School of Materials Science and Engineering, Harbin Institute of Technology

**17:10 (S12-37) Phase Transformation on Molybdenum Disulfide to Realize Dielectric Engineering for Enhancing the Microwave Absorbing Properties**

Yuefeng Yan, Xiaoxiao Huang<sup>\*</sup>

School of Materials Science and Engineering; Harbin Institute of Technology

**17:30 (S12-38) Regulating Dielectric Properties of Graphene by Heat Treatment to Achieve Lightweight Broadband Microwave Absorption**

Kaili Zhang, Xiaoxiao Huang<sup>\*</sup>

School of Materials Science and Engineering, MIIT Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

**Symposium 13: Piezoelectric, Ferroelectric/Multiferroic Materials & Components  
(Location: TBD)**

**Session Chair:** Guorong Li, University of Chinese Academy of Sciences  
Zong-Yang Shen, Jingdezhen Ceramic Institute

**08:30 (S13-41) Defect Engineering Field-Induced Electro-Strain (Keynote)**

Shujun Zhang<sup>\*</sup>, Yiping Guo, Jun Chen, Yejing Dai

<sup>1</sup>University of Wollongong

<sup>2</sup>Shanghai Jiaotong University

<sup>3</sup>University of Science of Technology Beijing

<sup>4</sup>Sun Yat-sen University

**09:00 (S13-42) Magnetization Reversal by Electric Field in Co Substituted BiFeO<sub>3</sub> (Invited)**

Masaki Azuma<sup>1,2,\*</sup>, Kei Shigematsu<sup>1,2</sup>, Hajime Hojo<sup>3</sup>, Keisuke Shimizu<sup>1</sup>, Takuma Ito<sup>1</sup>, Ko Mibu<sup>4</sup>

<sup>1</sup>Laboratory for Materials and Structures, Tokyo Institute of Technology

<sup>2</sup>Kanagawa Institute of Industrial Science and Technology

<sup>3</sup>Department of Energy and Material Science, Kyushu University

<sup>4</sup>Nagoya Institute of Technology

**09:25 (S13-43) One-step Preparation and High Piezoelectric Properties of BiFeO<sub>3</sub>-BaTiO<sub>3</sub> Lead-free Ceramics (Invited)**

Bo-Ping Zhang\*, Yu-Cheng Tang, Yi-Jin Hao

*School of Materials Science and Engineering, University of Science and Technology Beijing*

**09:50 (S13-44) The Structure Control and Performance Enhancement of Bismuth-based Ferroelectric Materials (Invited)**

Chao Chen<sup>1,\*</sup>, Xiangping Jiang<sup>1</sup>, Haosu Luo<sup>2</sup>, Shujun Zhang<sup>3</sup>

<sup>1</sup>*Department of Materials Science and Engineering, Jingdezhen Ceramic University*

<sup>2</sup>*Artificial Crystal Research Center, Shanghai Institute of Ceramics, University of Chinese Academy of Sciences*

<sup>3</sup>*Institute for Superconducting and Electronic Materials, Australian Institute for Innovative Materials, University of Wollongong*

**10:15 (S13-45) Enhanced Piezoelectric and Electrostrain properties of 0.7BiFeO<sub>3</sub>-0.3BaTiO<sub>3</sub> Lead-free Piezoceramics with High Curie Temperature by Optimizing Fe<sup>3+</sup> Content**

Haoyu Xu, Yucheng Tang, Yijin Hao, Bo-Ping Zhang\*

*School of Materials Science and Engineering, University of Science and Technology Beijing*

**10:30 Break**

**Session Chair:** Shujun Zhang, *University of Wollongong*

Masaki Azuma, *Tokyo Institute of Technology*

**10:30 (S13-46) Enhanced Energy Storage Properties under Low Electric Fields in Bi<sub>0.5</sub>Na<sub>0.5</sub>TiO<sub>3</sub>-based Relaxor Ferroelectrics (Invited)**

Hang Xie<sup>1</sup>, Hongliang Du<sup>2</sup>, Linjing Liu<sup>1</sup>, Qiangwei Kou<sup>1</sup>, Jiwen Xu<sup>3</sup>, Yuan Sun<sup>1</sup>, Rui Lv<sup>1</sup>, Dawei Wang<sup>1</sup>, Yunfei Chang<sup>1,\*</sup>

<sup>1</sup>*School of Instrumentation Science and Engineering, Harbin Institute of Technology*

<sup>2</sup>*College of Engineering, Xi'an International University*

<sup>3</sup>*Guangxi Key Laboratory of Information Materials, Guilin University of Electronic Technology*

**10:55 (S13-47) Enhanced Energy Storage Properties of BST-BNT Based Relaxor Ferroelectric Ceramics under Low Electric Field (Invited)**

Zong-Yang Shen

*School of Materials Science and Engineering, Jingdezhen Ceramic University*

**11:20 (S13-48) Enhancement of High-temperature Energy Storage Properties in Antiferroelectric AgNbO<sub>3</sub> Ceramics via Multi-scale Synergistic Design (Invited)**

Jing Wang<sup>1,\*</sup>, Hao Yuan<sup>1</sup>, Xuhui Fan<sup>1</sup>, Lei Zhao<sup>2,\*</sup>, Kongjun Zhu<sup>1</sup>

<sup>1</sup>*State Key Laboratory of Mechanics and Control for Aerospace Structures, College of Aerospace Engineering, Nanjing University of Aeronautics and Astronautics*

<sup>2</sup>*Key Laboratory of High-precision Computation and Application of Quantum Field Theory of Hebei Province, College Physics Science & Technology, Hebei University*

**11:45 (S13-49) Exotic Phase Transition Mechanisms at Ferroic Multi-phase Points**

Xiaoqin Ke; *School of Physics, Xi'an Jiaotong University*

**12:00 (S13-50) High Energy Storage Performance in Silver Niobate Based Relaxor Antiferroelectrics with Reduced Silver Content**

Li Ma, Nengneng Luo\*; *School of Resources, Environment and Materials, Guangxi University*

**12:15 (S13-51) The Effect of Nd<sup>3+</sup> Substitution in 0.7BiFeO<sub>3</sub>-0.3BaTiO<sub>3</sub> Lead-free Piezoelectric Ceramics**

Yijin Hao, Boping Zhang\*; *School of Mater Sci & Eng, University of Science and Technology Beijing*

**12:30 Lunch**

**Session Chair:** Yaojin Wang, *Nanjing University of Science and Technology*

Jun Ouyang, *Shandong University*

**13:30 (S13-52) Ferroelectric HfO<sub>2</sub>-based DRAM Capacitors and Artificial Synaptic Devices (Keynote)**

Yuewei Yin\*, Xiaoquan Li\*

*Department of Physics, University of Science and Technology of China*

**14:00 (S13-53) NBT-based Textured Piezoelectric Ceramics and Multilayer Piezoelectric Actuator (Invited)**

Kai Liu, Hua Tan, Haibo Zhang\*

*Huazhong University of Science and Technology*

**14:25 (S13-54) High Energy Storage Performance of PZO/PTO Multilayers via Interface Engineering (Invited)**

Yuanyuan Zhang<sup>1, 3, \*</sup>, Qianqian Chen<sup>1</sup>, Ruijuan Qi<sup>1</sup>, Fengrui Sui<sup>1</sup>, Hao Shen<sup>1</sup>, Jing Yang<sup>1</sup>, Wei Bai<sup>1</sup>, Xiaodong Tang<sup>1</sup>, Xuefeng Chen<sup>2</sup>, Zhengqian Fu<sup>2</sup>, Genshui Wang<sup>2</sup>, Shujun Zhang<sup>3</sup>

<sup>1</sup>Key Laboratory of Polar Materials and Devices, Ministry of Education, Department of Electronic Science, East China Normal University

<sup>2</sup>The Key Lab of Inorganic Functional Materials and Devices, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>3</sup>Institute for Superconducting and Electronic Materials, Australian Institute of Innovative Materials, University of Wollongong

**14:50 (S13-55) Electrical-Mediated Piezoelectricity with Unraveled Coupling Mechanism to the Domain Dynamics at Elevated Temperatures in Polycrystalline BiFeO<sub>3</sub> (Invited)**

Lisha Liu

Nanjing University of Science and Technology

**15:15 (S13-56) Ultralow Subthreshold Swing of a MOSFET Caused by Ferroelectric Polarization Reversal of Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> Thin Films**

Shengchun Shen<sup>\*</sup>, Yuchen Wang, Si Liu, Yuewei Yin, Xiaoguang Li

Department of Physics, University of Science and Technology of China

**15:30 (S13-57) K<sub>t</sub><sup>2</sup> Hysteresis Curves of PbTiO<sub>3</sub> Epitaxial Film Resonators before and after Removing Substrate**

Sota Kuninobu<sup>1, 2</sup>, Takahiko Yanagitani<sup>1, 2, 3, 4, \*</sup>

<sup>1</sup>Waseda University

<sup>2</sup>ZAIKEN

<sup>3</sup>JST-CREST

<sup>4</sup>JST-FOREST

**15:45 (S13-58) Origin of Tetragonal Phase beyond Critical Thickness in (001)-oriented Epitaxial BiFeO<sub>3</sub> Film Grown by Hydrothermal Method with Suppressed Strain Relaxation**

Yue-Yu-Shan Cheng<sup>1, 2</sup>, Yuxian Hu<sup>1</sup>, Taichi Murashita<sup>1</sup>, Kazuki Okamoto<sup>1</sup>, Hiroshi Funakubo<sup>1, \*,</sup>, Jing-Feng Li<sup>2</sup>

<sup>1</sup>Department of Materials Science and Engineering, Tokyo Institute of Technology

<sup>2</sup>State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University

**16:00 Break**

**Session Chair:** Haibo Zhang, Huazhong University of Science and Technology

Lisha Liu, Nanjing University of Science and Technology

**16:00 (S13-59) Enhanced Bipolar Fatigue Resistance in Low Oxygen Vacancy Ferroelectric PZN-PNN-PZT Ceramics (Invited)**

Ying Shi, Wentong Du, Zhenyong Man, Liaoying Zheng, Huarong Zeng, Guorong Li<sup>\*</sup>

<sup>1</sup>School of Instrumentation Science and Engineering, Harbin Institute of Technology

<sup>2</sup>College of Engineering, Xi'an International University

<sup>3</sup>Guangxi Key Laboratory of Information Materials, Guilin University of Electronic Technology

**16:25 (S13-60) Engineering PZT Films on Si for Piezo-MEMS Applications (Invited)**

Jun Ouyang<sup>1, 2, \*,</sup> Yingying Wang<sup>2</sup>

<sup>1</sup>School of Chemistry and Chemical Engineering, Qilu University of Technology

<sup>2</sup>School of Materials Science and Engineering, Shandong University

**16:50 (S13-61) Magnetolectric Antenna for Portable very Low Frequency Transmission (Invited)**

Yaojin Wang

School of Materials Science and Engineering, Nanjing University of Science and Technology

**17:15 (S13-62) Multiferroic Magnon Spin-Torque Logic (Invited)**

Tianxiang Nan

School of Integrated Circuits, Tsinghua University

**17:40 (S13-63) Acoustic Separation of Piezoelectric Layer and Substrate Using 30-Layer C-axis Zigzag ScAlN Polarization Inversion Resonator**

Satoshi Tokai<sup>1, 2</sup>, Kazutaka Shiraiwa<sup>1, 2</sup>, Takahiko Yanagitani<sup>1, 2, 3, 4</sup>

<sup>1</sup>Waseda University

<sup>2</sup>ZAIKEN

<sup>3</sup>JST-CREST

<sup>4</sup>JST-FOREST

**Symposium 14: Thermoelectric Materials and Devices for Sustainable Energy Utilization  
(Location: TBD)**

**Session Chair:** Xun Shi, *Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**08:30 (S14-35) Anisotropy of Chemical Bonding and Thermoelectric Properties of Materials (Keynote)**

Yuri Grin  
*Max-Planck-Institut für Chemische Physik fester Stoffe*

**09:00 (S14-36) Wide Bandgap Thermoelectrics (Keynote)**

Li-Dong Zhao  
*School of Materials Science and Engineering, Beihang University*

**09:30 (S14-37) Magnetism-Enhanced Thermoelectric Performance (Invited)**

Xiaoyuan Zhou  
*College of Physics and Center of Quantum Materials & Devices, Chongqing University*

**10:00 (S14-38) Flexible Thermoelectric Materials and Devices for Sustainable Energy and Refrigeration (Keynote)**

Zhigang Chen  
*Queensland University of Technology*

**10:30 Break**

**Session Chair:** Tiejun Zhu, *Zhejiang University*

**10:45 (S14-39) Operating Wearable Sensors and Actuators Based on Body Heat Harvesting for Type 1 Diabetes (Keynote)**

Woochul Kim  
*School of Mechanical Engineering, Yonsei University*

**11:15 (S14-40) Research Progress in Developing Thermoelectromagnetic Cooling Technique (Keynote)**

Ping Wei, Longzhou Li, Wenyu Zhao\*, Qingjie Zhang  
*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

**11:45 (S14-41) GeTe-based Thermoelectric Composites with Superior Power Factor and  $ZT > 2.5$**

Yilin Jiang, Jing-Feng Li\*  
*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*

**12:00 Lunch**

**Session Chair:** Hongchao Wang, *Shandong University*

**13:30 (S14-42) Neutron Scattering Study on the Lattice Anharmonicity in the Zintl-Type Thermoelectric Materials (Invited)**

Jie Ma  
*Shanghai Jiao Tong University*

**13:50 (S14-43) Dilemma and Opportunities: A Review on Industrial-Scale Applications of Thermoelectric Power Generation (Invited)**

Hao Yin

**14:10 (S14-44) New Application of Thermoelectrics: Thermoregulating for E-skin (Invited)**

Weishu Liu  
*Southern University of Science and Technology*

**14:30 (S14-45) Enhancing Thermoelectric Properties of P-type  $Mg_2Sn$  Single Crystals through Li/Si Co-Doping and Introduction of Lattice Defects**

Zhicheng Huang<sup>1</sup>, Kei Hayashi<sup>1, \*</sup>, Jing-Feng Li<sup>1, 2</sup>, Yuzuru Miyazaki<sup>1</sup>  
<sup>1</sup>*Department of Applied Physics, Graduate School of Engineering, Tohoku University*  
<sup>2</sup>*State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University*



**14:45 (S14-46) Reversible Room Temperature Brittle-Plastic Transition in  $\text{Ag}_2\text{Te}_{0.6}\text{S}_{0.4}$  Inorganic Thermoelectric Semiconductor**

Yuechu Wang, Airan Li, Huiping Hu, Chenguang Fu\*, Tiejun Zhu\*

State Key Laboratory of Silicon Materials, School of Materials Science and Engineering, Zhejiang University

**15:00 (S14-47) Magnetic Ordering Boost Excellent Thermoelectric Performance of Flexible Films**

Shaoqiu Ke<sup>1</sup>, Xiaolei Nie<sup>1,\*</sup>, Xiaoling Ai<sup>1</sup>, Chengshan Liu<sup>1</sup>, Wanting Zhu<sup>1</sup>, Ping Wei<sup>1,2</sup>, Wenyu Zhao<sup>1,\*</sup>, Qingjie Zhang<sup>1</sup>

<sup>1</sup>State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

<sup>2</sup>Nanostructure research center, Wuhan University of Technology

**15:15 (S14-48) Thermoelectric Enhancement in A-Site Deficient High-Entropy Perovskite ( $\text{Sr}_{0.25}\text{Ca}_{0.25}\text{La}_{0.25}\text{Ba}_{0.25}$ )<sub>1-x</sub>TiO<sub>3±δ</sub> Ceramics by Fine Manipulating Cation Vacancies**

Ping Zhang<sup>1</sup>, Lingyun Gong<sup>1</sup>, Xin Xu<sup>2,\*</sup>, Zhihao Lou<sup>1</sup>, Ziyao Wei<sup>1</sup>, Penghui Chen<sup>1</sup>, Zhuozhao Wu<sup>3</sup>, Jie Xu<sup>1</sup>, Feng Gao<sup>1,\*</sup>

<sup>1</sup>State Key Laboratory of Solidification Processing, MIIT Key Laboratory of Radiation Detection Materials and Devices, NPU-QMUL Joint Research Institute of Advanced Materials and Structure, USI Institute of Intelligence Materials and Structure, School of Materials Science and Engineering, Northwestern Polytechnical University

<sup>2</sup>Department of Orthopedic Trauma, Honghui Hospital of Xi'an Jiaotong University

<sup>3</sup>Queen Mary University of London Engineering School, Northwestern Polytechnical University

**15:35 Break**

Session Chair: Jing Shuai, Sun Yat-sen University

**15:50 (S14-49) High Performance N-type PbQ (Q = Te, Se and S) Thermoelectric Materials (Invited)**

Zhongzhen Luo<sup>1,\*</sup>, Zhigang Zou<sup>1,2</sup>

<sup>1</sup>Key Laboratory of Eco-materials Advanced Technology, College of Materials Science and Engineering, Fuzhou University

<sup>2</sup>Eco-materials and Renewable Energy Research Center, College of Engineering and Applied Sciences, Nanjing University

**16:10 (S14-50) Copper-based Diamond-like Thermoelectric Materials (Invited)**

Yubo Luo<sup>1,\*</sup>, Dan Zhang<sup>2,\*</sup>, Junyou Yang<sup>1,\*</sup>

<sup>1</sup>School of Materials Science and Engineering, Huazhong University of Science and Technology

