

# Monday, August 28, 2023

## Plenary session

Main Hall, 1st Floor

**Chair: J. Tatami (Yokohama National University, Japan)**

### 8:50 Opening Remarks

F. Wakai (local chair)

R. K. Bordia (conference chair)

S. Kitaoka (The Ceramic Society of Japan, The Engineering Ceramics Division)

### 9:10

#### Accelerated sintering through rapid heating: evidence, mechanisms and prospects

R. I. Todd\*<sup>1</sup>

1. University of Oxford, Department of Materials, UK

### 10:10

#### Break

### 10:30

#### Fabrication of advanced ceramics by electric current activated/assisted sintering

Y. Sakka\*<sup>1</sup>

1. National Institute for Materials Science, Japan

### 11:30

#### Sintering in additive manufacturing technologies

E. A. Olevsky\*<sup>1</sup>

1. San Diego State University, US

## Technical sessions

Room A, International Conference Room, 5th Floor

**Chair: C. D. Haines (US Army DEVCOM - Army Research Laboratory, US)**

### 13:30

#### [1A-I01] Spark plasma sintering of stabilized zirconia: strategies to design ceramics with tailored properties (Invited)

C. Estournes\*<sup>1</sup>

1. CIRIMAT (UT3 Paul Sabatier - CNRS), France

### 14:00

#### [1A-I02] From flash sintering to ultrafast sintering without an electric field and electrochemically controlled microstructural evolution (Invited)

J. Luo\*<sup>1</sup>

1. University of California San Diego, US

### 14:30

#### [1A-O03] Optimization of spark plasma sintering regimes and tool design to manufacture near-net-shape cutting inserts from WC/Ti powder mixtures

D. Garbiec\*<sup>1</sup>; J. Wiśniewski<sup>1</sup>; A. M. Laptev<sup>1</sup>; M. Wiśniewska<sup>1</sup>; W. Krzyżaniak<sup>1</sup>

1. Lukasiewicz Research Network, Poznan Institute of Technology, Poland

### 14:50

#### [1A-O04] From research to industry: applications and latest developments in the field of FAST/SPS-sintering

J. W. Huber\*<sup>1</sup>

1. Fritsch GmbH, Germany

**15:10**  
**Break**

**Chair: J. Luo (University of California San Diego, US)**

**15:30**

**[1A-I05] Advancing sintering from Edisonian to high-throughput materials discovery (Invited)**

C. D. Haines<sup>1</sup>

1.US Army DEVCOM - Army Research Laboratory, US

**16:00**

**[1A-O06] FAST/SPS for industry 4.0: optimize your process, from tool design to the reduction of thermal gradients, thanks to multiphysics modeling**

R. Epherre<sup>1</sup>; A. Fregeac<sup>1</sup>; Y. Beynet<sup>1</sup>; J. Mackie<sup>1</sup>

1.NORIMAT, France

**16:20**

**[1A-O07] Contactless flash sintering: enabling rapid densification of ceramic coatings**

C. Grimley<sup>1</sup>; C. Green<sup>1</sup>; G. Jones<sup>1</sup>; S. Bostanchi<sup>1</sup>; J. Minkiewicz<sup>1</sup>; D. Pearmain<sup>1</sup>

1.Lucideon, UK

**16:40**

**[1A-O08] Rapid densification of thermoelectric telluride compounds by flash sintering**

M. Mikami<sup>1</sup>; H. Miyazaki<sup>2</sup>; Y. Nishino<sup>2</sup>

1.National Institute of Advanced Industrial Science and Technology, Japan

2.Nagoya Institute of Technology, Japan

Room B, 4th Floor

**Chair: G-J. Zhang (Donghua University, China)**

**13:30**

**[1B-I01] Grain boundary atomic structures and GB migration mechanism in Al<sub>2</sub>O<sub>3</sub> (Invited)**

Y. Ikuhara<sup>1,2,3</sup>

1.University of Tokyo, Japan

2.Fine Ceramics Center, Japan

3.Tohoku University, AIMR, Japan

**14:00**

**[1B-I02] Analysis of the sintering of ceramic powder systems by in situ synchrotron nano-tomography (Invited)**

A. Venkatesh<sup>1</sup>; D. Bouvard<sup>1</sup>; P. Lhuissier<sup>1</sup>; J. Villanova<sup>2</sup>

1.Univ. Grenoble Alpes, France

2.European Synchrotron Research Facility, France

**14:30**

**[1B-O03] Grain boundary segregation in oxide ceramics studied using atomic-resolution STEM-EDS**

B. Feng<sup>1</sup>; C. Yang<sup>1</sup>; N. Shibata<sup>1,2</sup>; Y. Ikuhara<sup>1,2</sup>

1.The University of Tokyo, Japan

2.Japan Fine Ceramics Center, Japan

**14:50**

**[1B-O04] Heterogeneous evolution of pore distribution during sintering of a submicron alumina powder visualized by using synchrotron X-ray CT**