<sup>2</sup>College of Physics Science and Technology, Hebei University

**16:30 (S14-51) N-type Perovskite Oxide Thermoelectric Materials and Modules**

Peng Cao<sup>1</sup>, Jie Yao<sup>1</sup>, Tingting Chen<sup>1,2</sup>, Hongchao Wang<sup>1,\*</sup>, Wenbing Su<sup>1</sup>, Chunlei Wang<sup>1</sup>

<sup>1</sup>School of Physics, Shandong University

<sup>2</sup>School of Physics and Electronic Information, Weifang University

**16:45 (S14-52) Electrical Behavior Enhancement in Orientation-modulated Perovskite La-doped SrTiO<sub>3</sub> Thermoelectric Thin Films**

Yunpeng Zheng, Yuan-Hua Lin\*

School of Materials Science and Engineering, Tsinghua University

**17:00 (S14-53) Microstructure, Thermal and Mechanical Properties of Si<sub>3</sub>N<sub>4</sub> Ceramics: Effect of the Ratio of Y<sub>2</sub>O<sub>3</sub> and MgSiN<sub>2</sub> Sintering Additives**

Yun Liu, Rui Xiang Liu, Yuan Hang Zheng, Xiao Lei Li\*

School of Materials Science and Engineering, Tianjin University

**17:15 (S14-54) Enhancing Thermoelectric Performance in P-type Mg<sub>3</sub>Sb<sub>2</sub>-based ZintlIs through Optimization of Band Gap Structure and Nanostructuring**

Zhe Xu<sup>2</sup>, Chengyan Liu<sup>1,\*</sup>, Lei Miao<sup>2,\*</sup>

<sup>1</sup>School of Material Science and Engineering, Guilin University of Electronic Technology

<sup>2</sup>School of Physical Science & Technology, Guangxi University

**Symposium 15: Perovskites for Solar Cells, LEDs, and Other Applications  
(Location: TBD)**

Session Chair: Baomin Xu, Southern University of Science and Technology

**08:30 (S15-30) Engineering Materials and Interfaces for Halide Perovskite-based Devices, Modules and Panels (Keynote)**

Shihe Yang; Peking University Shenzhen Institute

**09:00 (S15-31) Perovskite Optoelectronic Devices Based on Metasurfaces (Keynote)**

Shumin Xiao; Harbin Institute of Technology, Shenzhen

**09:30 (S15-32) Efficient Inverted Perovskite Solar Cells Enabled by Molecule Coordinations (Invited)**

Zhubing He<sup>1, 2, \*</sup>

<sup>1</sup>Department of Materials science and Engineering, Southern University of Science and Technology

<sup>2</sup>Institute of Innovative Materials (I2M)

**09:55 (S15-33) Development of Wide-bandgap Perovskite Materials for High-efficiency and Stable Photovoltaics (Invited)**

Heping Shen

School of Engineering, The Australian National University

**10:20 Break**

**Session Chair:** Feng Gao, Linköping University

**10:30 (S15-34) High-performance Perovskite Optoelectronic Devices via Grain Boundary Defect Passivation (Invited)**

Zhanhua Wei

Institute of Luminescent Materials and Information Displays, College of Materials Science and Engineering, Huaqiao University

**10:55 (S15-35) Improving Ultraviolet Resistance in Perovskite Solar Cells (Invited)**

Zhiping Wang

Wuhan University

**11:20 (S15-36) Modification of the NiO<sub>x</sub> Films for Enhancing the Photovoltaic Performance of Inverted Flexible Perovskite Solar Cells (Invited)**

Xin Li

School of Electronic Science and Engineering, Xiamen University

**11:45 (S15-37) Large Area Freestanding Single-crystalline Perovskite Membranes for Low dimensional Photodetector**

Yang Liu

School of Materials Science and Engineering, University of New South Wales

**12:05 Lunch**

**Session Chair:** Hong Lin, Tsinghua University

**13:30 (S15-38) Efficient Perovskite Solar Cells via Charge Carrier Modulation and Defect Passivation (Keynote)**

Jingbi You

Institute of Semiconductors, Chinese Academy of Sciences

**14:00 (S15-39) Reducing Nonradiative Recombinations and Phase Segregation in Perovskite Solar Cells for Tandems (Invited)**

Jixian Xu

University of Science and Technology of China

**14:25 (S15-40) Interface Engineering for Efficient and Stable P-i-n Structured Perovskite Solar Cells (Invited)**

Yongzhen Wu

East China University of Science and Technology

**14:50 (S15-41) The Open-circuit Voltage Modulation Strategy for Tin-based Perovskite Solar Cells (Invited)**

Feng Hao

School of Materials and Energy, University of Electronic Science and Technology of China

**15:15 (S15-42) Volatile Solution Enabling Highly Orientational Perovskite Crystalline Film (Invited)**

Congcong Wu

Hubei University

**15:40 Break**

Session Chair: Shihe Yang, Peking University Shenzhen Institute

**15:55 (S15-43) Efficient and Stable Perovskite Solar Modules (Invited)**

Jianjun Tian  
Huazhong University of Science and Technology

**16:20 (S15-44) All-inorganic CsPbI<sub>3-x</sub>Br<sub>x</sub> Perovskite for Indoor Photovoltaics**

Zhanglin Guo<sup>1,\*</sup>, Tsutomu Miyasaka<sup>2</sup>  
<sup>1</sup>Kyushu University  
<sup>2</sup>Toin University of Yokohama

**16:40 (S15-45) High-performance Perovskite Light-emitting Diodes with Tunable Near-infrared Emissions and Improved Operational Stability**

Zhongcheng Yuan<sup>1,2</sup>, Zhangjun Hu<sup>1</sup>, Ingemar Persson<sup>1</sup>, Sai Bai<sup>1</sup>, Feng Gao<sup>1,\*</sup>  
<sup>1</sup>Department of Physics, Chemistry and Biology (IFM), Linköping University  
<sup>2</sup>Department of Physics, University of Oxford

**17:00 (S15-46) CuSbSe<sub>2</sub> Absorb Layer for Thin Film Solar Cells**

Lei Wan<sup>1,\*</sup>, Zishuo Zhang<sup>1</sup>, Guanglei Xu<sup>1</sup>, Ru Zhou<sup>1</sup>, Haihong Niu<sup>1</sup>, Huan Wang<sup>1</sup>  
<sup>1</sup>School of Electrical Engineering and Automation, Hefei University of Technology

**17:20 (S15-47) Suppress Defect and Lattice Degradation of the Perovskite Light Absorber by Doping and Interface Passivation Strategy**

Chu Zhang<sup>1,\*</sup>, Chunying Ma<sup>1</sup>, Shennan Chen<sup>1</sup>, Tingli Ma<sup>1,\*</sup>  
<sup>1</sup>School of Material and Chemistry, China Jiliang University

**17:40 (S15-48) Thermal and Chemical Durability of Metal Halide Perovskite CsPbBr<sub>3</sub> Single Crystals**

Daniu Han<sup>1,\*</sup>, Kun Yang<sup>1,\*</sup>, Chengying Bai<sup>2</sup>, Feida Chen<sup>1</sup>, Xiaobin Tang<sup>2,\*</sup>  
<sup>1</sup>College of Materials Science and Chemical Engineering, Harbin Engineering University  
<sup>2</sup>College of Materials Science and Technology, Nanjing University of Aeronautic and Astronautics

**Symposium 16: Transparent Ceramics and Luminescent Materials  
(Location: TBD)**

Session Chair: Jianrong Qiu, Zhejiang University

**08:30 (S16-36) Contact Damage in Glasses (Keynote)**

Ivar Reimanis  
Metallurgical and Materials Engineering Department, Colorado School of Mines

**09:00 (S16-37) Development of Glass-Ceramic Optical Fibers Doped with Metal Transition Ions for Unconventional Light Emissions (Invited)**

Georges Humbert  
XLIM Research institute, CNRS Limoges University

**09:20 (S16-38) Investigation on Micro/Nanoscaled Mechanical Behaviour of AION Transparent Ceramics (Invited)**

Ying Shi<sup>1,\*</sup>, Chenyun Zhang<sup>1</sup>, Hongti Zhang<sup>2</sup>  
<sup>1</sup>School of Material Science and Engineering, Shanghai University  
<sup>2</sup>School of Physical Science and Technology, Shanghai Tech University

**09:40 (S16-39) Terbium Oxide Magneto-Optical Transparent Ceramics (Invited)**

Ding Zhou<sup>1,\*</sup>, Yanhua Li<sup>1</sup>, Shiqi Xu<sup>1</sup>, Jiayue Xu<sup>1</sup>  
<sup>1</sup>School of Materials Science and Engineering, Shanghai Institute of Technology

**10:00 (S16-40) A Novel Experimental Approach to Quantitatively Evaluate the Printability of Inks in 3D Printing Using Two Criteria**

Haohao Ji<sup>1</sup>, Yu Liu<sup>2,\*</sup>, Jian Zhang<sup>1,\*</sup>, Shiwei Wang<sup>1</sup>  
<sup>1</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences  
<sup>2</sup>School of Mechanical Engineering, Jiangnan University

10:15

Break

**Session Chair:** Darius G. Hreniak, *Institute of Low Temperature and Structure Research, Polish Academy of Science*

**10:30 (S16-41) New Insights into Discovery, Quenching Mechanism and Applications of Phosphors (Invited)**

Shuxing Li

*College of Materials, Xiamen University*

**10:50 (S16-42) Bismuth Activated Luminescent Materials: Structure Design, Luminescence Properties and Applications (Invited)**

Yi Wei, Guogang Li\*

*Faculty of Materials Science and Chemistry, China University of Geosciences*

**11:10 (S16-43) Mechanoluminescence Materials for Advanced Sensing Applications (Invited)**

Yixi Zhuang\*, Rong-Jun Xie

*College of Materials, Xiamen University*

**11:30 (S16-44) Preparation and Application of LuAG Transparent Scintillation Ceramics**

Bing Zhou, Yanhua Li, Shiqi Xu, Jie Li, Ding Zhou \*

*School of Materials Science and Engineering, Shanghai Institute of Technology*

**11:45 (S16-45) Effects of Annealing on the Optical Properties of Transparent  $Y_2Ti_2O_7$  Pyrochlore: Proposing a Constant Cationic B Lattice Model**

Muhammad Tsabit Ayman, Dang-Hyok Yoon\*

*School of Materials Science and Engineering, Yeungnam University*

**12:00 Lunch**

**Session Chair:** Ivar Reimanis, *Colorado School of Mines*

**13:30 (S16-46) Improved Optical Properties and Laser Performance of Nd:  $Y_2O_3$  Ceramics (Invited)**

Ha-Neul Kim<sup>1,\*</sup>, Hyeon-Myeong Oh<sup>1</sup>, Ho-Jin Ma<sup>1</sup>, Jae-Woong Ko<sup>1</sup>, Jae-Wook Lee<sup>1</sup>, Young-Jo Park<sup>1</sup>, Hyeon-Kwoun Lee<sup>2</sup>

<sup>1</sup>*Engineering Ceramics Department, Korea Institute of Material Science*

<sup>2</sup>*School of Advanced Materials Science and Engineering, Kumoh National Institute of Technology*

**13:50 (S16-47) Fast Fabrication of Highly Transparent AION Ceramics by using Binary Component Sintering Additives (Invited)**

Yingchun Shan<sup>1,\*</sup>, Cun Wei<sup>1</sup>, Xuemin Xi<sup>1</sup>, Liya Ma<sup>1</sup>, Haoran Guo<sup>1</sup>, Jiangtao Li<sup>2</sup>, JiuJun Xu<sup>1,\*</sup>

<sup>1</sup>*Department of Materials Science and Engineering, Dalian Maritime University*

<sup>2</sup>*Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**14:10 (S16-48) Theoretical and Experimental Studies on Composition-dependent Structure and Properties of AION Transparent Ceramics (Invited)**

Hao Wang\*, Bingtian Tu, Kaiping Zheng, Lu Ren

*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

**14:30 (S16-49) High Performance CsPbBr<sub>3</sub> QDs Glass for Wide Color Gamut Display (Invited)**

Xuejie Zhang\*, Juqing Li, Bingfu Lei\*, Yingliang Liu\*

*College of Materials and Energy, South China Agricultural University*

**14:50 (S16-50) Optical Multifunctional Properties of Potassium-Sodium Niobate Based Transparent Ceramics via Pressureless Sintering (Invited)**

Xiao Wu

*College of Materials Science and Engineering, Fuzhou University*

**15:10 (S16-51) Smart Control of Upconversion towards Frontier Applications (Invited)**

Bo Zhou

*State Key Laboratory of Luminescent Materials and Devices, School of Materials Science and Engineering, South China University of Technology*

**15:30 (S16-52) Layered Array Al<sub>2</sub>O<sub>3</sub>-LuAG: Ce Composite Ceramic Phosphors for High-brightness Display**

Qi Zhan, Ruilin Zheng, Kehan Yu, Wei Wei\*

*College of Electronic and Optical Engineering, Nanjing University of Posts and Telecommunications*

**15:45 Break**

**Session Chair:** Junichi Tatami, *Yokohama National University*

- 16:00 (S16-53) Impact of Synthesis Parameters and Co-Doping with Rare Earth Ions on the Microstructural and Spectroscopic Properties of Polycrystalline  $Y_3Al_2Ga_3O_{12}$  Garnets (Invited)**  
 Vitalii Boiko<sup>1</sup>, Sebastian Cieřła<sup>1,2</sup>, Mariusz Stefański<sup>1</sup>, Xiaowu Hu<sup>1</sup>, Dariusz G. Hreniak<sup>1,\*</sup>  
<sup>1</sup>*Division of Optical Spectroscopy, Institute of Low Temperature and Structure Research, Polish Academy of Science*  
<sup>2</sup>*Faculty of Chemistry, Wrocław University of Science and Technology*
- 16:20 (S16-54) Luminescent Multi-component Formulations for Anti-counterfeiting Systems (Invited)**  
Maria Luisa Saladino \*  
*Department of Biological, Chemical and Pharmaceutical Sciences and Technologies (STEBICEF)-University of Palermo – Palermo*
- 16:40 (S16-55) Crystallization Mechanism and Phase Transition of Halide Nanocrystals in Glasses (Invited)**  
Ruilin Zheng<sup>1,2,\*</sup>, Jumpei Ueda<sup>1</sup>, Setsuhisa Tanabe<sup>1</sup>  
<sup>1</sup>*Graduate School of Human and Environmental Studies, Kyoto University*  
<sup>2</sup>*School of Science, Nanjing University of Posts and Telecommunications*
- 17:00 (S16-56) Fabrication and Properties Optimization of Cerium Doped Garnet Scintillation Ceramics (Invited)**  
Jiang Li  
*Transparent Ceramics Research Center, Shanghai Institute of Ceramics, Chinese Academy of Sciences*
- 17:20 (S16-57)  $Ce^{3+}$ :  $Lu_3Al_5O_{12}$ - $Al_2O_3$  Optical Nanoceramic Scintillators Elaborated via a Low-Temperature Glass Crystallization Route (Invited)**  
Jianqiang Li<sup>1,2</sup>  
<sup>1</sup>*School of Materials Science and Engineering, University of Science and Technology Beijing*  
<sup>2</sup>*State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences*
- 17:40 (S16-58) High-Pressure-Sintering, Microstructure and Optical Properties of Metastable-phase Cubic Aluminum Oxide Transparent Ceramics (Invited)**  
Xingtao Chen<sup>1,\*</sup>, Yiquan Wu<sup>2</sup>, Jianqi Qi<sup>3</sup>, Tiecheng Lu<sup>3</sup>  
<sup>1</sup>*School of Physical and Material Science and Technology, Nanchang University, Nanchang*  
<sup>2</sup>*Department of Materials Science and Engineering, Kazuo Inamori School of Engineering, New York State College of Ceramics, Alfred University*  
<sup>3</sup>*Key Laboratory of High Energy Density Physics and Technology of Ministry of Education, Sichuan University*

### Symposium 18: Solid Oxide Fuel Cells and Hydrogen Technologies (Location: TBD)

**Session Chair:** Yan Chen, *South China University of Technology*  
 Zewei Lyu, *The University of Tokyo*

- 08:30 (S18-31) The Progress of SOE Technology in Shanghai Institute of Applied Physics (SINAP) CAS (Keynote)**  
Guntae Kim\*, JianQiang Wang\*  
*Shanghai Institute of Applied Physics*
- 09:00 (S18-32) Modeling Electrical Behavior of Solid Oxide Electrolyzer Cells by Using Artificial Neural Network (Invited)**  
Pouya Zahadat\*, Jaroslav Milewski  
*Power and Aeronautical Engineering, Warsaw University of Technology*
- 09:25 (S18-33) A Multi-Physics Coupled Single-Cell Numerical Model for SOFC/SOEC Based on 3D Microstructure Reconstructions**  
Yunpeng Su, Zhenjun Jiao\*; *Harbin Institute of Technology, Shenzhen*
- 09:45 (S18-34) The Comprehensive Review on Modeling of Solid Oxide Fuel Cells: From Large System to Fine Electrode**  
Pengfei Zhu\*, Zhen Wu\*, Fusheng Yang, Zaoxiao Zhang, Meng Ni\*  
<sup>1</sup>*School of Chemical Engineering and Technology, Xi'an Jiaotong University*  
<sup>2</sup>*Department of Building and Real Estate, Research Institute for Sustainable Urban Development (RISUD) & Research Institute for Smart Energy (RISE), Hong Kong Polytechnic University*

**10:05 Break**

**Session Chair:** Daan Cui, *Dalian Maritime University*

Yuhao Wang, *The Hong Kong University of Science and Technology*

**10:30 (S18-35) Janus-type Substitution for High-performance Reversible Protonic Ceramic Cells (Keynote)**

Francesco Ciucci

**11:00 (S18-36) In-situ Growth of Binary Alloy Nanoparticles for Efficient Electrochemical Nitrate Reduction to Ammonia (Invited)**

Min Xu<sup>1</sup>, Shuyue Dong<sup>2</sup>, Haoran Guo<sup>3</sup>, John T.S. Irvine<sup>4</sup>, Tingshuai Li<sup>2</sup>, Di Chen<sup>1,5,\*</sup>

<sup>1</sup>*The Future Laboratory, Tsinghua University*

<sup>2</sup>*School of Materials and Energy, University of Electronic Science and Technology of China*

<sup>3</sup>*School of Chemical Sciences, University of Chinese Academy of Sciences*

<sup>4</sup>*School of Chemistry, University of St Andrews*

<sup>5</sup>*School of Materials Science and Engineering*

**11:25 (S18-37) Enhancing Durability of Ni/YSZ Electrode-Supported Solid Oxide Electrolysis Cells under High Current Densities**

Xiaofeng Tong<sup>1,\*</sup>, Ming Chen<sup>2</sup>

<sup>1</sup>*Institute of Energy Power Innovation, North China Electric Power University*

<sup>2</sup>*Department of Energy Conversion and Storage, Technical University of Denmark*

**11:45 (S18-38) Equivalent Circuit Model and Performance Study of H<sub>2</sub>/CO-based SOFC and H<sub>2</sub>O/CO<sub>2</sub>-based SOEC**

Yaodong Liu, Jingjing Liang, Minfang Han\*; *Department of power and energy engineering, Tsinghua University*

**12:05 Lunch**

**Session Chair:** Minfang Han, *Tsinghua University*

Yufei Song, *The Hong Kong University of Science and Technology*

**13:30 (S18-39) Clean Hydrogen Technologies: Utilization of Ceramics in Production, Distribution and End-use (Keynote)**

Fatih Dogan; *Department of Materials Science and Engineering, Missouri University of Science and Technology*

**14:00 (S18-40) Development of Reversible SOEC/SOFC System for a Zero Emissions Network Energy System: Progress within the 24/7\_Zen Project (Invited)**

Marc Torrell<sup>1,\*</sup>, Lucile Bernadet<sup>1</sup>, Dario Montinaro<sup>2</sup>, Dimitrios K. Niakolas<sup>3</sup>, Federico Smeacetto<sup>4</sup>, Albert Tarancon<sup>5</sup>

<sup>1</sup>*IREC, Catalonia Institute for Energy Research*

<sup>2</sup>*Department of Applied Science and Technology (DISAT) Politecnico de Torino*

<sup>3</sup>*Foundation for Research and Technology. Institute of Chemical Engineering Sciences (FORTH/ICE-HT)*

<sup>4</sup>*Solydera S.P.A*

<sup>5</sup>*ICREA*

**14:25 (S18-41) Performance Prediction of Solid Oxide Fuel Cells Systems based on A Neutral Network Model**

Zhongcai Fan, Ruiyu Zhang, Yuqing Wang\*; *School of Mechatronical Engineering, Beijing Institute of Technology*

**14:45 (S18-42) Analysis and Optimal Design of Multi-stack Solid Oxide Fuel Cell Systems based on Cascade**

Peiyuan Liu, Minfang Han \*

*Fuel Cell and Energy Storage Center, Department of Energy and Power Engineering, Tsinghua University*

**15:05 (S18-43) Study on the Electrochemical Performance of SOFC using Underground Coal Gasification Gas as Fuel**

Zhongxuan Zhang, Minfang Han \*

*Fuel Cell and Energy Storage Center, State Key Laboratory of Power System and Generation Equipment,*

*Department of Energy and Power Engineering, Tsinghua University*

**15:25 (S18-44) A Robust Direct-Propane Solid Oxide Fuel Cell with Hierarchically Oriented Full Ceramic Anode Consisting with In-situ Exsolved Metallic Nano-Catalysts**

Xi Chen<sup>1,\*</sup>, Jietao Wang<sup>2</sup>, Na Yu<sup>1</sup>, Wang Yao<sup>3</sup>, Dong Zhang<sup>3</sup>, Meng Ni<sup>1</sup>, Fanglin Chen<sup>4</sup>, Tong Liu<sup>3</sup>, Mingyue Ding<sup>3</sup>

<sup>1</sup>*Department of Building and Real Estate, Hong Kong polytechnic University*

<sup>2</sup>*School of Power and Mechanical Engineering, Wuhan University*

<sup>3</sup>*School of Chemical Engineering and Pharmacy, Wuhan Institute of Technology*

<sup>4</sup>*Department of Mechanical Engineering, University of South Carolina*

**15:45 Break**

**Session Chair:** Shixue Liu, *China Nuclear Power Technology Research Institute*  
Yunfeng Tian, *China University of Mining and Technology*

- 16:00 (S18-45) Understanding Inter-facet Junction Effects on Particulate Photoelectrodes for Green H<sub>2</sub> Technologies (Invited)**  
Xianwen Mao\*  
*National University of Singapore*
- 16:25 (S18-46) Enhancing Oxygen Evolution Performance of Oxygen Electrode for Durable Intermediate-temperature Solid Oxide Electrolysis Cells (Invited)**  
Yongliang Zhang<sup>1</sup>, Kevin Huang<sup>2</sup>, Minfang Han<sup>1,\*</sup>  
<sup>1</sup>*Department of energy and power, Tsinghua University*  
<sup>2</sup>*University of South Carolina*
- 16:50 (S18-47) Performance Evaluation of SOFC-PEMFC Hybrid System Fueled by Ammonia for Ship Application (Invited)**  
Daan Cui\*, Tao Meng  
*Marine Engineering College, Dalian Maritime University*
- 17:15 (S18-48) Experimental Research on the Role of the H<sub>2</sub>O During the Reduction of the NiO-YSZ Anode of the Solid Oxide Fuel Cell**  
Xiaoyu Wang, Minfang Han\*  
*Fuel Cell and Energy Storage Center, State Key Laboratory of Power System and Generation Equipment, Department of Energy and Power Engineering, Tsinghua University*
- 17:35 (S18-49) Downward Band Bending as an Efficient Strategy to Accelerate Oxygen Exchange Kinetics in Mixed Conducting Oxides – Studies on Different Oriented LSCF Thin Films**  
Bingbing Qiu, Yi Yang, Ranran Peng\*, Yalin Lu  
*University of Science and Technology of China*
- 17:55 (S18-50) Lithium Metal Oxide as Symmetrical Electrodes for Low Temperature Solid Oxide Fuel Cells**  
Wenjing Dong; *School of Microelectronics, Hubei University*

**Symposium 19: Ionic and Mixed Conducting Ceramics  
(Location: TBD)**

**Session Chair:** Dongshuang Wu, *Nanyang Technological University*  
Albert Tarancon, *ICREA/IREC*

- 08:30 (S19-29) 3D Printing of Ionic Conductors for Energy Applications (Keynote)**  
Albert Tarancón<sup>1,\*</sup>, Santiago Márquez<sup>2</sup>, Natalia Kostretsova<sup>2</sup>, Maritta Lira<sup>2</sup>, Ismael Babeli<sup>2</sup>, Lucile Bernadet<sup>2</sup>, Gianfranco Sabato<sup>2</sup>, Ana Martos<sup>2</sup>, Alex Morata<sup>2</sup>, Marc Núñez<sup>2</sup>, Marc Torrell<sup>2</sup>  
<sup>1</sup>*ICREA/IREC*  
<sup>2</sup>*IREC*
- 09:00 (S19-30) Enhanced Catalytic Activity and Structural Stability of Cathode Materials for SOFC (Invited)**  
Yang Zhang, Leyu Shen, Zhihong Du, Hailei Zhao\*  
*School of Material Science and Engineering, University of Science and Technology Beijing*
- 09:25 (S19-31) Differentiating Oxygen Exchange Reaction Mechanisms across Phase Boundaries (Invited)**  
Qiyang Lu  
*School of Engineering, Westlake University*
- 09:50 (S19-32) Operando Functional Imaging of Emerging Hotoelectrochemical Systems (Invited)**  
Xianwen Mao  
*National University of Singapore*

**10:15 Break**

**Session Chair:** Qiyang Lu, *Westlake University*

Xianwen Mao, *National University of Singapore*

**10:30 (S19-33) Revealing the Local Electronic Structure of High-entropy Alloy Nanoparticles (Invited)**

Dongshuang Wu; *Nanyang Technological University*

**10:55 (S19-34) Role of Lattice Dynamics in the Ionic Transport of Ionic Conducting Ceramics (Invited)**

Qianli Chen  
*Shanghai Jiao Tong University*

**11:20 (S19-35) Oxygen Activity Regulated by Heteroatom Doping to Enhance the Performance of Water or Biomass Oxidation Reaction**

Chenghao Jia, Xuepeng Xiang, Yan Chen \*  
*School of Environment and Energy, South China University of Technology*

**11:35 (S19-36) A FeCoNiCuMo High-entropy Alloy Fuel Electrode for SOEC Co-electrolysis with High Oxidation Resistance and CO Selectivity**

Jun Tong<sup>1</sup>, Na Ni<sup>1</sup>, Hengyong Tu<sup>1</sup>, Yusi Liu<sup>2</sup>, Chongqing Yang<sup>2</sup>, Lei Zhu<sup>1,\*</sup>, Zhen Huang<sup>1</sup>  
<sup>1</sup>Key Lab. for Power Machinery and Engineering of M.O.E., *Shanghai Jiao Tong University*  
<sup>2</sup>College of Smart Energy, *Shanghai Jiao Tong University*

**11:50 (S19-37) Different Synthesis Methods and Firing Systems on the Performance of the Limiting Current Oxygen Sensor by Affecting the Grain Size of the Mixed Conductor Material**

Junbo Long, Jiegang You \*, Xiaofang Zhang \*  
*School of Materials and Metallurgy, University of Science and Technology Liaoning*

**12:05 Lunch**

**Session Chair:** Yan Yu, *University of Science and Technology of China*

Kota Suzuki, *Tokyo Institute of Technology*

**13:30 (S19-38) Advanced Positive Electrode Materials for Li-ion Batteries (Keynote)**

Naoaki Yabuuchi  
*Yokohama National University*

**14:00 (S19-39) Aqueous Batteries: Complexities of Energy Storage in Ceramic Electrodes (Invited)**

Aninda Jiban Bhattacharyya  
*Interdisciplinary Centre for Energy Research, Solid State and Structural Chemistry Unit, Indian Institute of Science*

**14:25 (S19-40) Advanced Sintering Methods for Garnet Electrolytes and Solid-state Lithium Batteries (Invited)**

Wei Liu  
*Shanghai Technology University*

**14:50 (S19-41) Znic-ion Batteries Development and Applications (Invited)**

Hui Ying Yang<sup>1,2</sup>  
<sup>1</sup>*Singapore University of Technology and Design*  
<sup>2</sup>*Engineering Product Development*

**15:15 (S19-42) Synthesis of LiCoO<sub>2</sub> Cathode Materials for Li-ion Batteries at Low Temperatures**

Qiang Zuo<sup>1</sup>, Wen Liu<sup>1</sup>, Yanxia Su<sup>2</sup>, Ke Ren<sup>3,\*</sup>, Yiguang Wang<sup>3,\*</sup>  
<sup>1</sup>*School of Materials Science and Engineering, Zhengzhou University*  
<sup>2</sup>*School of Materials Science and Engineering, Northwestern Polytechnical University*  
<sup>3</sup>*Institute of Advanced Structure Technology, Beijing Institute of Technology*

**15:30 (S19-43) Regulating Surface Oxygen Species on Copper Oxides for Effective Reduction of Nitrate to Ammonia**

Zhiheng Gong, Wenye Zhong, Yan Chen \*  
*School of Environment and Energy, South China University of Technology*

**15:45 Break**



**Session Chair:** Aninda J. Bhattacharyya, *Indian Institute of Science*  
Wei Liu, *ShanghaiTech University*

- 16:00 (S19-44) Novel Search Guideline of Lithium Ionic Conductors for All-Solid-State Lithium Battery (Invited)**  
Kota Suzuki, Ryoji Kanno\*  
*Research Center for All-Solid-State Battery, Institute of Innovative Research, Tokyo Institute of Technology*
- 16:25 (S19-45) High Energy Density and Low-Cost Na-S Batteries (Invited)**  
Yan Yu; *Department of Materials Science and Engineering, University of Science and Technology of China*
- 16:50 (S19-46) Inorganic Solid Electrolyte for All-Solid-State Chloride-Shuttle Batteries (Invited)**  
Atsushi Inoishi\*, Liwei Zhao, Hikari Sakaebe  
*Institute for Materials Chemistry and Engineering, Kyushu University*
- 17:15 (S19-47) Synthesis of Sulfide-type Solid Electrolytes through the Liquid Phase Method for All-Solid-State Battery (Invited)**  
Kazuhiro Hikima\*, Atsunori Matsuda\*  
*Toyohashi University of Technology*
- 17:40 (S19-48) Synthesis and Electrochemical Properties of  $\text{Li}_{5+x}\text{Fe}_{1-x}\text{Mn}_x\text{O}_4$  with Anti-fluorite Type Structure for Lithium Battery Cathode**  
Sou Taminato\*, Ryosuke Goto, Daisuke Mori, Nobuyuki Imanishi  
*Department of Chemistry, Mie University*
- 17:55 (S19-49) Fabrication and Characterization of Cathode-Electrolyte Interfaces in All-Solid-State Thin-film Lithium-ion Batteries**  
Yumi Ikuhara<sup>1,\*</sup>, Shunsuke Kobayashi<sup>1</sup>, Kei Nakayama<sup>1</sup>, Craig Fisher<sup>1</sup>, Akihide Kuwabara<sup>1</sup>, Yuichi Ikuhara<sup>1,2</sup>  
<sup>1</sup>Japan Fine Ceramics Center  
<sup>2</sup>The University of Tokyo

**Symposium 21: Ceramics for Environmental Conservation, Energy and Environmental catalysis, Pollution Control, and Critical Materials**  
(Location: TBD)

**Session Chair:** Wanping Chen, *Wuhan University*,

- 08:30 (S21-31) Molten Salt Synthesis and Electrochemical Energy Storage of MXenes (Invited)**  
Zifeng Lin  
*Sichuan University*
- 08:55 (S21-32) Photocatalytic Memory Effect for Environmental Applications and Beyond (Invited)**  
Qi Li  
*Key Laboratory of Advanced Technologies of Materials (Ministry of Education), School of Materials Science and Engineering, Southwest Jiaotong University*
- 09:20 (S21-33) Nanowire Energy Storage Materials and Devices (Keynote)**  
Liqiang Mai  
*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*
- 09:50 (S21-34) Enhanced Activity for Catalytic Combustion of VOCs by the  $\text{TiO}_2$  Nanotube-based Catalysts**  
Xiaoyang Wang<sup>1,4</sup>, Xu Yang<sup>2</sup>, Xinjun Li<sup>3</sup>, Lei Miao<sup>1,\*</sup>  
<sup>1</sup>School of Physical Science and Technology, Guangxi University  
<sup>2</sup>School of Chemical Engineering and Light Industry, Guangdong University of Technology  
<sup>3</sup>Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences  
<sup>4</sup>Research Center for Space System Innovation, Tokyo University of Science

**10:10 Break**

**Session Chair:** Qi Li, *Southwest Jiaotong University*

- 10:30 (S21-35)  $\text{Fe}_3\text{O}_4$  Magnetic Fluid-coated Biosorbent for Removal of Cr (VI) from Water (Invited)**  
Binqiao Ren<sup>1</sup>, Chongwei Cui\*  
<sup>1</sup>Harbin Institute of Technology  
<sup>2</sup>Institute of Advanced Technology of HAS

**10:55 (S21-36) Non-layered Two-dimensional Metal Oxides for Energy-related Applications**

Dong Wang\*, Guangwu Wen\*

*School of Materials Science and Engineering, Shandong University of Technology*

**11:15 (S21-37) Highly Selective Photocatalytic CO<sub>2</sub> Reduction to Ethylene in Pure Water by Nb<sub>2</sub>O<sub>5</sub> Nanoparticles with Enriched Surface -OH Groups under Simulated Solar Illumination**

Haoyu Zhang, Shuang Gao\*, Haitao Guan, Weiyi Yang, Qi Li\*

*Key Laboratory of Advanced Technologies of Materials, Ministry of Education, School of Materials Science and Engineering, Southwest Jiaotong University*

**11:35 (S21-38) Creation of Robust Oxygen Vacancies in 2D Ultrathin BiOBr Nanosheets by Illumination through Photocatalytic Memory Effect for Enhanced CO<sub>2</sub> Reduction**