G. Okuma<sup>1</sup>

1.National Institute for Materials and Science, Japan

**15:10**

**Break**

**Chair: Y. Ikuhara (University of Tokyo, Japan)**

**15:30**

**[1B-I05] Reactive synthesis and sintering of high-entropy ceramics (Invited)**

G-J. Zhang<sup>1</sup>

1.Donghua University, China

**16:00**

**[1B-O06] Fast grain growth phenomenon in high-entropy ceramics: a case study in rare-earth hexaaluminates**

J-X. Liu<sup>1</sup>; L. Zhou<sup>1</sup>; T-Z. Tu<sup>1</sup>; Y. Wu<sup>1</sup>; G-J. Zhang<sup>1</sup>

1.Donghua University, China

**16:20**

**[1B-O07] Effect of talc particle size on sintering and pyroplastic deformation of alumina-strengthened porcelain**

D. Hao<sup>1</sup>; T. Akatsu<sup>1</sup>; N. Kamochi<sup>2</sup>

1.Saga University, Japan

2.Saga Ceramics Research Laboratory, Japan

Room C, 4th Floor

**Chair: L. Fulanovic (Technische Universitat Darmstadt, Germany)**

**13:30**

**[1C-I01] High throughput, ultra-fast laser sintering to establish machine-learning based microstructure-property relationships (Invited)**

X. Geng<sup>1</sup>; J. Tang<sup>2</sup>; S. Sarkar<sup>1</sup>; B. Sheridan<sup>1</sup>; D. Li<sup>3</sup>; Y. Shi<sup>4</sup>; J. Tong<sup>1</sup>; H. Xiao<sup>2</sup>; F. Peng<sup>1</sup>; R. K. Bordia<sup>1</sup>

1.Clemson University, Materials Science and Engineering, US

2.Clemson University, Electrical and Computer Engineering, US

3.Advanced Manufacturing LLC, US

4.Rensselaer Polytechnic Institute, Materials Science and Engineering, US

**14:00**

**[1C-I02] Laser sintering of oxide ceramics (Invited)**

T. Kimura<sup>1</sup>

1.Japan Fine Ceramics Center, Japan

**14:30**

**[1C-O03] Ultrafast high-temperature sintering of refractory ceramics**

M. Biesuz<sup>1</sup>; E. De Bona<sup>1</sup>; V. M. Sglavo<sup>1</sup>

1. University of Trento, Italy

**14:50**

**Break**

**Chair: T. Kimura (Japan Fine Ceramics Center, Japan)**

**15:30**

**[1C-I05] Blacklight sintering of oxide ferroelectric ceramics (Invited)**

L. Fulanovic<sup>1</sup>; M. Schere<sup>1</sup>; T. Fromling<sup>1</sup>; L. Porz<sup>1</sup>; J. Rödel<sup>1</sup>

1.Technische Universitat Darmstadt, Germany

**16:00**

**[1C-I06] Reactive sintering of Al-Ti-C blended powders to provide anchor structure on aluminum substrate for bonding with resin (Invited)**

M. Kobashi<sup>1</sup>; S. Zhou<sup>1</sup>; A. Suzuki<sup>1</sup>

1.Nagoya University, Japan

**16:30**

**[1C-O07] 3YSZ polycrystals fabricated by ultrafast high-temperature sintering**

R. Murakami<sup>1</sup>; B. Feng<sup>1</sup>; K. Matsu<sup>1</sup>; N. Shibata<sup>1,2</sup>; Y. Ikuhara<sup>1,2</sup>

1.The University of Tokyo, Japan

2.Japan Fine Ceramics Center, Japan

Room D, 4th Floor

**Chair: J. Pan (University of Leicester, School of Engineering, UK)**

**13:30**

**[1D-I01] Another view on the effect of grain rearrangement on shear viscosity and viscous Poisson's ratio in sintering (Invited)**

F. Delannay<sup>1</sup>; L. Delannay<sup>1</sup>

1.UCLouvain, Belgium

**14:00**

**[1D-I02] Computer simulation study on the process of powder compaction, sintering and grain growth (Invited)**

H. Matsubara<sup>1</sup>

1. Tohoku University, Japan

**14:30**

**[1D-O03] Using artificial neural network as constitutive laws in finite element analysis of sintering**

P. Polak<sup>1</sup>; V. Ghantasala<sup>1</sup>; B. Saleem<sup>1</sup>; M. Xia<sup>1</sup>; R. He<sup>1</sup>; S. Wang<sup>1</sup>; J. Pan<sup>1</sup>

1. University of Leicester, UK

**14:50**

**[1D-O04] Simulation of densification behavior of nano-powder in final sintering stage**

B-N. Kim<sup>1</sup>; K. Morita<sup>1</sup>; T. S. Suzuki<sup>1</sup>; J-G. Li<sup>1</sup>

1. National Institute for Materials Science, Japan

**15:10**

**Break**

**Chair: F. Delannay (UCLouvain, Belgium)**

**15:30**

**[1D-I05] Machine learning and digital twin for sintering of advanced ceramics (Invited)**

J. Pan<sup>1</sup>; V. R. Ghantasala<sup>1</sup>; P. Polak<sup>1</sup>; B. Saleem<sup>1</sup>; M. Xia<sup>1</sup>; R. He<sup>1</sup>; S. Wang<sup>1</sup>

1. University of Leicester, School of Engineering, UK

2. University of Leicester, School of Computing and Mathematical Sciences, UK

**16:00**

**[1D-O06] Machine learning and densification-based finite element analysis of sintering**

B. Saleem<sup>1</sup>; P. Polak<sup>1</sup>; V. Ghantasala<sup>1</sup>; R. He<sup>1</sup>; M. Xia<sup>1</sup>; J. Pan<sup>1</sup>

1. University of Leicester, UK

**16:20**

**[1D-O07] Continuum scale shrinkage predictions of additively manufactured ceramics**

B. Lester<sup>1</sup>; D. Cillessen<sup>1</sup>; K. Strong<sup>1</sup>

1. Sandia National Laboratories, US

**16:40**

**[1D-O08] Investigating densification during sintering with phase-field and molecular dynamics simulations**

M. Seiz<sup>1</sup>; H. Hierl<sup>1</sup>; B. Nestler<sup>1</sup>

1. Karlsruhe Institute of Technology, Germany

## Poster session

Lobby Hall, 2nd Floor

### [1P-01] Fabrication of reaction-formed graphite/SiC composites with outstanding self-lubrication

R. Xue\*<sup>1</sup>; J. Wang<sup>1</sup>

1.Xi'an Jiaotong University, China

### [1P-02] Effect of junction surface anisotropy and interface roughness on mechanical properties for reaction bonding 2.5D Cf/C composites

J. Wang\*<sup>1</sup>; P. Yang<sup>1</sup>; Z. Wang<sup>1</sup>

1.Xi'an Jiaotong University, China

### [1P-03] Fabrication of Si<sub>3</sub>N<sub>4</sub> ceramics with high thermal conductivity and flexural strength via novel two-step gas-pressure sintering

J. Hu<sup>1</sup>; Z. Shi\*<sup>1</sup>; J. Yang<sup>1</sup>

1. Xi'an Jiaotong University, China

### [1P-04] Sintering composite electrolyte of yttria-doped bismuth oxide and yttria-stabilized zirconia for solid oxide fuel cell

L. Zhang\*<sup>1</sup>; C. Xia<sup>1</sup>

1.University of Science and Technology of China, China

### [1P-05] Fabrication of transparent SiO<sub>2</sub> glass components by DLP-type 3D printing system using interparticle photo-cross-linkable suspensions

Y. Yamanoi\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>

1.Yokohama National University, Japan

### [1P-06] A Study of sintering phenomena on material extrusion (ME)-based soft magnetic composites (SMCs)

T. Im\*<sup>1</sup>; J. Ahn<sup>1</sup>; J. Kim<sup>1</sup>; K. Lee<sup>1</sup>; J. Kim<sup>1</sup>; J-S. Lee<sup>1</sup>; C. S. Lee<sup>1</sup>

1.Hanyang university, Department of Materials and Chemical Engineering, Republic of Korea

### [1P-07] Binder jet 3D printing of 17-4PH steel using aqueous inorganic binder

S. Ji\*<sup>1</sup>; H-J. Kim<sup>1</sup>; H. Kim<sup>1</sup>; S. Bae<sup>1</sup>

1.SFS Co., Ltd., Republic of Korea

### [1P-08] Investigation of the formation conditions of the mixed phase of the TbCu<sub>7</sub> and the ThMn<sub>12</sub> type structures in (Sm,Zr)<sub>1.04-1.26</sub>(Fe,Co)<sub>11.3</sub>Ti<sub>0.7-0.8</sub> sintered magnets