Lizhen Lu<sup>1</sup>, Haoyu Zhang<sup>1</sup>, Zhe Sun<sup>2</sup>, Jinghui Wang<sup>3</sup>, Haolin Wang<sup>1</sup>, Jinbo Xue<sup>2</sup>, Qianqian Shen<sup>2</sup>, Qi Li<sup>1,\*</sup>

<sup>1</sup>*Key Laboratory of Advanced Technologies of Materials (Ministry of Education) School of Materials Science and Engineering Southwest Jiaotong University*

<sup>2</sup>*Key Laboratory of Interface Science and Engineering in Advanced Materials (Ministry of Education) College of Materials Science and Engineering Taiyuan University of Technology*

<sup>3</sup>*Shenyang National Laboratory for Materials Science Institute of Metal Research, Chinese Academy of Sciences*

11:55

Lunch

Session Chair: Zifeng Lin, *Sichuan University*

**13:30 (S21-39) Hierarchical Superhydrophilic/Superaerophobic 3D Porous Trimetallic (Fe, Co, Ni) Spinell/Carbon/Nickel Foam for Boosting Oxygen Evolution Reaction**

Liang Ma<sup>1,2,3</sup>, Xiaoming Duan<sup>1,2,3,\*</sup>, Zengyan Wei<sup>3,\*</sup>, Xiaoxiao Huang<sup>1,2,3</sup>, Dechang Jia<sup>1,2,3,\*</sup>, Yu Zhou<sup>1,2,3</sup>

<sup>1</sup>*Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology*

<sup>2</sup>*Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology*

<sup>3</sup>*School of Materials Science and Engineering, Harbin Institute of Technology*

**13:50 (S21-40) Metal-organic Framework-derived Cu-hierarchical Porous Carbon Composites for High-energy and Long-lasting Lithium Storage**

Bing Zhu, Yangai Liu\*, Yicen Liu, Xi Zhang, Manshu Zhang

*School of Materials Science and Technology, China University of Geosciences (Beijing)*

**14:10 (S21-41) Bimetallic Hydroxyl Fluoride with High-rate Lithium Storage Performance: Co<sub>0.6</sub>Zn<sub>0.4</sub>(OH)F Material**

Yicen Liu, Yangai Liu\*; *School of Materials Science and Technology, China University of Geosciences (Beijing)*

**14:30 (S21-42) Bi/PCFs Enabled High Cycle Stability of Potassium Metal Batteries**

Bo Zhi Yang, Xin Min\*; *School of Materials Science and Technology, China University of Geosciences (Beijing)*

**14:50 (S21-43) Modulation of Property of Dendritic BaTiO<sub>3</sub> Piezocatalysts**

Zhiwen Hu<sup>1,2</sup>, Weixia Dong<sup>1,2,\*</sup>, Zihao Dong<sup>1</sup>, Ping Li<sup>1</sup>, Qifu Bao<sup>1</sup>

<sup>1</sup>*Department of Materials Science and Engineering, Jingdezhen Ceramic University*

<sup>2</sup>*State Key Laboratory of Silicon Materials Zhejiang University*

**15:10 (S21-44) Structure and Interface Engineering of Porous Nanomaterials for Photocatalytic Applications**

Wei Zhou; *Qilu University of Technology*

**15:30 (S21-45) Mo<sub>2</sub>C-Based Ceramic Electrode with High Stability and Catalytic Activity for Hydrogen Evolution at High Current Density**

Anding Huang

*CAS Key Laboratory of Materials for Energy Conversion, Department of Materials Science and Engineering, University of Science and Technology of China*

**Symposium 22: Ceramic Integration and Joining Technologies**  
(Location: TBD)

**Session Chair:** Yanming He, *Zhejiang University of Technology*  
Xiaoqing Si, *Harbin Institute of Technology*

- 08:30 (S22-38) Microstructure and Mechanical Properties of SiC<sub>f</sub>/SiC-MX246A Brazed Joints (Keynote)**  
Jun Tao\*, Bangzheng Jiang, Jinbao Hou  
*Aeronautical Key Laboratory for Welding and Joining Technologies, AVIC Manufacturing Technology Institute*
- 09:00 (S22-39) Laser Surface Modification Assisted Joining of Graphite and DT4C Pure Iron (Invited)**  
Wenwen Li\*, Bo Chen; *Beijing Institute of Aeronautical Materials, AECC*
- 09:20 (S22-40) Conductive Carrier Supported Ceramics Nanomaterials as Electrochemical Catalysts for Water Splitting (Invited)**  
Xiaohang Zheng\*  
*School of Materials Science and Engineering, Harbin Institute of Technology*
- 09:40 (S22-41) Construction of Enhanced Interfacial Structure in High-entropy Ceramic Brazed Joint toward Ultra-high Temperature Application**  
Ruijie Mu, Ying Wang, Shiyu Niu, Kongbo Sun, Zhenwen Yang\*  
*School of Materials Science and Engineering, Tianjin University*
- 09:55 (S22-42) Microstructural and Mechanical Properties of SiC /Al<sub>0.3</sub>CoCrFeNi Joints Brazed using a FeCoCrNiCu/Ti Composite Interlayer**  
Mushi Zheng, Xiaoqing Si\*  
*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*

**10:10 Break**

**Session Chair:** Panpan Lin, *Harbin Institute of Technology*  
Rui Pan, *Beijing University of Technology*

- 10:25 (S22-43) Near-seamless Joining of SiC Ceramics and Ceramic Matrix Composites (Keynote)**  
Xiaobing Zhou  
*Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences*
- 10:55 (S22-44) Thermal Shock Assisted Ceramic Surface Modification and High Temperature Joining (Invited)**  
Junlei Qi\*, Yaotian Yan  
*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*
- 11:15 (S22-45) Transient Liquid Phase Diffusion Bonding of ZrC-SiC Ceramic and 304 Stainless Steel Using Ti/Porous Ni Interlayer (Invited)**  
WeiQi Yang  
*Sino-French Institute of Nuclear Engineering and Technology, Sun Yat-sen University*
- 11:35 (S22-46) A New Low-temperature Preparation Technology of Heat-resistant Diamond/Cu Joint using Composite Braze: Microstructure Evolution and Mechanical Properties Strengthening**  
Xinfei Zhang, Tiesong Lin\*, Panpan Lin, Peng He  
*School of Materials Science and Engineering, Harbin Institute of Technology*

**11:50 Lunch**

**Session Chair:** Jun Tao, *AVIC Manufacturing Technology Institute*  
WeiQi Yang, *Sun Yat-sen University*

- 13:30 (S22-47) Interface Design and Reaction Control of Dissimilar Materials Joining (Keynote)**  
Zhenwen Yang; *Tianjin Key Laboratory of Advanced Joining Technology, School of Mater Sci & Eng, Tianjin University*
- 14:00 (S22-48) Application of Glass Brazing Technology in All Solid State Lithium Batteries (Invited)**  
Ce Wang<sup>1,2</sup>, Zhanguo Liu<sup>3,\*</sup>, Tiesong Lin<sup>1,\*</sup>, Panpan Lin<sup>1,\*</sup>, Peng He<sup>1</sup>  
<sup>1</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology  
<sup>2</sup>Zhengzhou Research Institute, Harbin Institute of Technology  
<sup>3</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

**14:20 (S22-49) The Composition and Preparation of Glass Powder for Electronic Paste (Invited)**

Yangsuo Yao, Huidan Zeng \*, Qi Jiang, Yali Yang, Yijing Chen

*School of Materials Science and Engineering, East China University of Science and Technology*

**14:40 (S22-50) Preparation of 3-Dimensional TiC Nanosheet Reinforced Ag-Cu Composite Filler for Brazing Ti<sub>3</sub>SiC<sub>2</sub> Ceramic and Ti<sub>2</sub>AlNb Alloy: Interfacial Reaction and Strengthening Mechanism**

Bo Zhang, Zhan Sun, Qing Chang, Lixia Zhang \*

*Department of Materials Processing Engineering, Harbin Institute of Technology*

**14:55 (S22-51) Electric-field Assisted Flash Joining of Ceramic Oxides/Ceramics Oxides**

Ke Ren<sup>1,\*</sup>, Junbo Xia<sup>2</sup>, Yiguang Wang<sup>1,\*</sup>

<sup>1</sup>*Institute of Advanced structure Technology, Beijing Institute of Technology*

<sup>2</sup>*College of Science, Xi'an University of Posts and Telecommunications*

**15:10 (S22-52) Preparation of Graphene-enhanced Cu-based Filler for Brazing ZrC-SiC Ceramic and TC4 Alloy**

Degang Li, Lixia Zhang \*, Bo Zhang; *Welding technology and engineering, Harbin Institute of Technology*

**15:25 (S22-53) High-strength SiC Joints Fabricated at a Low-temperature of 1400°C using a Novel Low Activation Filler of Praseodymium**

Jie xu \*, Xiaobing Zhou

*Engineering Laboratory of Advanced Energy Materials, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences*

**15:40**

**Break**

**Session Chair:** Zhenwen Yang, *Tianjin University*

Ce Wang, *Harbin Institute of Technology*

**15:55 (S22-54) Microstructure and Properties of TiC Ceramic Reinforced Ti6Al4V Matrix Gradient Composites by Laser Melting Deposition (Keynote)**

Jiandong Wang<sup>1,\*</sup>, Yuzhou Zeng<sup>1</sup>, Panpan Lin<sup>2</sup>, Liqun Li<sup>2</sup>, Fengchun Jiang<sup>1</sup>

<sup>1</sup>*College of Materials Science and Chemical Engineering, Harbin Engineering University*

<sup>2</sup>*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*

**16:25 (S22-55) Multiscale Characterization of Glass-Ceramic Bonded SiC Joint under He Ion Irradiation (Invited)**

Liangbo Sun, Shuohao Wang, Chunfeng Liu, Jie Zhang \*

*School of Materials Science and Engineering, Harbin Institute of Technology*

**16:45 (S22-56) Microstructure and Mechanical Properties of SiC<sub>f</sub>/SiC and GH3039 Joint Brazed by AuCuV Filler (Invited)**

Jincheng Lin<sup>1</sup>, Tiesong Lin<sup>2,\*</sup>

<sup>1</sup>*Sun Yat-sen University*

<sup>2</sup>*Harbin Institute of Technology*

**17:05 (S22-57) High Quality Welding of Fused Silica by Ultrafast Laser**

Taoshuai Zhou, Rui Pan \*, Shujun Chen, Yinghao Feng

*Faculty of Materials and Manufacturing, Beijing University of Technology*

**17:20 (S22-58) A New Method for Achieving Stress Relief and Interface Enhanced Air-brazed Oxide Ceramics Joint Via In-situ Formation of Directional Growing Whiskers**

Xinyue Li, Panpan Lin \*, Peng He \*

*State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology*

**17:35 (S22-59) Preparation and Mechanical Properties of Ceramic Matrix Composite Bolts**

Xuehan Ma<sup>1</sup>, Yi Zhang<sup>1,\*</sup>, Xiangyun Gao<sup>1</sup>, Bojie You<sup>1</sup>, Chen Zhang<sup>2</sup>

<sup>1</sup>*Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University*

<sup>2</sup>*School of Materials Science and Engineering, Chang'an University*

**17:50 (S22-60) Highly Dispersed Ceramics Nanomaterials in Nano Arrays for Superior Hydrogen Evolution**

Peijia Wang, Xiaohang Zheng\*; *School of Materials Science and Engineering, Harbin Institute of Technology*

**Symposium 23: Geopolymers: Low Energy and Environmentally Friendly Ceramics and Coatings  
(Location: TBD)**

**Session Chair:** Peigang He, *Harbin Institute of Technology*

Chengying Bai, *Harbin Engineering University*

**08:30 (S23-01) Geopolymers and Related Alkali-activated Materials: Recent Advance and Future Research (Keynote)**

Hao Wang; *University of Southern Queensland*

**09:00 (S23-02) Additive Manufacturing of Porous Geopolymers for Environmental Applications (Keynote)**

Paolo Colombo<sup>1,2</sup>

<sup>1</sup>*Department of Industrial Engineering, University of Padova*

<sup>2</sup>*Department of Materials Science and Engineering, The Pennsylvania State University*

**09:30 (S23-03) Preparation of Waterproof Geopolymer and its Application for Deep Ultraviolet LED Packaging (Invited)**

Qinglei Sun<sup>1,2,\*</sup>, Yijing Wang<sup>1</sup>, Jianing Li<sup>1</sup>, Liang Hao<sup>1,3</sup>

<sup>1</sup>*Gemmological Institute, China University of Geosciences*

<sup>2</sup>*Faculty of materials science and chemistry, China University of Geosciences*

<sup>3</sup>*School of mechanical engineering and electronic information, China University of Geosciences*

**09:55 (S23-04) 3D Printing of Green and Environment-friendly rGO@ZnO/GP for Removal of Methylene Blue from Wastewater**

Xuehui Liu<sup>1,2</sup>, Peigang He<sup>1,2,\*</sup>

<sup>1</sup>*Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology*

<sup>2</sup>*Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology*

**10:15 Break**

**Session Chair:** Paolo Colombo, *University of Padova*

Hao Wang, *University of Southern Queensland*

**10:30 (S23-05) 3D Printing Geopolymer with Bionic-inspired Structure (Keynote)**

Peigang He<sup>1,\*</sup>, Siqi Ma<sup>1</sup>, Dechang Jia<sup>1</sup>, Paolo Colombo<sup>2</sup>, Yu Zhou<sup>1</sup>

<sup>1</sup>*Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology*

<sup>2</sup>*Department of Industrial Engineering, University of Padova*

**11:00 (S23-06) Design of 3D Printed Fiber-reinforced Geopolymer (3D-FRG) Based on Response Surface Method (Invited)**

Xinhao Liu, Xiaolu Guo\*, Jiajun Hu

*Key Laboratory of Advanced Civil Engineering Materials of Ministry of Education, School of Materials Science and Engineering, Tongji University*

**11:25 (S23-07) The Formulation of Alkali Activated Materials from a Chemical Perspective (Invited)**

Isabella Lancellotti, Giovanni Dal Poggetto, Cristina Leonelli\*

*Dipartimento di Ingegneria "Enzo Ferrari", Università degli Studi di Modena e Reggio Emilia*

**12:00 Lunch**

**Session Chair:** Ta-Wui Cheng, *National Taipei University of Technology*

Yuanyuan Ge, *Guangxi University*

**13:30 (S23-08) A Review on the Recycling of Waste Ceramics in Geopolymer Related Materials (Keynote)**

Zhengning Zhou<sup>1,2</sup>, Yingcan Zhu<sup>2</sup>, Zuhua Zhang<sup>1,\*</sup>

<sup>1</sup>*Key Laboratory of Advanced Civil Engineering Materials of Ministry of Education, School of Materials Science and Engineering, Tongji University*

<sup>2</sup>*Shanghai Geopoly New Materials Company Limited*

**14:00 (S23-09) Reusing Waste Materials in Alkali-activated Cements (Invited)**

Henry A. Colorado

*Universidad de Antioquia*

**14:25 (S23-10) Synthesis and Adsorption Performance of Solid Waste Based Geopolymer Adsorbent (Invited)**

Shu Yan\*, Yang Zhao, Chenyang He, Xue Feng, Kai Huang  
School of Metallurgy, Northeastern University

**14:50 (S23-11) Exploiting Bifunctional 3D-Printed Geopolymers for Efficient Cesium Removal and Immobilization: An Approach for Hazardous Waste Management**

Siqi Ma<sup>1</sup>, Peigang He<sup>1,\*</sup>, Dechang Jia<sup>1,\*</sup>, Paolo Colombo<sup>2</sup>, Yu Zhou<sup>1</sup>  
<sup>1</sup>Harbin Institute of Technology  
<sup>2</sup>Università degli Studi di Padova

**15:10 (S23-12) Effect of PFDS on the Immobilization of Cs<sup>+</sup> by Metakaolin-based Geopolymers in Complex Environments**

Shengjian Zhao<sup>1,2</sup>, Peigang He<sup>1,2,\*</sup>, Dechang Jia<sup>1,2</sup>, Yu Zhou<sup>1,2</sup>  
<sup>1</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology  
<sup>2</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology

**15:30 (S23-13) An Easy-to-Fabricate Geopolymer/Copper Mesh Composite Membrane for Efficient Removal of Dyes in water**

Chunyan Huang, Hongmiao Chen, Yuanyuan Ge\*  
Resource Processing and Process Intensification Technology, Guangxi University

**15:50 Break**

**Session Chair:** Zuhua Zhang, Tongji University  
Kaituo Wang, Guangxi University

**16:00 (S23-14) A Study on Capture and Sequestration Carbon Dioxide Using Geopolymer Technology (Keynote)**

Ta-Wui Cheng\*, Wei-Hao Lee, Ti-Chun Li  
Institute of Mineral Resources Engineering, National Taipei University of Technology

**16:30 (S23-15) New Applications of Biochar Geopolymer Composites in Water Sustainable Development (Invited)**

Yuanyuan Ge  
School of Chemistry & Chemical Engineering, Guangxi University

**16:55 (S23-16) Effect of Sodium Methylsilicate on the Thermal Behaviour of Geopolymers (Invited)**

Meirong Wang<sup>1,\*</sup>, Shuyi Lu<sup>2</sup>, Peigang He<sup>3</sup>, Dongyan Tang<sup>4</sup>, Dechang Jia<sup>3</sup>  
<sup>1</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology  
<sup>2</sup>School of Marine Science and Technology, Harbin Institute of Technology  
<sup>3</sup>Institute for Advanced Ceramics, Department of Materials Science, Harbin Institute of Technology  
<sup>4</sup>School of Chemistry and Chemical Engineering, Harbin Institute of Technology