K. Hirata\*<sup>1</sup>; K. Taniguchi<sup>1</sup>; T. Kuno<sup>1</sup>; K. Kobayashi<sup>1</sup>; H. Fujiwara<sup>1</sup>

1.Ritsumeikan University, Japan

### [1P-09] FeSi<sub>2</sub> thermoelectric materials prepared by mechanical alloying and spark plasma sintering

T. Saito\*<sup>1</sup>; R. Asakawa<sup>1</sup>

1.Chiba Institute of technology, Japan

### [1P-10] Synthesis and sintering behavior of bismuth sodium titanate (Bi<sub>0.5</sub>Na<sub>0.5</sub>TiO<sub>3</sub>) lead-free ferroelectric ceramics

I. Takiul<sup>1</sup>; K. Kim<sup>1</sup>; H. Hwang\*<sup>1</sup>

1.Inha University, Republic of Korea

### [1P-11] Cold sintered temperature stable xLi<sub>2</sub>MoO<sub>4</sub>-(1-x)(LiBi)<sub>0.5</sub>MoO<sub>4</sub> microwave dielectric ceramics

X. Li\*<sup>1</sup>; X. Xue<sup>1</sup>; H. Wang<sup>2</sup>; J. Guo<sup>1</sup>

1.Xi'an Jiaotong University, China

2.Southern University of Science and Technology, China

### [1P-12] The effect of heteroatom substitution on electrical properties of spinel oxides for the application to temperature sensor

S. Mhin<sup>1</sup>; Y. So\*<sup>1</sup>; H. Jeon<sup>1</sup>; G-S. An<sup>1</sup>

1.Kyonggi University, Republic of Korea

### [1P-13] Regenerative spinel oxide catalysts for efficient production of energy from biomass

S. Yamaguchi\*<sup>1</sup>; M. Ootani<sup>2</sup>; T. Ozaki<sup>1</sup>; T. Suyama<sup>1</sup>

1.Osaka Research Institute of Industrial Science and Technology, Japan

2.Kansai Catalyst Co., Ltd., Japan

### [1P-14] Investigation on the spark plasma sintering characteristics of titanium-zirconia-niobium-tantalum-molybdenum high entropy alloys for bio applications

M. L. Lepule\*<sup>1,2</sup>; P. A Olubambi<sup>1</sup>

1.University of Johannesburg, South Africa

2.Vaal University of Technology, South Africa

**[1P-15] 3-dimensional visualization of inhomogeneous internal structure evolution in Al<sub>2</sub>O<sub>3</sub> ceramics by in-situ OCT observation during sintering**

M. Izawa\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>

1.Yokohama National University, Japan

**[1P-16] Rapid synthesis of Ni-rich layered positive electrode materials for lithium-ion batteries via microwave heating**

Y. Koshika\*<sup>1</sup>; H. Kaneda<sup>1</sup>; Y. Furuichi<sup>1</sup>

1.Sumitomo Metal Mining Co., Ltd., Battery Research Laboratory, Japan

**[1P-17] Microstructure and mechanical properties of Mo<sub>2</sub>NiB<sub>2</sub>-Ni based cermets fabricated via a calcination process**

E. Takahashi\*<sup>1</sup>; T. Ichikawa<sup>1</sup>; R. Sato<sup>1</sup>; J. Watanabe<sup>1</sup>; A. Hayashi<sup>1</sup>; T. Nishimura<sup>2</sup>; S. Maruyama<sup>1</sup>

1.Tokyo City University, Japan

2.National Institute for Materials Science, Japan

**[1P-18] Physical properties and microwave dielectric properties of carbon nanotube-containing alumina composite ceramic material**

T. Segawa\*<sup>1</sup>

1.Japan Atomic Energy Agency, Japan

**[1P-19] The relationship between crystal structures and thermal properties for high-entropy oxides fabricated by spark plasma sintering**

Y. Arai\*<sup>1</sup>; R. Inoue<sup>1</sup>; G. Okuma<sup>2</sup>; K. Shimoda<sup>2</sup>; T. Nishimura<sup>2</sup>; H. Kakisawa<sup>2</sup>

1.Tokyo University of Science, Japan

2.National Institute for Materials Science, Japan

**[1P-20] Improvement of volume resistivity of AlN ceramics by controlling particle size distribution of sintering aids**

K. Kotsugai\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>

1.Yokohama National University, Japan

**[1P-21] Microstructure and mechanical properties of the harmonic structure Al<sub>1.8</sub>CrCuFeNi<sub>2</sub> high entropy alloys**

K. Shigematsu\*<sup>1</sup>; M. Kawabata<sup>1</sup>; T. Kuno<sup>1</sup>; K. Ameyama<sup>1</sup>; H. Fujiwara<sup>1</sup>

1.Ritsumeikan University, Japan

**[1P-22] Effect of particle size of raw Y<sub>2</sub>O<sub>3</sub> powders on sintering behavior and transparency of Y- $\alpha$ -SiAlON:Ce<sup>3+</sup> ceramics**

T. Ito\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>; T. Takahashi<sup>2</sup>

1.Yokohama National University, Japan

2.Kanagawa Institute of Industrial Science and Technology, Japan

**[1P-23] Microstructure and elevated temperature mechanical properties of equiatomic AlCoCrFeNi high entropy alloy**

R. Honda\*<sup>1</sup>; R. Morozumi<sup>1</sup>; M. Kawabata<sup>1</sup>; T. Kuno<sup>1</sup>; K. Ameyama<sup>1</sup>; H. Fujiwara<sup>1</sup>

1.Ritsumeikan University, Japan

**[1P-24] Influence of sintering condition on bending strength and chemical composition of grain boundary in Si<sub>3</sub>N<sub>4</sub> ceramics**

K. Shimada\*<sup>1,2</sup>; T. Nogawa<sup>1</sup>; S. Takano<sup>1</sup>; K. Okishiro<sup>1</sup>; T. Kawata<sup>1</sup>; K. Anai<sup>1</sup>; J. Tatami<sup>2</sup>

1.Proterial, Ltd., Japan

2.Yokohama National University, Japan

**[1P-25] Densification and microstructural development of multimodal powder feedstock for powder-based net-shape technology**

J-P. Choi\*<sup>1</sup>; M-K. Jung<sup>1</sup>; P-H. Lee<sup>1</sup>; T. Ha<sup>1</sup>; J-H. Yu<sup>2</sup>; J-S. Lee<sup>3</sup>

1.Korea Institute of Machinery & Materials, South Korea

2.Korea Institute of Materials Science, South Korea

3.Hanyang University, South Korea

**[1P-26] Effect of milling on the microstructure and mechanical properties of SiC prepared by carburization of Si-SiC mixture**