**17:20 (S23-17) Porous coal Gangué-based Alkali-activated Material Adsorbent Synthesized by a Microwave Foaming Method (Invited)**

Xinyu Li<sup>1,\*</sup>, Chengying Bai<sup>1</sup>, Yingjie Qiao<sup>1</sup>, Paolo Colombo<sup>2,3</sup>  
<sup>1</sup>Key Laboratory of Superlight Materials and Surface Technology, Ministry of Education, College of Materials Science and Chemical Engineering, Harbin Engineering University  
<sup>2</sup>Department of Industrial Engineering, University of Padova  
<sup>3</sup>Department of Materials Science and Engineering, The Pennsylvania State University

**17:45 (S23-18) Effect of the Sodium Silicate Content on Properties of Porous Metakaolin-based Geopolymer Fabricated via Microwave Foaming**

Jiaqi Zheng, Xinyu Li, Chengying Bai\*, Xiaohong Zhang, Yingjie Qiao  
College of Materials Science and Chemical Engineering, Harbin Engineering University

**Symposium 24: Advanced Refractories and Traditional Ceramics  
(Location: TBD)**

**Session Chair:** Christopher Parr, Imerys China

**08:30 (S24-33) Study on Improving Continuous Casting Speed by Optimizing the Structure of Ladle Nozzle (Invited)**

Chunyu Guo, Yingshuai Guo, Enhui Wang, Xinmei Hou\*  
Institute for Carbon Neutrality, University of Science and Technology Beijing

**08:55 (S24-34) Effects of Al<sub>2</sub>O<sub>3</sub> Crystal Types on Morphologies, Formation Mechanisms of Mullite and Properties of Porous Mullite Ceramics Based on Kyanite**

Huishi Guo<sup>1,\*</sup>, Wenfeng Li<sup>1,2</sup>

<sup>1</sup>School of Materials and Chemical Engineering, Zhengzhou University of Light Industry

<sup>2</sup>School of Materials Science and Engineering, Henan University of Technology

**09:15 (S24-35) Development Process, Design Ideas, and Challenges of Lightweight Refractory: A Review**

Hongfeng Yin

College of Materials Science and Engineering, Xi'an University of Architecture & Technology

**09:35 (S24-36) Preparation of Carbon Aerogels with Nanowalls for Electromagnetic Shielding and Thermal Insulation**

Pengpeng Liang<sup>1,2</sup>, Hongxia Li<sup>1,2,\*</sup>, Gang Wang<sup>1,2,\*</sup>

<sup>1</sup>School of Materials Science and Engineering, Zhengzhou University

<sup>2</sup>State Key Laboratory of Advanced Refractories, Sinosteel Luoyang Institute of Refractories Research Co., Ltd.,

**09:55 (S24-37) Simultaneous Enhancement of the Thermal Shock Resistance and Slag-penetration Resistance for Tundish Flow-control Refractories: the Role of Microporous Magnesia**

Yongshun Zou<sup>\*</sup>, Huazhi Gu, Ao Huang, Lvping Fu, Meijie Zhang

The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**10:15 Break**

**Session Chair:** Hong Peng, *Elkem Silicon Materials*

**10:30 (S24-38) Alumina Based Refractory Raw Materials for a Sustainable Future (Keynote)**

Chunfeng Liu, Jenifer Astoveza, Christoph Wöhrmeyer, Christopher Parr<sup>\*</sup>

Imerys China

**11:00 (S24-39) Research on the Formation of Carbon Nanotubes by the Catalytic Pyrolysis of Glucoses**

Junbo Tu<sup>1,\*</sup>, Jinyu Li<sup>1</sup>, Juncong Wei<sup>1</sup>, Bingjie Tang<sup>2</sup>

<sup>1</sup>School of Materials Science and Engineering, North China University of Science and Technology

<sup>2</sup>Caihong Group (Shaoyang) Special Glass Limited Liability Company

**11:20 (S24-40) Toughening Mechanism and Practice of Refractories - Microcracking**

Renhong Yu<sup>1,2,\*</sup>, Jiwei Zhou<sup>1,2</sup>, Mancang Li<sup>1,2</sup>, Yunfei Zang<sup>1,2</sup>, Xiaohui Zhang<sup>1,2,\*</sup>

<sup>1</sup>School of Mater Sci & Eng (High Temperature Materials Institute), Henan University of Science and Technology

<sup>2</sup>Sinosteel Luoyang Institute of Refractories Research Co., Ltd

**11:40 (S24-41) Study on Wear Protection Performance of HVOF WC-Cr<sub>3</sub>C<sub>2</sub>-Ni Coating on Crystallizer Surface**

Diyao Zhang<sup>1</sup>, Jingkun Yu<sup>1</sup>, Lei Yuan<sup>1,2,\*</sup>

<sup>1</sup>School of Metallurgy, Northeastern University

<sup>2</sup>Institute for Frontier Technologies of Low-Carbon Steelmaking, Northeastern University

**12:00 Lunch**

**Session Chair:** Juntong Huang, *Nanchang Hangkong University*

**13:30 (S24-42) MgAlON Whisker Bond in Refractories (Keynote)**

Zongqi Guo; *Trasteel International SA*

**14:00 (S24-43) A Novel Potential Ceramic Material for Melting Ti<sub>6</sub>Al<sub>4</sub>V Alloy: A Solid Solution of BaZrO<sub>3</sub> and CaZrO<sub>3</sub> (Invited)**

Lvping Fu; *The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology*

**14:25 (S24-44) Numerical Simulation of A One-kiln-two-line Float Glass Melting Kiln and Analytical Study of Refractory Materials in the Kiln**

Hao Feng, Benjun Cheng<sup>\*</sup>; *School of Energy Science and Engineering, Central South University*

**14:45 (S24-45) Study on the Preparation of High-content Carbon Nanotubes/calcium Aluminate Cement and its Effects on the Properties of Al<sub>2</sub>O<sub>3</sub>-SiC-C Castable**

Zang Yunfei<sup>1,2,\*</sup>

<sup>1</sup>College of Materials Science and Engineering, Xi'an University of Architecture and Technology

<sup>2</sup>School of Materials Science and Engineering, Henan University of Science and Technology

**15:05 (S24-46) Formation of Isolation Layer Between the Refractory Lining and Molten Steel/slag: Industrial Trials in Refining Ladle**

Yifei Du<sup>1</sup>, Yu Zhang<sup>1,2,\*</sup>, Junfeng Chen<sup>1,\*</sup>, Wen Yan<sup>1</sup>, Nan Li<sup>1</sup>

<sup>1</sup>The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

<sup>2</sup>Core Facility of Wuhan University

**15:25 (S24-47) Enhancement of Oxidation Resistance at 1000-1400°C of Low Carbon Al<sub>2</sub>O<sub>3</sub>-C Refractories with Pre-synthesized SiC<sub>nw</sub>/Al<sub>2</sub>O<sub>3</sub>**

Xiaochuan Chong\*, Guoqing Xiao, Donghai Ding

College of Materials Science and Engineering, Xi'an University of Architecture and Technology

**15:45 Break**

**Session Chair:** Sandra Vollmann, *Montanuniversität Leoben*

**16:00 (S24-48) Challenges in Phase Diagram Study for Refractory System (Keynote)**

In-Ho Jung; *Materials Science and Engineering, Seoul National University*

**16:30 (S24-49) Highly Efficient Cr(VI) Removal from Industrial Solid Wastes Using Calcium Aluminate Cement (Invited)**

Mithun Nath<sup>1,2,\*</sup>, Xingyu Yang<sup>1</sup>, Liao Ning<sup>1</sup>, Shengqiang Song<sup>1</sup>, Yawei Li<sup>1,3</sup>

<sup>1</sup>Wuhan University of Science and Technology

<sup>2</sup>Wuboraite Technologies, Sonai

<sup>3</sup>Qinghai University, Xining

**16:55 (S24-50) Preparation and Slag Corrosion Resistance of Al<sub>2</sub>O<sub>3</sub>@Mg(Al,Cr)<sub>2</sub>O<sub>4</sub>-containing Castable (Invited)**

Liugang Chen\*, Hongrui Zhang

*School of Materials Science and Engineering, Zhengzhou University*

**17:20 (S24-51) A Potential Method to Control the Corrosion of Submerged Entry Nozzle by Applying an Electric Field (Invited)**

Lei Yuan<sup>1,\*</sup>, Chen Tian<sup>1</sup>, Shiyu Sun<sup>1</sup>, Jingkun Yu<sup>1</sup>, Guoqi Liu<sup>2</sup>, Hongxia Li<sup>2</sup>

<sup>1</sup>School of Metallurgy, Northeastern University

<sup>2</sup>State Key Laboratory of Advanced Refractories, Sinosteel Luoyang Institute of Refractories Research Co., Ltd

**17:45 (S24-52) Regulating the Pore Structure of Periclase Refractories by Adding Y<sub>2</sub>O<sub>3</sub> to Enhance Corrosion Resistance for Copper Slag**

Endong Jin\*, Donghai Ding, Guoqing Xiao, Chao Zou

*College of Materials Science and Engineering, Xi'an University of Architecture and Technology*

**18:05 (S24-53) Design of Micron/nano Lamellar Hydrates C<sub>4</sub>AçH<sub>11</sub> and M-A-H Bonded Alumina-spinel Castables Based on Two-step Curing**

Wenjing Liu, Ning Liao\*, Yawei Li\*

*Wuhan University of Science and Technology*

**Symposium 25: Porous Ceramics: From Innovative Processing to Advanced Industrial Applications (Location: TBD)**

**Session Chair:** Yuping Zeng, *Shanghai Institute of Ceramics*

Louis Winnubst, *University of Twente*

**10:30 (S25-01) Bioconjugated Nanocarriers for Precision Drug Delivery (Keynote)**

Sanjay Mathur<sup>1,2,\*</sup>

<sup>1</sup>University of Cologne, Germany

<sup>2</sup>Chair, Inorganic and Materials Chemistry

**11:00 (S25-02) Structure Design and Regulation of High Sound Absorbing Porous Ceramic Composites (Invited)**

Anze Shui\*, Chao He, Hulei Yu

*School of Materials Science and Engineering, South China University of Technology*

**11:25 (S25-03) Enhanced Thermal Insulation and Mechanical Properties of α-SiAlON Porous Ceramics for High-temperature Radome Application (Invited)**

Jie Xu\*, Runwu Yang, Fengying Fan, Jia Guo, Feng Gao

*School of Materials Science and Engineering, Northwestern Polytechnical University*

**12:00 Lunch**

The underlined author indicates the presenter. \* Indicates the corresponding author.

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**Session Chair:** Sanjay Mathur, *University of Cologne*

Anze Shui, *South China University of Technology*

Jie Xu, *Northwestern Polytechnical University*

**13:30 (S25-04) Tuning Ceramic Pores on the Nanoscale for Membrane Applications under Demanding Conditions (Keynote)**

Louis Winnubst<sup>\*</sup>, Marie-Alix Pizzoccaro-Zilamy; *Inorganic Membranes, University of Twente*

**14:00 (S25-05) Fabrication of Near-zero Sintering Shrinkage Porous Pottery via Template-free Method (Invited)**

Dong Hao<sup>1,\*</sup>, Takashi Akatsu<sup>1,2</sup>, Nobuaki Kamochi<sup>3</sup>, Miki Inada<sup>4</sup>, Atsunori Shiraishi<sup>3</sup>

<sup>1</sup>*Ceramic Research Center, Saga University*

<sup>2</sup>*Katayanagi Advanced Research Institute, Tokyo University of Technology*

<sup>3</sup>*Saga Ceramics Research Laboratory*

<sup>4</sup>*Centre of Advanced Instrumental Analysis, Kyushu University*

**14:25 (S25-06) One-step Preparation of Asymmetric Ultra-filtration Ceramic Membranes with Controllable Pore Structure Parameters and the Application in Oily Wastewater Treatment (Invited)**

Juan Ma<sup>1,\*</sup>, Anze Shui<sup>2,\*</sup>, Chao He<sup>2</sup>

<sup>1</sup>*School of Civil Engineering, Guangzhou University*

<sup>2</sup>*School of Materials Science and Engineering, South China University of Technology*

**14:50 (S25-07) Enhanced Mechanical Strength of Tubular SiC Ceramic Membrane Supports through a Reverse Particle Grading Strategy**

Zheng Liang<sup>1</sup>, Qilin Gu<sup>1,\*</sup>, Zhaoxiang Zhong<sup>1</sup>, Weihong Xing<sup>1,2,\*</sup>

<sup>1</sup>*National Engineering Research Center for Special Separation Membrane, Nanjing Tech University*

<sup>2</sup>*Jiangsu University*

**15:10 (S25-08) Hierarchical Porous Silica Ceramics with Variable Pore Size and Microstructure**

Yuanyuan Liu<sup>\*</sup>, Zhilin Tian<sup>\*</sup>, Liya Zheng, Bin Li<sup>\*</sup>; *School of Materials, Shenzhen Campus of Sun Yat-Sen University*

**15:30 (S25-09) Synthesis of Cu-based Catalysts on Honeycomb Ceramics for Methanol Steam Reforming**

Chenxu Guo, Wenming Guo<sup>\*</sup>, Hang Qin, Yi Zhang, Hanning Xiao<sup>\*</sup>

*College of Materials Science and Engineering, Hunan University*

15:50

Break

**Session Chair:** Dong Hao, *Saga University*

Juan Ma, *Guangzhou University*

**16:00 (S25-10) Porous Ceramic Membrane for Environmental Application: Recent Developments and Prospects (Keynote)**

In-Hyuck Song<sup>1,2,\*</sup>, Hong Joo Lee<sup>1</sup>, Jang Hoo Ha<sup>1</sup>, Jongman Lee<sup>1,2</sup>

<sup>1</sup>*Ceramic Materials Division, Korea Institute of Materials Science (KIMS)*

<sup>2</sup>*Department of Advanced Materials Engineering, University of Science and Technology (UST)*

**16:30 (S25-11) Emerging Surface Engineering Strategies for Antifouling Ceramic Membranes (Invited)**

Qilin Gu

*National Engineering Research Center for Special Separation Membrane, College of Chemical Engineering, Nanjing Tech University*

**16:55 (S25-12) Preparation and Separation Performance of Hollow Fiber Ceramic Supported Ti<sub>3</sub>C<sub>2</sub>Tx/Al<sub>2</sub>O<sub>3</sub> Composite Membranes (Invited)**

Shancheng Ye, Xiaozhen Zhang<sup>\*</sup>; *School of Materials Science and Engineering, Jingdezhen Ceramic University*

**17:20 (S25-13) A Novel Research of Removing the Cl<sup>-1</sup> from Zirconia Precursor Efficiently by the Disc Ceramic Membrane to Prepare Zirconia Powders with Excellent Performance**

Ruiqiang Yang, Qibing Chang<sup>\*</sup>, Yongqing Wang<sup>\*</sup>

*School of Materials Science and Engineering, Jingdezhen Ceramic University*

**17:40 (S25-14) The Cell Connectivity Controllable ZrO<sub>2</sub> Ceramic Foam Prepared by Direct Foaming with Particles as Foam Stabilizer**

Quanle Leng<sup>1,2</sup>, Yuping Zeng<sup>1,\*</sup>

<sup>1</sup>*State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences*

<sup>2</sup>*Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences*

The underlined author indicates the presenter. \* Indicates the corresponding author.

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**Symposium 26: Bioceramics and Ceramics Coatings for Biomedical Applications**  
(Location: TBD)

**Session Chair:** Kai Zheng, *Nanjing Medical University*  
Zhiping Xu, *The University of Queensland*

**08:30 (S26-05) Using Clay Nanoparticles to Normalizing Physiological Properties of the Tumor Microenvironment as Adjuvant Therapy (Keynote)**

Zhiping Xu<sup>1,2,\*</sup>

<sup>1</sup>*Institute of Biomedical Health Technology and Engineering, and Institute of Systems and Physical Biology, Shenzhen Bay Laboratory*

<sup>2</sup>*Australian Institute for Bioengineering and Nanotechnology, The University of Queensland*

**09:00 (S26-06) Bioactive Glass-reinforced Hydrogels Regulate Cellular Behavior for Bone Tissue Regeneration (Invited)**

Kai Zheng<sup>1,\*</sup>, Rongyao Xu<sup>2</sup>, Zeqian Xu<sup>3</sup>, Yong Xu<sup>4</sup>

<sup>1</sup>*Nanjing Medical University*

<sup>2</sup>*Affiliated Hospital of Stomatology, Nanjing Medical University*

<sup>3</sup>*Shanghai Jiaotong University School of Medicine, Shanghai Jiaotong University*

<sup>4</sup>*Soochow University*

**09:25 (S26-07) Bone-targeting Carbon Dots: Target-oriented Synthesis and Quantitative Evaluation of Bone-targeting Ability (Invited)**

Baoqiang Li<sup>1,\*</sup>, Guanxiong Liu<sup>1</sup>, Yuri V. Petrov<sup>2</sup>

<sup>1</sup>*Institute for Advanced Ceramics, State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology*

<sup>2</sup>*Laboratory of Dynamics and Extreme Characteristics of Promising Nanostructured Materials, Saint Petersburg State University*

**09:50 (S26-08) Preparation and Properties of Carboxymethylcellulose/Tannin/Ce Containing BGNs Microsphere Scaffolds for Tissue Regeneration**

Yingxin Xu, Kaiwen Zheng, Rumeng Wang, Yu Chen<sup>\*</sup>, Jue Zhang<sup>\*</sup>

*Anhui Provincial Engineering Research Center for Dental Materials and Application, School of Stomatology, Wannan medical college*

**10:15 Break**

**Session Chair:** Zi (Sophia) Gu, *University of New South Wales*  
Chaoming Xie, *Southwest Jiaotong University*

**10:30 (S26-09) Polydopamine-mediated Graphene Oxide and Nanohydroxyapatite-incorporated Conductive Scaffold with an Immunomodulatory Ability Accelerates Periodontal Bone Regeneration in Diabetes (Invited)**

Chaoming Xie

*Institute of Biomedical Engineering, College of Medicine, Southwest Jiaotong University*

**10:55 (S26-10) Engineering Ultrathin Nanosheets for Drug Delivery and Catalytic Nanomedicine (Invited)**

Zi (Sophia) Gu

*University of New South Wales*

**11:20 (S26-11) In Vitro Lifetime Assessment of Zirconia Bioceramics**

Jiayue Cui<sup>1</sup>, Wenshu Zhao<sup>1</sup>, Chong Wei<sup>1,\*</sup>

<sup>1</sup>*Northwestern Polytechnical University*

**11:40 (S26-12) Photoactivated MXene Nanosheets for Enhanced Bone and Soft Tissue Regeneration: Exploring Effects and Potential Mechanisms**

Xiaoyan Qu<sup>1</sup>, Bo Lei<sup>1,2,\*</sup>

<sup>1</sup>*Frontier Institute of Science and Technology, Xi'an Jiaotong University*

<sup>2</sup>*Key Laboratory of Shaanxi Province for Craniofacial Precision Medicine Research, College of Stomatology, Instrument Analysis Center, Xi'an Jiaotong University*

**12:00 Lunch**

**Session Chair:** Fanyan Deng, *Shanghai Normal University*  
Yuling Wang, *Macquarie University*

**13:30 (S26-13) Engineering of Plasmonic Nanomaterials for In Vitro Cancer Diagnosis (Keynote)**

Yuling Wang<sup>1,\*</sup>

<sup>1</sup>*School of Natural Sciences, Macquarie University*

**14:00 (S26-14) Bioadaptable Properties of Silicocarnotite Bioceramic Tuned by Zinc Oxide for Bone Regeneration (Invited)**

Fanyan Deng<sup>1</sup>, Ziheng Bu<sup>2</sup>, Xianzhuo Han<sup>3</sup>, Zhongtang Liu<sup>2</sup>, Congqin Ning<sup>1,\*</sup>

<sup>1</sup>*The Education Ministry Key Lab of Resource Chemistry and Shanghai Frontiers Science Center of Biomimetic Catalysis and Shanghai Engineering Research Center of Green Energy Chemical Engineering, Shanghai Normal University*

<sup>2</sup>*Department of Orthopedic Surgery, Changhai Hospital, Naval Military Medical University*

<sup>3</sup>*Department of Stomatology, Baoan Maternal and Child Health Hospital, Jinan University*

**14:25 (S26-15) Biomimetic 2D Layered Double Hydroxide Nanocomposites for Hyperthermia-facilitated Homologous Targeting Cancer Photo-chemotherapy (Invited)**

Li Li; *Australian Institute for Bioengineering and Nanotechnology, The University of Queensland*

**14:50 (S26-16) Multi-functional Bioactive Glass Nanosystems for Tissue Regeneration**

Yumeng Xue<sup>1,\*</sup>, Bo Lei<sup>2,\*</sup>

<sup>1</sup>*School of Materials Science and Engineering, Northwestern Polytechnical University*

<sup>2</sup>*Frontier Institute of Science and Technology, Xi'an Jiaotong University*

**15:10 (S26-17) Manganese Supplementation of Orthopedic Implant Coatings for Remodeling of Disease Microenvironments**

Kai Li, Xuebin Zheng\*

*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**15:30 (S26-18) Surface Modification of Bioactive Glass Nanoparticles and Its Application in Repair of Complex Wounds**

Mi Chen<sup>1</sup>, Sen Yu<sup>1,\*</sup>, Bo Lei<sup>2,\*</sup>

<sup>1</sup>*Northwest Institute for Non-ferrous Metal Research*

<sup>2</sup>*Frontier Institute of Science and Technology, Xi'an Jiaotong University*

**15:50 Break**

**Session Chair:** Yulin Li, *East China University of Science & Technology*  
Haobo Pan, *Chinese Academy of Science*

**16:00 (S26-19) Borosilicate: Dual-glass Network to Repair Hard/Soft Tissues (Keynote)**

Haobo Pan<sup>1,\*</sup>

<sup>1</sup>*Research Center for Human Tissues and Organs Degeneration, Shenzhen Institute of Advanced Technology, Chinese Academy of Science*

**16:30 (S26-20) Self-reinforcing Internal Fixation Materials (Invited)**

Yulin Li<sup>1,2,\*</sup>, Fangrui Liu<sup>1</sup>, Shihao Zhang<sup>1</sup>, Changsheng Liu<sup>1,\*</sup>

<sup>1</sup>*Frontiers Science Center for Materiobiology and Dynamic Chemistry, Engineering Research Centre for Biomedical Materials of Ministry of Education, East China University of Science & Technology*

<sup>2</sup>*Wenzhou Institute of Shanghai University*

**16:55 (S26-21) Advances in Biomedical Coatings of Orthopedic Implants (Invited)**

Xuebin Zheng

*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**17:20 (S26-22) Bioactive MXene Promoting Angiogenesis and Skeletal Muscle Regeneration through Regulating M2 Polarization and Oxidation Stress**

Ting Li<sup>1,2</sup>, Junping Ma<sup>1,2</sup>, Wensi Wang<sup>1,\*</sup>, Bo Lei<sup>1,2,3,4,\*</sup>

<sup>1</sup>*Key Laboratory of Shaanxi Province for Craniofacial Precision Medicine Research, College of Stomatology, Xi'an Jiaotong University*

<sup>2</sup>*Frontier Institute of Science and Technology, Xi'an Jiaotong University*

<sup>3</sup>*State Key Laboratory for Mechanical Behavior of Materials, Instrument Analysis Center, Xi'an Jiaotong University*

<sup>4</sup>*Instrumental Analysis Center, Xi'an Jiaotong University*

**17:40 (S26-23) Sprayable, Antibacterial, Anti-inflammatory, and Angiogenic Citrate-cobalt Hydrogel Dressing for MRSA Infected Wound Healing**

Sihua Li<sup>1,\*</sup>, Meng Luo<sup>1</sup>, Xiaoyan Qu<sup>1</sup>, Bo Lei<sup>1,2,3,4,\*</sup>

<sup>1</sup>Frontier Institute of Science and Technology, Xi'an Jiaotong University

<sup>2</sup>Key Laboratory of Shaanxi Province for Craniofacial Precision Medicine Research, College of Stomatology, Xi'an Jiaotong University

<sup>3</sup>State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University

<sup>4</sup>Instrument Analysis Center, Xi'an Jiaotong University

**Symposium 27: Biomimetics and Bioinspired Processing of Advanced Ceramics  
(Location: TBD)**

**Session Chair:** Hang Ping, *Wuhan University of Technology*

**13:30 (S27-10) Biological Ceramic Optical Materials: Structure, Properties, and Formation (Keynote)**

Ling Li

*Virginia Tech*

**14:00 (S27-11) Nature-inspired Nacre-like Ceramic-Polymer Composites with Tooth-matching Elasticity and Hardness, Notable Damage Tolerance and Good Fatigue Properties (Invited)**

Zengqian Liu<sup>\*</sup>, Zhefeng Zhang

*Institute of Metal Research, Chinese Academy of Sciences*

**14:25 (S27-12) Bio-inorganic Hybrid Living Materials Enabled by Bacterial Biofilms (Invited)**

Xinyu Wang

*Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences*

**14:50 (S27-13) Bioinspired Additive Manufacturing of Hierarchically Functional Materials**

Jingjiang Wei<sup>1</sup>, Zhengyi Fu<sup>2,\*</sup>

<sup>1</sup>*Institute for Advanced Study, Chengdu University*

<sup>2</sup>*State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology*

**15:10 (S27-14) Preparation of High-efficiency Photocatalysts Inspired by Photosynthesis**

Yanze Wang, Jingjing Xie<sup>\*</sup>, Zhengyi Fu<sup>\*</sup>

*Wuhan University of Technology*

**15:30 (S27-15) Biotemplating Synthesis of Rod-shaped Tin Sulfides Assembled by Interconnected Nanosheets for Energy Storage**

Chenglong Zhu, Hang Ping<sup>\*</sup>, Zhengyi Fu<sup>\*</sup>

*Wuhan University of Technology*

**15:50 Break**

**Session Chair:** Xinyu Wang, *Shenzhen Institute of Advanced Technology, CAS*

**16:00 (S27-16) Controlled Deformation of Soft Nanogel Particles Generates Artificial Biominerals with Ordered Internal Structure (Invited)**

Yin Ning; *Jinan University*

**16:25 (S27-17) Generation of Megapascal Contractile Stress via Intrafibrillar Collagen Mineralization (Invited)**

Hang Ping, Zhengyi Fu<sup>\*</sup>; *Wuhan University of Technology*

**16:50 (S27-18) Coupled Biomimetic Structures Impart Ceramic-polymer Composites with Enhanced Mechanical Properties (Invited)**

Huai-Ling Gao; *University of Science and Technology of China*

**17:15 (S27-19) Fast Mineralization Mechanism of Shark Tooth Enameloid**

Zeyao Fu, Zhengyi Fu<sup>\*</sup>, Zhaoyong Zou<sup>\*</sup>

*Wuhan University of Technology*

**Symposium 28: PACRIM Young Scholars Forum  
(Location: TBD)**

**Session Chair:** Yanhao Dong, *Tsinghua University*

**08:30 (S28-27) Tribological Properties of Self-healing NiCrAlY/Cr<sub>3</sub>C<sub>2</sub>-Ti<sub>3</sub>AlC<sub>2</sub> Coating at High Temperatures (Keynote)**

Biao Hu, Hongfei Chen<sup>\*</sup>, Yanfeng Gao  
*School of Materials Science and Engineering, Shanghai University*

**09:00 (S28-28) High-entropy Rare Earth Diborodiboride: A Novel Class of High-entropy Ceramics (Y<sub>0.25</sub>Yb<sub>0.25</sub>Dy<sub>0.25</sub>Er<sub>0.25</sub>)B<sub>2</sub>C<sub>2</sub> (Invited)**

Xiaobing Zhou<sup>\*</sup>, Huidong Xu, Longfei Jiang  
<sup>1</sup>*Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences*

**09:25 (S28-29) Realizing Microwave-infrared Compatible Stealth via Single YSZ Coating (Invited)**

Peng Wu, Tingwen He<sup>\*</sup>, Bohong Guo<sup>\*</sup>  
*School of Materials Science and Engineering, Beihang University*

**09:50 (S28-30) Macroscale Fabrication of Strong and Tough Carbon Aerogel Composites through Soft-template Reinforcement Design (Invited)**

Rui Luo<sup>1,2</sup>, Sufang Tang<sup>1,\*</sup>  
<sup>1</sup>*Shi-Changxu Innovation Center for Advanced Materials, Institute of Metal Research, Chinese Academy of Sciences*  
<sup>2</sup>*School of Materials Science and Engineering, University of Science and Technology of China*

**10:15 Break**

**Session Chair:** Hongfei Chen, *Shanghai University*

**10:30 (S28-31) Giant Pyroelectricity in Nanomembranes (Keynote)**

Jie Jiang  
*Department of Materials Science and Engineering, Rensselaer Polytechnic Institute*

**11:00 (S28-32) Machine Learning Assisted Phase Diagram Construction and Property Prediction in Multi-component Ferroelectric Materials (Invited)**

Jingjin He<sup>1</sup>, Yang Bai<sup>2,3,\*</sup>  
<sup>1</sup>*Faculty of Materials Science and Engineering, Kunming University of Science and Technology*  
<sup>2</sup>*Beijing Advanced Innovation Center for Materials Genome Engineering, University of Science and Technology Beijing*  
<sup>3</sup>*Institute for Advanced Material and Technology, University of Science and Technology Beijing*

**11:25 (S28-33) Construction of C/SiC-Cu<sub>3</sub>Si-Cu Interpenetrating Composites for Long-duration Thermal Protection at 2500 °C by Cooperative Active-passive Cooling (Invited)**

Bin Liang, Sufang Tang<sup>\*</sup>  
*Shi-Changxu Innovation Center for Advanced Materials, Institute of Metal Research, Chinese Academy of Sciences*

**12:00 Lunch**

**Session Chair:** Jie Jiang, *Rensselaer Polytechnic Institute*

**13:30 (S28-34) Sub-1.4 eV Bandgap Inorganic Perovskite Solar Cells (Keynote)**

Mingyu Hu<sup>1,2</sup>, Yuanyuan Zhou<sup>1,\*</sup>, Shihe Yang<sup>2,\*</sup>  
<sup>1</sup>*Department of Physics, Hong Kong Baptist University*  
<sup>2</sup>*School of Chemical Biology and Biotechnology, Shenzhen Graduate School, Peking University*

**14:00 (S28-35) Giant Electrostrain in Domain Engineered KNbO<sub>3</sub> Single Crystals (Invited)**

Liyang Wu; *Department of Mechanical Engineering & Mechanics, Drexel University*

**14:25 (S28-36) High Entropy Design and Performance Research of Thermal Insulation Ceramic Materials (Invited)**

Zifan Zhao; *Faculty of Materials Science and Engineering, Kunming University of Science and Technology*

**14:50 (S28-37) Hydrogen-induced Hardening/softening Mechanisms and Dynamic Recrystallization Behavior of Nickel and Nickel-platinum Alloys (Invited)**

Shunke Liu  
*Department of Mechanical and Industrial Engineering (MTP), Norwegian University of Science and Technology (NTNU)*

**15:15 (S28-38) Simultaneous Manipulations of Thermal Expansion and Fracture Toughness In SiO<sub>2</sub>-AlTaO<sub>4</sub> Ceramics with Low Radiative Thermal Conductivity (Invited)**

Luyang Zhang, Jiankun Wang, Yuxuan Zhang, Jiaxin Liao, Jin Feng\*  
Kunming University of Science and Technology

**15:45 Break**

**Session Chair:** Mingyu Hu, *Hong Kong Baptist University*

**16:00 (S28-39) Phonon Scattering Mechanisms and Regulations of Thermal Properties of Ferroelastic RETaO<sub>4</sub> Ceramics (Keynote)**

Lin Chen  
Faculty of Materials Science and Engineering, Kunming University of Science and Technology

**16:30 (S28-40) Co<sub>3</sub>O<sub>4</sub>/CeO<sub>2</sub>/C Heterostructure Nanoflowers Derived from CoCe-ZIF-67 as Efficient Electrocatalyst for Oxygen Evolution Reaction (Invited)**

Liang Ma<sup>1,2,3</sup>, Xiaoming Duan<sup>1,2,3,\*</sup>, Zengyan Wei<sup>3</sup>, Xiaoxiao Huang<sup>1,2,3</sup>, Dechang Jia<sup>1,2,3,\*</sup>, Yu Zhou<sup>1,2,3</sup>  
<sup>1</sup>Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology  
<sup>2</sup>Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology  
<sup>3</sup>School of Materials Science and Engineering, Harbin Institute of Technology

**16:55 (S28-41) Finite Element Simulation of Temperature Field and Stress Field of YTaO<sub>4</sub> / NiCoCrAlY Thermal Barrier Coating System (Invited)**

Tianlong Lu, Xiaoyu Chong\*  
Department of Materials, Punjab Technical University

**17:20 (S28-42) Spherical Close Pores Enabling Excellent High-temperature Abradability and Bonding Strength for Abradable Seal Coating (Invited)**

Yan kang, Lin Chen, Chanjiu Li, Guanjun Yang\*  
School of Materials Science and Engineering, Xi'an Jiaotong University

**Symposium 29: PACRIM Enterprise Forum  
(Location: TBD)**

**Session Chair:** Zhengren Huang, *Shanghai Advanced Research Institute, CAS*

**10:30 (S29-01) Lithography-based 3D Printing of Ceramics - Industrial Standard or Prototyping Technology (Keynote)**

Martin Schwentenwein; Lithoz GmbH

**11:00 (S29-02) Manufacturing Method and High Properties of Structural Ceramics (Keynote)**

Bin Feng<sup>1,\*</sup>, Fudong Qiao<sup>1</sup>, Haibin Yuan<sup>1</sup>, Baofu Qiu<sup>1</sup>  
<sup>1</sup>Foshan Ceramics Research Institute Group Co., Ltd

**11:30 (S29-03) FRITSCH Company Introduction and Product Applications (Invited)**

Bill Lee; Management Dept, FRITSCH GmbH

**11:55 Lunch**

**Session Chair:** Shibin Jiang, *AdValue Photonics Inc / Hangzhou Silverlake Laser*

**13:30 (S29-04) Co-Creation Based Collaboration for Succeeding Together in High-Performance Ceramics (Keynote)**

Hasan MANDAL; TÜBİTAK and WAITRO

**14:00 (S29-05) Structure and Function Regulation and Industrialization of Porous Ceramics (Keynote)**

Hanning Xiao; Hunan University

**14:30 (S29-06) Advances in Graphite Materials for Energy Savings and Creations (Invited)**

Tomoyuki Okuni\*; Toyo Tanso Co., Ltd.