H. Kwon\*<sup>1</sup>

Jeonbuk National University, Republic of Korea

**[1P-27] Evaluation of crystal microstructure at fiber cross section in SiC fiber-bonded ceramics**

T. Ozaki\*<sup>1</sup>; H. Tsuda<sup>2</sup>

1.ORIST, Japan

2.Osaka Metropolitan University, Japan

- [1P-28] Comparative study on Fe and Fe-TaC hard materials: densification, microstructural evolution, and mechanical properties**  
 B-S. Park\*<sup>1</sup>; J-H. Lee<sup>1</sup>; H-K. Park<sup>1</sup>; J-C. Park<sup>1</sup>  
 1.Korea Institute of Industrial Technology, South Korea
- [1P-29] Property evaluation of aluminum-graphite composites fabricated by spark plasma sintering: thermal conductivity, microstructure, and mechanical properties**  
 B-S. Park\*<sup>1</sup>; J-H. Lee<sup>1</sup>; H-K. Park<sup>1</sup>; S-Y. Choi<sup>1</sup>; J-C. Park<sup>1</sup>  
 1.Korea Institute of Industrial Technology, South Korea
- [1P-30] Sintering properties of the premixed aluminium alloy powder**  
 Y-J. Kim\*<sup>1</sup>; S. Yang<sup>1</sup>; K-B. Kim<sup>1</sup>  
 1.Korea Institute of Materials Science, Republic of Korea
- [1P-31] Influence of composition and preparation process on the hardness of Ni-TiB<sub>2</sub> composites prepared by SPS**  
 Q. Li\*<sup>1</sup>; K. Matsugi<sup>1</sup>  
 1.Hiroshima University, Japan
- [1P-32] Packing density and sinterability enhancement via a novel powder assembly technique**  
 K. Fujishiro\*<sup>1</sup>; A. Yokoi<sup>1</sup>; G. Kawamura<sup>1</sup>; A. Matsuda<sup>1</sup>; W-K. Tan<sup>1</sup>; H. Muto<sup>1</sup>  
 1.Toyohashi University of Technology, Japan
- [1P-33] Deep machine learning for modelling grain-boundary diffusion**  
 M. Xia\*<sup>1</sup>; J. Pan<sup>1</sup>; P. Polak<sup>1</sup>; B. Saleem<sup>1</sup>; J. Shepherd<sup>1</sup>; R. He<sup>1</sup>  
 1.Leicester University, UK
- [1P-34] Effect of powder size distribution on the densification behaviour of alumina ceramics sintering: phase-field study**  
 M. Nishimura\*<sup>1</sup>; A. Nakazawa<sup>1</sup>; S. Sakane<sup>1</sup>; T. Takaki<sup>1</sup>  
 1.Kyoto Institute of Technology, Japan
- [1P-35] High-performance computing of phase-field simulations for material microstructures formed during sintering**  
 A. Nakazawa\*<sup>1</sup>; M. Nishimura<sup>1</sup>; S. Sakane<sup>1</sup>; T. Takaki<sup>1</sup>  
 1.Kyoto Institute of Technology, Japan
- [1P-36] Kinetic Monte Carlo (KMC) simulation of sintering of nickel oxide-yttria stabilized zirconia (NiO-YSZ) composites**  
 Z. Zhong<sup>1</sup>; S. Zhou\*<sup>1</sup>; X. Liu<sup>1</sup>; Z. Yan<sup>1</sup>; S. Hara<sup>2</sup>; N. Shikazono<sup>3</sup>  
 1.Harbin Institute of Technology, Shenzhen, China  
 2.Chiba Institute of Technology, Japan  
 3.The University of Tokyo, Institute of Industrial Science, Japan
- [1P-37] Computational efficient modeling of supersolidus liquid phase sintering in multi-component alloys for ICME applications**  
 T. T. Molla\*<sup>1</sup>  
 1.The University of Melbourne, Australia
- [1P-38] Spark plasma sintering of HEB-milled Si<sub>3</sub>N<sub>4</sub> under Air, Ar and N<sub>2</sub> atmosphere**  
 M. Ohyanagi<sup>1</sup>; M. Inoue\*<sup>1</sup>; K. Shirai<sup>1</sup>; T. Imai<sup>1</sup>  
 1.Ryukoku University, Japan
- [1P-39] Densification of Zr<sub>2</sub>SP<sub>2</sub>O<sub>12</sub> by cold sintering process**  
 T. Aburano\*<sup>1</sup>; N. Arimitsu<sup>1</sup>; Y. Mochizuki<sup>1</sup>; S. Matsushita<sup>1</sup>; A. Nakaijma<sup>1</sup>; T. Isobe<sup>1</sup>  
 1.Tokyo Institute of Technology, Japan
- [1P-40] High pressure spark plasma sintering of MgAl<sub>2</sub>O<sub>4</sub> synthesized by high energy mechano-chemical reaction**  
 M. Ohyanagi<sup>1</sup>; S. Shimazu\*<sup>1</sup>; K. Shirai<sup>1</sup>; T. Imai<sup>1</sup>  
 1.Ryukoku University, Japan
- [1P-41] Low-temperature densification of TiB<sub>2</sub> using Ti-based ball-milled additive**  
 Y. Jimba\*<sup>1,2</sup>; S. Kondo<sup>2</sup>; Y. Okuno<sup>3</sup>; H. Yu<sup>2</sup>; R. Kasada<sup>2</sup>  
 1.Tohoku University, Graduate School of Engineering, Japan  
 2.Tohoku University, Institute for Materials Research, Japan  
 3.Kyoto University, Institute for Integrated Radiation and Nuclear Science, Japan

**[1P-42] Low-temperature densification of titanium by SPS under cyclic high-pressure**

N. Manabe\*<sup>1</sup>; A. S Suzuki<sup>2</sup>; M. Ninagawa<sup>1</sup>; H. Wakabayashi<sup>1</sup>; K. Niinobe<sup>3</sup> H. Kitagawa<sup>1</sup>

1. Shimane University, Japan

2. S. S. Alloy Co., Ltd., Japan

3. National Institute of Technology, Matsue College, Japan

**[1P-43] Fabrication for TiB<sub>2</sub> based transition metal diborides using SPS**

T. Ichikawa\*<sup>1</sup>; E. Takahashi<sup>1</sup>; R. Tashiro<sup>1</sup>; A. Momozawa<sup>1</sup>; R. Telle<sup>2</sup>; S. Maruyama<sup>1</sup>

1. Tokyo City University, Japan

2. RWTH Aachen University, Germany

**[1P-44] Spark plasma sintering of 8YSZ-stainless steel composite membrane for oxygen production by air separation**

A. Eksatit\*<sup>1</sup>; K. Ishii<sup>1</sup>; K. Kobayashi<sup>1</sup>; K. Morita<sup>1</sup>; T. S. Suzuki<sup>1</sup>; T. Uchikoshi<sup>1</sup>