**14:55 (S29-07) Advanced Ceramic Industry - Need for Flexibility in Rapidly Changing Technological Landscape (Invited)**

Santosh Y. Limaye\*; Vesta Si Sweden AB, an SKF Group Company

**15:20 (S29-08) From High-end Advanced Ceramic Powder to Ceramic Parts - Several Thoughts on Entrepreneurship (Invited)**

Yujin Wang<sup>1,\*</sup>

<sup>1</sup>Jilin Changyu Advanced Materials Co LTD

**15:45 Break**

**Session Chair:** Hansan MANDAL, TÜBİTAK and WAITRO

**16:00 (S29-09) Ceramic Cutting and Drilling using Lasers (Keynote)**

Shibin Jiang<sup>1,\*</sup>

<sup>1</sup>AdValue Photonics Inc / Hangzhou Silverlake Laser

**16:30 (S29-10) Thermal Management Materials and Components of Ceramic Based Composite (Keynote)**

Zhengren Huang<sup>1,2,3,\*</sup>

<sup>1</sup>Shanghai Advanced Research Institute, CAS

<sup>2</sup>Ningbo Institute of Material Technology and Engineer, CAS

<sup>3</sup>Shanghai Institute of Ceramics, CAS

**17:00 (S29-11) The Current Situation and Expectation of Ceramic Material Application in Pulverized Coal Burners of Coal-fired Power Station of China (Invited)**

Wanchun Feng<sup>1,\*</sup>

<sup>1</sup>Huludao Huaneng Industrial Ceramic Co., Ltd.

**17:25 (S29-12) Green preparation and Properties of 3D Large-sized SiC Nanowire Aerogels (Invited)**

Gang Wang<sup>1,2</sup>, Pengpeng Liang<sup>1,2</sup>, Hongxia Li<sup>1,2,\*</sup>

<sup>1</sup>State Key Laboratory of Advanced Refractories, Sinosteel Luoyang Institute of Refractories Research Co., Ltd.

<sup>2</sup>School of Materials Science and Engineering, Zhengzhou University

**Symposium 5: Advanced Additive Manufacturing Technologies: Materials, Processes, and Systems  
(Location: TBD)**

**Session Chair:** He Li, *Xinjiang University*

**08:30 (S5-47) Additive Manufacturing of Carbon Fiber Reinforced ZrB<sub>2</sub>-SiC Ceramic Composites (Invited)**

Yehong Cheng\*, Fan Zhang, Yixin Zhang, Ning Hu  
*Hebei University of Technology*

**08:55 (S5-48) Additive Manufacturing of SiC Ceramics by Digital Light Processing and Binder Jetting (Invited)**

Yongzhao Hou\*, Nannan Zhu, Lijuan Zhang, Guangwu Wen\*  
*School of Materials Science and Engineering, Shandong University of Technology*

**09:20 (S5-49) Processing and Mechanical Properties of Lunar Regolith Simulant Ceramics Prepared by DLP-stereolithography (Invited)**

Xiao Zong\*, Haoming Chen, Junhao Chen, Shanghua Wu\*  
*School of Electromechanical Engineering, Guangdong University of Technology*

**09:45 (S5-50) Preparation and Sintering of Porous Silicon Nitride Ceramics based on Fused Deposition Modeling**

Fei Wang, Ling Li\*  
*Shandong Industrial Ceramic Research&Design Institute*

**10:05 Break**

**Session Chair:** Yehong Cheng, *Hebei University of Technology*

**10:30 (S5-51) Study on Mechanical Properties and Mechanism of Laser Additive Manufacturing Ceramics (Invited)**

He Li; *School of Physical and Technology, Xinjiang University, Urumqi*

**10:50 (S5-52) 3D 打印二氧化硅超疏水单体陶瓷材料的工艺研究**

Lei Wang\*, Jimin Chen, Yong Zeng  
*Beijing University of Technology*

**11:10 (S5-53) Role of Scanning Speed on the Microstructure and Mechanical Properties of Additively Manufactured Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>**

Zhiwei Xiong, Tingting Liu\*  
*School of Mechanical Engineering, Nanjing University of Science and Technology*

**Symposium 12: Microwave Dielectric Ceramics and Applications  
(Location: TBD)**

**Session Chair:** Alexey Vasiliev, *University "Dubna"*

Mingsheng Ma, *Shanghai Institute of Ceramics of CAS*

**08:30 (S12-39) Development of RF Front-end Devices for Wireless Communication (Keynote)**

Jau-Ho Jean; *Department of Materials Science and Engineering, National Tsing Hua University*

**09:00 (S12-40) Fabrication of Ku-band flat Microwave Ceramics-based Luneburg Lens Antennas Using 3D Printing Technology (Invited)**

Wenzhong Lv<sup>1,2,3,\*</sup>

<sup>1</sup>*School of Optical and Electronic Information, Huazhong University of Science and Technology*

<sup>2</sup>*Key Lab of Functional Materials for Electronic Information, Ministry of Education*

<sup>3</sup>*Wenzhou Key Laboratory of Microwave Communication Materials and Devices, Wenzhou Advanced Manufacturing Institute of HUST*

**09:25 (S12-41) Collaborative Optimization of LTCC Ceramics and Integrated Device (Invited)**

Gang Wang; *Anhui University*

**09:50 (S12-42) Design and Fabrication of Wideband Dielectric Resonator Antenna Using Temperature Stable Dielectric Ceramic Mg<sub>2</sub>TiO<sub>4</sub>-LaAlO<sub>3</sub>-CaTiO<sub>3</sub> for 5G-millimeter Wave Applications**

Muhammad Shehbaz<sup>1</sup>, Chao Du<sup>1</sup>, Ruitao Li<sup>1</sup>, Xiaogang Yao<sup>2</sup>, Haiyi Peng<sup>2</sup>, Huixing Lin<sup>2</sup>, Di Zhou<sup>1,\*</sup>

<sup>1</sup>*Multifunctional Materials and Structures, Key Laboratory of the Ministry of Education & International Center for*



*Dielectric Research, School of Electronic Science and Engineering, Xi'an Jiaotong University*

*<sup>2</sup>Information Materials and Devices Research Center, Shanghai Institute of Ceramics, Chinese Academy of Science*

**10:15 Break**

**Session Chair:** Wenzhong Lv, *Huazhong University of Science and Technology*

Zhifu Liu, *Shanghai Institute of Ceramics of CAS*

**10:30 (S12-43) Metamaterials for Ultrasensitive Biomolecular Detection (Invited)**

Yang Bai, *University of Science and Technology Beijing*

**10:55 (S12-44) Thin LTCC and Screen Printed MEMS for High Temperature Gas Sensors (Invited)**

Alexey Vasiliev<sup>1,2,\*</sup>, Oleg V. Kul<sup>2</sup>, Andrey S. Nikitin<sup>1</sup>, Anna S. Dmitrieva<sup>2</sup>, Zhifu Liu<sup>3</sup>

<sup>1</sup>Laboratory of Sensor Systems, University "Dubna"

<sup>2</sup>C-Components Ltd, Russia

<sup>3</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences

**11:20 (S12-45) Ultra-strong Lanthanum-doped Tungsten Wire with Gradient Nano-twinned Structure**

Yu Zhang, Tao Zhang\*

*School of Materials Science and Engineering, Harbin Institute of Technology, Weihai*

### Symposium 16: Transparent Ceramics and Luminescent Materials

(Location: TBD)

**Session Chair:** Hao Wang, *Wuhan University of Technology*

**08:30 (S16-59) Understanding Some Phenomena in Vacuum-sintering of ZrO<sub>2</sub>-doped Lu<sub>2</sub>O<sub>3</sub>-based Transparent Ceramics (Invited)**

Xiaodong Li<sup>1,2,\*</sup>, Yi Ren<sup>2</sup>, Haojie Mu<sup>2</sup>

<sup>1</sup>Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), Northeastern University

<sup>2</sup>Research Center for Advanced Ceramic Materials, School of Mater Sci & Eng, Northeastern University

**08:50 (S16-60) Red-emitting Oxide-based Luminescent Ceramics for Laser Lighting Applications (Invited)**

Zhiguo Xia

*State Key Laboratory of Luminescent Materials and Devices, South China University of Technology*

**09:10 (S16-61) RE<sub>2</sub>M<sub>2</sub>O<sub>7</sub> Transparent Ceramics: Properties and Applications (Invited)**

Jiangqi Qi<sup>1,2,\*</sup>, Zhe Tang<sup>1,3</sup>, Kailei Lu<sup>1,2</sup>, Lexing Liang<sup>1,3</sup>, Ajiao Liu<sup>1,3</sup>, Shiwei Deng<sup>1,2</sup>, Haifeng Yuan<sup>1,3</sup>, Zijie Li<sup>1,3</sup>,

Wenhan Han<sup>1,2</sup>, Tiecheng Lu<sup>1,2,3,\*</sup>

<sup>1</sup>School of Physics, Sichuan University

<sup>2</sup>Key Laboratory of High Energy Density Physics of Ministry of Education, Sichuan University

<sup>3</sup>Key Laboratory of Radiation Physics and Technology of Ministry of Education, Sichuan University

**09:30 (S16-62) Stable On-chip Type Quantum Dot Light-emitting Diodes (Invited)**

Kai Wang

*Southern University of Science and Technology*

**09:50 (S16-63) Development of Transparent Ceramics for Future HEP Applications**

Chen Hu<sup>1,2</sup>, Jiang Li<sup>1,\*</sup>, Liyuan Zhang<sup>2</sup>, Ren-Yuan Zhu<sup>2,\*</sup>

<sup>1</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>HEP, California Institute of Technology

**10:05 Break**

**Session Chair: XXX**

**10:30 (S16-64) Applications of Micro-Raman Spectroscopy to Chemically Strengthened Glass (Invited)**

Nobuaki Terakado<sup>1,\*</sup>, Yoshihiro Takahashi<sup>1</sup>, Takumi Fujiwara<sup>1</sup>, Shuji Orihara<sup>2</sup>, Yoshio Orihara<sup>2</sup>

<sup>1</sup>Department of Applied Physics, Tohoku University

<sup>2</sup>Orihara Industrial, Co., Ltd

**10:50 (S16-65) Novel Transparent Phosphor Ceramics for Laser-Driven Lighting and Display**

Shaowei Feng<sup>1</sup>, Jianqiang Li<sup>2,\*</sup>, Dongfeng Xue<sup>3,\*</sup>

<sup>1</sup>Shenzhen Institute of Advanced Technology, CAS

<sup>2</sup>University of Science and Technology Beijing

<sup>3</sup>Shenzhen Institute of Advanced Technology, CAS

**Symposium 19: Ionic and Mixed Conducting Ceramics**  
(Location: TBD)

**Session Chair:** Wei Liu, *ShanghaiTech University*

Jung WooChul, *Korea Advanced Institute of Science and Technology*

**08:30 (S19-50) A Novel Facile Strategy to Suppress Sr Segregation or Chromium Poisoning for High-Entropy Stabilized Cathode Materials (Invited)**

Yihan Ling<sup>\*</sup>, Xu Han, Zhe Lv<sup>\*</sup>

<sup>1</sup>*China University of Mining and Technology*

<sup>2</sup>*Harbin Institute of Technology*

**08:55 (S19-51) Dramatic Impact of the TiO<sub>2</sub> Polymorph on the Electrical Properties of ‘Stoichiometric’ Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> Ceramics Prepared by Solid-state Reaction (Invited)**

Fan Yang<sup>1,\*</sup>, Derek C Sinclair<sup>2,\*</sup>

<sup>1</sup>*School of Mechanical Engineering, Shanghai Jiao Tong University*

<sup>2</sup>*Department of Materials Science & Engineering, The University of Sheffield*

**09:20 (S19-52) Improving the Lithium-garnet Interface Stability for High-rate Solid-state Batteries**

Hua Xie; *Institute of Frontier and Interdisciplinary Science, Shandong University*

**09:35 (S19-53) Numerical Study of Current Leakage Characteristics of Proton Conducting Solid Oxide Electrolysis Cell**

Xinxin Wang, Hui Zhu, Yihan Ling<sup>\*</sup>

*China University of Mining and Technology*

**09:50 (S19-54) Novel MnCo<sub>2</sub>O<sub>4</sub> Conductive Ceramics with La<sub>0.6</sub>Sr<sub>0.4</sub>CoO<sub>3</sub> Doped in Gradient for SOFC Cathode Contact Layers**

Haozhen Li<sup>1</sup>, Hao Shi<sup>1</sup>, Chao Ma<sup>2</sup>, Hengyong Tu<sup>1</sup>, Lei Zhu<sup>1,\*</sup>, Zhen Huang<sup>1</sup>

<sup>1</sup>*Key Lab. for Power Machinery and Engineering of M.O.E., Shanghai Jiao Tong University*

<sup>2</sup>*College of Smart Energy, Shanghai Jiao Tong University*

**10:05 Break**

**Session Chair:** Qianli Chen *Shanghai Jiao Tong University*

Yihan Lin, *China University of Mining and Technology*

**10:30 (S19-55) In Operando Probing the Surface Oxygen Exchange Kinetics on Atomically Flat Ceria with Large Biaxial Strain**

Hongyang Su<sup>1</sup>, Jing Chai<sup>2</sup>, Hendrik Bluhm<sup>3</sup>, Yuan-Hua Lin<sup>4</sup>, Liang Zhang<sup>2,\*</sup>, Di Chen<sup>1,\*</sup>

<sup>1</sup>*The Future Laboratory, Tsinghua University*

<sup>2</sup>*School of Vehicle and Mobility, Tsinghua University*

<sup>3</sup>*Fritz Haber Institute of the Max Planck Society*

<sup>4</sup>*School of Materials Science and Engineering, Tsinghua University*

**10:45 (S19-56) Modulating Surface Oxygen Activity for Efficient Electrochemical Oxidative Dehydrogenation Reaction at High Temperature**

Benchi Chen, Xiang Sun, Yan Chen<sup>\*</sup>

*School of Environment and Energy, South China University of Technology*

**11:00 (S19-57) Combination of In Situ Raman and Impedance Spectroscopy Revealing the Surface Proton Transport Mechanism in Nanoporous Oxides**

Zihan Zhao<sup>1</sup>, Xiao Ling<sup>1</sup>, Ruibin Wang<sup>2</sup>, Qianli Chen<sup>1,\*</sup>

<sup>1</sup>*UM-SJTU Joint Institute, Shanghai Jiao Tong University*

<sup>2</sup>*Instrumental Analysis Center of SJTU, Shanghai Jiao Tong University*

**11:15 (S19-58) Performance Analysis of a Metal-supported Intermediate-temperature Solid Oxide Electrolysis Cell**

Mengru Zhang<sup>1,\*</sup>, Enhua Wang<sup>1</sup>, Jingwen Mao<sup>1</sup>, Hewu Wang<sup>1</sup>, Minggao Ouyang<sup>2</sup>, Haoran Hu<sup>2</sup>

<sup>1</sup>*School of Mechanical Engineering, Beijing Institute of Technology*

<sup>2</sup>*State Key Laboratory of Automotive Safety and Energy, Tsinghua University*

**Symposium 23: Geopolymers: Low Energy and Environmentally Friendly Ceramics and Coatings  
(Location: TBD)**

**Session Chair:** Qiu Li, *Wuhan University of Technology*  
Liugang Chen, *Zhengzhou University*

**08:30 (S23-19) Rapid Preparation of Coal Gangue based Geopolymer Foams as Precursors for Porous Ceramics (Invited)**

Chengying Bai<sup>1,\*</sup>, Xinyu Li<sup>1</sup>, Yingjie Qiao<sup>1</sup>, Paolo Colombo  
<sup>1</sup>Harbin Engineering University

**08:55 (S23-20) Preparation, Modification and Strengthening Mechanism of Porous Geopolymer Microspheres (Invited)**

Kaituo Wang  
School of Resources, Environment and Materials, Guangxi University

**09:20 (S23-21) Actual Engineering Application of Ba Modified Geopolymer Foam in Coal Mine Groundwater Ion Adsorption**

Xuhao Zhang<sup>1</sup>, Xiao Zhang<sup>1,\*</sup>  
<sup>1</sup>Research Center of Geotechnical and Structural Engineering, Shandong University

**09:40 (S23-22) Mechanical Properties and Carbonation of Sustainable Geopolymer Concrete Made from Red Mud, Ground Granulated Blast-furnace Slag and Metakaolin with the Seawater and Sea Sand**

Yang Liu<sup>1</sup>, Ning Xie<sup>1,\*</sup>  
<sup>1</sup>Shandong Provincial Key Laboratory of Preparation and Measurement of Building Materials, University of Jinan