1. National Institute for Materials Science, Japan

**[1P-45] Diffusion behavior of cubic ZrO<sub>2</sub> polycrystal under direct and alternative current (DC and AC) fields**

N. Orimoto\*<sup>1</sup>; K. Nambu<sup>1</sup>; H. Yoshida<sup>3</sup>; K. Soga<sup>1</sup>; K. Morita<sup>1,2,4</sup>

1. Tokyo University of Science, Japan

2. Kyushu University, Japan

3. The University of Tokyo, Japan

4. National Institute for Material Science, Japan

**[1P-46] Effect of current/field conditions on grain growth behavior of cubic ZrO<sub>2</sub>**

A. Ishii\*<sup>1</sup>; K. Nambu<sup>2</sup>; K. Soga<sup>1</sup>; K. Morita<sup>1,2,3</sup>

1. Tokyo University of Science, Japan

2. Kyushu University, Japan

3. National Institute for Materials Science (NIMS), Japan

**[1P-47] Temperature distribution of spark plasma sintering with control of sample structure**

T. Misawa\*<sup>1</sup>; Y. Kawakami<sup>2</sup>; M. Kawahara<sup>3</sup>

1. Saga University, Japan

2. National Institute of Technology, Kurume College, Japan

3. Kawahara SPS Technical Office, Japan

**[1P-48] Flash healing of Vickers microcracks formed on (001) surface of cubic zirconia single crystals**

S. Kayukawa\*<sup>1</sup>; T. Tokunaga<sup>1</sup>; A. Kodaira<sup>1</sup>; K. Morita<sup>2</sup>; T. Yamamoto<sup>1</sup>

1. Nagoya University, Japan

2. National Institute for Materials Science, Japan

**[1P-49] Microstructural evolution in rapid densification of yttria stabilized zirconia during fast firing**

R. Tsuchida\*<sup>1</sup>; M. Yoshida<sup>1</sup>

1. Gifu University, Japan

**[1P-50] Microstructure and mechanical properties of zirconia-alumina composites prepared by flash sintering under alternating electric field**

K. Kido\*<sup>1</sup>; M. Yoshida<sup>1</sup>

1. Gifu University, Japan



# Tuesday, August 29, 2023

## Technical sessions

Room A, International Conference Room, 5th Floor

**Chair: M. Nanko (Nagaoka University of Technology, Japan)**

**8:50**

**[2A-I01] Flash sintering of metal-like ceramics (Invited)**

V. M. Sglavo<sup>\*1</sup>

1. University of Trento - Department of Industrial Engineering, Italy

**9:20**

**[2A-O02] Field-assisted sintering of load-bearing Ti<sub>6</sub>Al<sub>4</sub>V-Barium titanate piezoelectric scaffolds for bone tissue engineering**

A. Riaz<sup>\*1</sup>; C. Polley<sup>1</sup>; E. Burkel<sup>1</sup>; H. Seitz<sup>1</sup>

1. University of Rostock, Chair of Microfluidics, Germany

**9:40**

**[2A-O03] Spark plasma sintering of high energy ball milled WC/Ti powder mixtures as an effective route for manufacturing of hard composites**

J. Wiśniewski<sup>\*1</sup>; W. Krzyżaniak<sup>1</sup>; M. Marczewski<sup>1</sup>; G. Adamek<sup>2</sup>; D. Garbiec<sup>1</sup>

1. Poznan Institute of Technology, Lukaszewicz Research Network, Poland

2. Poznan University of Technology, Institute of Materials Science and Engineering, Poland

**10:00**

**[2A-O04] Effect of FAST/SPS process parameters on microstructure evolution and development of mechanical properties of (Ti,Mo)C reinforced Ti matrix composites**

R. Rubach<sup>\*1</sup>; P. Figiel<sup>2</sup>; A. Biedunkiewicz<sup>2</sup>; D. Garbiec<sup>1</sup>

1. Poznan Institute of Technology, Lukaszewicz Research Network, Poland

2. West Pomeranian University of Technology, Poland

**10:20**

**Break**

**Chair: V. M. Sglavo (University of Trento - Department of Industrial Engineering, Italy)**

**10:40**

**[2A-I05] Synthesis of copper-MAX-phases composites by spark plasma sintering (Invited)**

J. Erauw<sup>\*1</sup>; V. Dupont<sup>2</sup>; M. Colla<sup>1</sup>; P. J. Jacques<sup>1</sup>

1. UCLouvain, Institute of Mechanics, Materials and Civil Engineering, IMAP, Belgium

2. Belgian Ceramic Research Centre (BCRC), Belgium

**11:10**

**[2A-I06] Pulsed electric current sintering of Ti<sub>2</sub>AlC ceramics (Invited)**

M. Nanko<sup>\*1</sup>

1. Nagaoka University of Technology, Japan

**11:40**

**[2A-O07] Fabrication of Al<sub>2</sub>O<sub>3</sub>-GAP eutectic ceramics with a fine anisotropic microstructure using a flash event**