**10:00 (S23-23) From Bulk to Porous Structures: Tailoring Monoclinic SrAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub> Ceramic by Geopolymer Precursor Technique**

TongTian Li<sup>1</sup>, Peigang He<sup>1,\*</sup>  
<sup>1</sup>Department of Materials Science, Institute for Advanced Ceramics, Harbin Institute of Technology

**10:20 Break**

**Session Chair:** Chengying Bai, *Harbin Engineering University*  
Kaituo Wang, *Guangxi University*

**10:30 (S23-24) Room-temperature-hardening High-temperature Ceramizable Geopolymer: Design and Application (Invited)**

Zonggang Li<sup>1</sup>, Yuhang Jiang<sup>1</sup>, Xiang Zhu<sup>1</sup>, Wei Chen<sup>1</sup>, Qiu Li<sup>1,\*</sup>  
<sup>1</sup>State Key Laboratory of Silicate Materials for Architecture, Wuhan University of Technology

**10:55 (S23-25) Preparation and Corrosion Resistance of KAISi<sub>2</sub>O<sub>6</sub>-mullite Composite to Lithium Battery Cathode Materials using K-based Geopolymer Binder (Invited)**

Liugang Chen  
School of Materials Science and Engineering, Zhengzhou University

**11:20 (S23-26) Preparation of Geopolymer by Cold Sintering**

Xiang Xiao, Peigang He<sup>\*</sup>  
Institute for Advanced Ceramics, Harbin Institute of Technology

**Symposium 24: Advanced Refractories and Traditional Ceramics  
(Location: TBD)**

**Session Chair:** Quanli Jia, *Zhengzhou University*

**08:30 (S24-54) A Novel Approach to Prepare Graphite Nanoplatelets Exfoliated by Three-roll Milling in Phenolic Resin for Low-carbon MgO-C Refractories (Invited)**

Mingqiang Liu<sup>1</sup>, Juntong Huang<sup>1,\*</sup>, Hongtao Meng<sup>2</sup>, Cheng Liu<sup>2</sup>, Zhaohui Huang<sup>3,\*</sup>, Shaowei Zhang<sup>4,\*</sup>  
<sup>1</sup>The School of Materials Science and Engineering, Nanchang Hangkong University  
<sup>2</sup>Puyang Refractories Group Co., Ltd  
<sup>3</sup>School of Materials Science and Technology, China University of Geosciences (Beijing)  
<sup>4</sup>College of Engineering, Mathematics and Physical Sciences, University of Exeter

**08:55 (S24-55) Structural Regulation and Anisotropic Properties of Lightweight and High-strength Multilayered Mullite Thermal Insulation Materials (Invited)**

Chengliang Ma<sup>1,2,\*</sup>, Xiang Li<sup>1,2</sup>, Si Li<sup>1,2</sup>, Lujun Yang<sup>1,2</sup>, Yuan Kong<sup>1,2</sup>

<sup>1</sup>School of Material Science and Engineering, Zhengzhou University

<sup>2</sup>Henan Key Laboratory of High-Temperature Functional Ceramics, Zhengzhou University

**09:20 (S24-56) Functional Refractory with Superwetting Property (Invited)**

Zhong Huang<sup>1,\*</sup>, Hongjuan Duan<sup>1</sup>, Haijun Zhang<sup>1</sup>, Shaowei Zhang<sup>2</sup>

<sup>1</sup>The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

<sup>2</sup>College of Engineering, Mathematics and Physical Sciences, University of Exeter

**09:45 (S24-57) Effect of Particle Grading on Properties of SiC-CA<sub>6</sub> Composite Refractories**

Yaochen Si<sup>1,2</sup>, Hongxia Li<sup>1,2,\*</sup>, Honggang Sun<sup>2</sup>, Mengqiang Wang<sup>2,3</sup>, Yihao Du<sup>2</sup>, Shixian Zhao<sup>2</sup>

<sup>1</sup>School of materials science and engineering, University of Science and Technology Beijing

<sup>2</sup>State Key Laboratory of Advanced Refractories, Sinosteel Luoyang Institute of Refractories Research Co., Ltd

<sup>3</sup>Henan Key Laboratory of High Temperature Functional Ceramics, School of Materials Science and Engineering, Zhengzhou University

**10:05**

**Break**

**Session Chair: XXX, XXX**

**10:30 (S24-58) Assessment of Thermal-mechanical Stress Damage Mechanisms of Monocarbonate Bonded Alumina-spinel Castables by High-temperature Wedge Splitting Test**

Ning Liao, Yawei Li\*

The Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology

**10:50 (S24-59) Removal of Silicon from Magnesite by Flotation: Influence of Particle Size and Mechanical Mechanism**

Ruinan Zhang<sup>1</sup>, Jingkun Yu<sup>1,\*</sup>, Zhaoyang Liu<sup>2,\*</sup>

<sup>1</sup>School of Metallurgy, Northeastern University

<sup>2</sup>School of Metallurgy, Northeastern University & Key Laboratory for Ecological Metallurgy of Multimetallic Mineral (Ministry of Education)

**Symposium 25: Porous Ceramics: From Innovative Processing to Advanced Industrial Applications (Location: TBD)**

**Session Chair:** In-Hyuck Song, Korea Institute of Materials Science (KIMS)  
Xiaozhen Zhang, Jingdezhen Ceramic University

**08:30 (S25-15) SiC Aerogels with Efficient Microwave Absorption Properties (Keynote)**

Zhixin Cai<sup>1</sup>, Hongjie Wang<sup>1,\*</sup>, Lei Wang<sup>1</sup>, Lei Su<sup>1</sup>, Min Niu<sup>1</sup>

<sup>1</sup>State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University

**09:00 (S25-16) High Temperature Fracture Behavior of Porous Si<sub>3</sub>N<sub>4</sub> Ceramics (Invited)**

Dongxu Yao<sup>1,\*</sup>, Yuping Zeng<sup>1,\*</sup>

<sup>1</sup>Shanghai Institute of Ceramics, Chinese Academy of Sciences

**09:25 (S25-17) A Process-structure-property Model via Physics-based/data-driven Hybrid Methods for Freeze-cast Porous Ceramics in Si<sub>3</sub>N<sub>4</sub>-Si<sub>2</sub>N<sub>2</sub>O Case System**

Xingqi Liao, Zhihua Yang\*, Dechang Jia, Yu Zhou

Institute for Advanced Ceramics, School of Materials Science and Engineering, Harbin Institute of Technology

**09:45 (S25-18) Dual-Functional Porous Ceramics for Enhanced Stability in Interfacial Evaporation**

Lei Chen<sup>1,2</sup>, YuPing Zeng<sup>1,\*</sup>

<sup>1</sup>State Key Laboratory of High-Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences

<sup>2</sup>Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences

**10:15**

**Break**

**Session Chair:** Hongjie Wang, *Xi'an Jiaotong University*  
Dongxu Yao, *Shanghai Institute of Ceramics*  
Qilin Gu, *Nanjing Tech University*

- 10:30 (S25-19) Superhigh Porosity High-entropy ( $Y_{0.25}Ho_{0.25}Yb_{0.25}Lu_{0.25}$ )<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> with Excellent Thermal Stability**  
Zhen Wu  
*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences*
- 10:50 (S25-20) Preparation and Properties of in-situ Whisker Reinforced Porous Ceramics by Low Temperature Sintering**  
Kaihui Hua  
*School of Environment and Civil Engineering, Dongguan University of Technology*
- 11:10 (S25-21) Preparation and Mechanical Properties of SiC Porous Ceramics by Gelcasting**  
Juan Luo<sup>1,2,\*</sup>, Hailin Liu<sup>1</sup>, Yinghan Zheng<sup>1</sup>, Haide Yu<sup>1</sup>, Peiyan Yuan<sup>1</sup>  
<sup>1</sup>*China Building Materials Science Research Institute Co., Ltd.*  
<sup>2</sup>*Xianyang Ceramic Research and Design Institute Co., Ltd.*
- 11:30 (S25-22) Fabrication of SiO<sub>2</sub> Based Porous Ceramics and its Application as Atomizing Device**  
Jiadong Zang<sup>1,\*</sup>, Hua Tan<sup>2</sup>, Haibo Zhang<sup>2</sup>  
<sup>1</sup>*Geekvape Technology Co., Ltd.*,  
<sup>2</sup>*School of Materials Science and Engineering, Huazhong University of Science and Technology*

**Symposium 26: Bioceramics and Ceramics Coatings for Biomedical Applications**  
(Location: TBD)

**Session Chair:** Hang Thu Ta, *Griffith University*  
Bo Su, *University of Bristol*

- 08:30 (S26-24) Developing Bio-inspired Ceramic Composites for Dentistry and Orthopaedics (Keynote)**  
Bo Su  
*Bristol Dental School, University of Bristol*
- 09:00 (S26-25) Multi-functional Composite Nanomaterials for Theranostics of Diseases (Invited)**  
Hang Thu Ta<sup>1,2,3,\*</sup>  
<sup>1</sup>*School of Environment and Science, Griffith University*  
<sup>2</sup>*Queensland Micro and Nanotechnology Centre, Griffith University*  
<sup>3</sup>*Australian Institute for Bioengineering and Nanotechnology, University of Queensland*
- 09:25 (S26-26) Dental Lithium Disilicate Glass-Ceramics: Materials Innovation, Clinical Performance and Future Perspectives (Invited)**  
Saifang Huang  
*School of Materials Science and Engineering, Jiangsu University of Science and Technology*
- 09:50 (S26-27) Exploring the Application of Bioactive Ceramics in Soft Tissue Regeneration**  
Chen Yang<sup>1,\*</sup>, Jiang Chang<sup>1,2,\*</sup>  
<sup>1</sup>*Wenzhou Institute, University of Chinese Academy of Sciences*  
<sup>2</sup>*Shanghai Institute of Ceramics, Chinese Academy of Sciences*

**Symposium 27: Biomimetics and Bioinspired Processing of Advanced Ceramics**  
(Location: TBD)

**Session Chair:** Zengqian Liu, *Institute of Metal Research, Chinese Academy of Sciences*

- 08:30 (S27-20) Bioinspired Materials for Tissue Regeneration (Invited)**  
Chan Du  
*South China University of Technology*
- 08:55 (S27-21) Biomaterialized Functional Plasma Nanomaterials and Biological Applications (Invited)**  
Qihong Zhang  
*Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences*

**09:20 (S27-22) Amphiphilic Curcumin Prodrug Incorporated Biomimetic Calcium Phosphate for Osteosarcoma Inhibition and Osteogenesis**

Mingjie Wang<sup>1</sup>, Dong Xu<sup>2,3,4</sup>, Chang Du<sup>2,3,4,\*</sup>, Yuelian Liu<sup>1,\*</sup>

<sup>1</sup>University of Amsterdam and Vrije Universiteit Amsterdam

<sup>2</sup>School of Materials Science and Engineering, South China University of Technology

<sup>3</sup>National Engineering Research Center for Tissue Restoration and Reconstruction, South China University of Technology

<sup>4</sup>Key Laboratory of Biomedical Materials and Engineering of the Ministry of Education, and Innovation Center for Tissue Restoration and Reconstruction, South China University of Technology

**09:40 (S27-23) 3D Relationship Between Hierarchical Canal Network and Gradient Mineralization of Shark Tooth Osteodentin**

Zhuanfei Liu, Zhaoyong Zou\*

Wuhan University of Technology

**10:00 (S27-24) Mechanically Reinforced Artificial Enamel by Mg<sup>2+</sup>-induced Amorphous Intergranular Phases**

Yidi Li; Jiangnan university

**10:20 Break**

**Session Chair:** Wei Huang, Huazhong University of Science and Technology

**10:30 (S27-25) TBD (Keynote)**

David Kisailus

University of California

**11:00 (S27-26) Overcoming Brittleness through Seashell-Inspired Architectures (Invited)**

Zhen Yin

Tongji University

**11:25 (S27-27) Crystallization Pathways of Amorphous Calcium Phosphate (Invited)**

Haoyue Song, Zhaoyong Zou\*

Wuhan University of Technology

**11:45 (S27-28) Intrafibrillar Calcium Carbonate Mineralization of Electrospinning PVA/Collagen Films with Improved Mechanical and Bioactive Properties**

Yin Liu, Hang Ping\*, Zhengyi Fu\*

Wuhan University of Technology

**Symposium 28: PACRIM Young Scholars Forum**

(Location: TBD)

**Session Chair:** Zezhou Li, Beijing Institute of Technology

**08:30 (S28-43) Nucleation Mechanism and Coating Preparation of Lanthanide High Entropy Carbide Nanocrystals (Invited)**

Fangwei Guo<sup>1,\*</sup>, Wenchen Zhang<sup>1</sup>

<sup>1</sup>Shanghai Key Laboratory of Advanced High-temperature Materials and Precision Forming, School of Materials Science and Engineering, Shanghai Jiao Tong University

**08:55 (S28-44) Heterogeneous Effect in PS-PVD Ceramic Coatings: Thermal Ratchet, Microstructure and Mechanical Properties (Invited)**

Lu Huang<sup>1</sup>, Yanhong Lu<sup>1</sup>, Lin Dong<sup>1</sup>, Meijun Liu<sup>1</sup>, Guanjun Yang<sup>1,\*</sup>, Changjiu Li<sup>1</sup>

<sup>1</sup>Xi'an Jiaotong University

**09:20 (S28-45) Uncover the Multiple Toughening Mechanisms and Thermal Conductivity Evolution of Y<sub>1/6</sub>Yb<sub>5/6</sub>TaO<sub>4</sub>/8YSZ Composite Ceramics (Invited)**

Jiankun Wang<sup>1</sup>, Lin Chen<sup>1</sup>, Tao Su<sup>1</sup>, Mengdi Gan<sup>1</sup>, Baihui Li<sup>1</sup>, Jing Feng<sup>1,\*</sup>

<sup>1</sup>Kunming University of Science and Technology School of Materials Science and Engineering

**09:45 (S28-46) Enhanced Shear Strength of Cu/AlN/Cu Composite Materials with the Double-interface Design**

Binhua Xiang, Fei Chen\*; School of Materials and Microelectronics, Wuhan University of Technology

**10:15 Break**

**Session Chair:** Fangwei Guo, *Shanghai Jiao Tong University*

**10:30 (S28-47) Dynamic response of advanced metallic materials (Invited)**

Ze Zhou Li; *Beijing Institute of Technology*

**10:55 (S28-48) High-specific Surface-area  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Nanoparticles Synthesised by High-Energy Ball-Milling Method and Applications in Nanocrystalline Ceramics (Invited)**

Lu Li<sup>1</sup>, Hongbing Yang<sup>2</sup>, Ji Ma<sup>2</sup>, Jianguo Li<sup>2,\*</sup>

<sup>1</sup>*School of Mechanical and Electrical Engineering, Gansu Agricultural University*

<sup>2</sup>*Institute of Materials Science and Engineering, School of Materials and Energy, Lanzhou University*

**11:20 (S28-49) Construction of a Ceramic Coating with Low Residual Stress on C/CA Composites for Thermal Protection at Ultra-high Temperatures**

Meng Yan<sup>1,2</sup>, Chenglong Hu<sup>1,\*</sup>, Sufang Tang<sup>1,\*</sup>

<sup>1</sup>*Shi-Changxu Innovation Center for Advanced Materials, Institute of Metal Research, Chinese Academy of Sciences*

<sup>2</sup>*School of Materials Science and Engineering, University of Science and Technology of China*

**Symposium 29: PACRIM Enterprise Forum  
(Location: TBD)**

**Session Chair:** Yanfeng Gao, *Shanghai University*

**08:30 (S29-13) Recommender System for Discovery of Inorganic Crystals (Keynote)**

Jiangtao Li; *Technical Institute of Physics and Chemistry, Chinese Academy of Sciences*

**09:00 (S29-14) Disc ceramic membranes: Opportunities and Challenges (Invited)**

Qibing Chang<sup>1,\*</sup>, Ruqiang Yang<sup>1</sup>, Yulong Yang<sup>1</sup>

<sup>1</sup>*Materials of Science and Engineering, Jingdezhen Ceramic University*

**09:25 (S29-15) A New Ultra-UHV Gas Internal Insulation Material - Silicon Nitride Composite Ceramics**

Yiming Zhang<sup>1</sup>, Dong Hou<sup>1</sup>, Zongchao Xu<sup>1</sup>, Jun Ji<sup>1</sup>, Jingkai Nie<sup>1,\*</sup>, Yu Han<sup>1</sup>

<sup>1</sup>*Institute of New Electrical Material, State Grid Smart Grid Research Institute Co., Ltd*

**09:45 Break**

**Session Chair:** Jiangtao Li, *Technical Institute of Physics and Chemistry, CAS*

**10:30 (S29-16) Small Particles, Big Business (Keynote)**

Yanfeng Gao; *Shanghai University*

**11:00 (S29-17) Technology Ways and Industrial Application of Insulating Oxide Coating on Titanium Dioxide Ultrafine Powder (Invited)**

Qinghong Zhang<sup>1,2,\*</sup>

<sup>1</sup>*State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University*

<sup>2</sup>*Engineering Research Center of Advanced Glasses Manufacturing Technology, MOE, Donghua University*

**11:25 (S29-18) Fabrication and Properties of SiC Nanofibers and Silicon-based Ceramic Fibers (Invited)**

Jianjun Chen; *Zhejiang Sci-Tech University*