Y. Aoki<sup>\*1</sup>; H. Masuda<sup>1</sup>; H. Yoshida<sup>1</sup>

1. The University of Tokyo, Japan

**12:00**

**[2A-O08] Effect of the absorbed power on the rapid microwave sintering of ceramic and composite materials**

S. V. Egorov<sup>1</sup>; A. G. Ereemeev<sup>1</sup>; V. V. Kholoptsev<sup>1</sup>; I. V. Plotnikov<sup>1</sup>; K. I. Rybakov<sup>\*1</sup>; A. A. Sorokin<sup>1</sup>

1. Russian Academy of Sciences, Institute of Applied Physics, Russian Federation

**Chair: T. Yamamoto (Nagoya University, Japan)**

**13:20**

**[2A-I09] Rapid pressure-less sintering of structural and functional ceramics (Invited)**

K. Macá<sup>\*1</sup>

1. Brno University of Technology, Czech Republic

**13:50**

**[2A-I10] Diffusional mass transport phenomena under flash event in oxide ceramics (Invited)**

H. Yoshida<sup>1</sup>; A. Nakamoto<sup>1</sup>; K. Nambu<sup>2</sup>; H. Masuda<sup>1</sup>; K. Morita<sup>3</sup>; T. Yamamoto<sup>4</sup>

1. The University of Tokyo, Japan
2. Kyushu University, Japan
3. National Institute for Materials Science, Japan
4. Nagoya University, Japan

**14:20**

**[2A-O11] Electrical-field assisted flash joining of ceramic oxides**

Y. Wang<sup>1</sup>; J. Xia<sup>2</sup>; K. Ren<sup>1</sup>

1. Beijing Institute of Technology, China
2. Xi'an University of Posts and Telecommunications, China

**14:40**

**[2A-O12] Flash sintering of Y<sub>2</sub>O<sub>3</sub> under an AC electric field**

K. Nambu<sup>1,2</sup>; K. Morita<sup>1,2</sup>; H. Masuda<sup>3</sup>; H. Yoshida<sup>3,4</sup>

1. Kyushu University, Japan
2. National Institute for Material Science, Japan
3. The University of Tokyo, Japan
4. The University of Tokyo, Institute of Engineering Innovation, Next Generation Zirconia Social Cooperation Program, Japan

**15:00**

**Break**

**Chair: Karel Maca (Brno University of Technology)**

**15:20**

**[2A-I13] Formation of electric field-induced point defects by flash events (Invited)**

T. Yamamoto<sup>1</sup>

1. Nagoya University, Japan

**15:50**

**[2A-I14] Effect of direct and alternative current (DC and AC) on deformation behavior of zirconia ceramics (8Y-CSZ) (Invited)**

K. Morita<sup>1,2,3</sup>

1. National Institute for Materials Science (NIMS), Japan
2. Kyushu University, Japan
3. Chiba Institute of Technology, Japan

**16:20**

**[2A-O15] Defect characterization associated with DC and AC flash sintering of non-doped Y<sub>2</sub>O<sub>3</sub> polycrystals**

H. Masuda<sup>1</sup>; A. Nakamoto<sup>1</sup>; K. Nambu<sup>2,3</sup>; H. Yoshida<sup>1,4</sup>

1. The University of Tokyo, Japan
2. Kyushu University, Japan
3. National Institute for Materials Science, Japan
4. The University of Tokyo, Institute of Engineering Innovation, Next Generation Zirconia Social Cooperation Program, Japan

**16:40**

**[2A-O16] Healing behavior of microcracks in sintered body under nanosecond pulsed electric field**

H. Saito<sup>1</sup>; K. Yoshida<sup>1</sup>; A. Okawa<sup>2</sup>; K. Nagao<sup>3</sup>; K. Niihara<sup>1</sup>; T. Nakayama<sup>1</sup>

1. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan
2. Tohoku University, Japan
3. National Institute of Technology, Oyama College, Japan

Room B, 4th Floor

**Chair: R. H.R. Castro (Lehigh University, US)**

**8:50**

**[2B-I01] Powder-less processing of nano-structured ceramics: Possible fabrication of various advanced ceramics from solutions and/or melts (Invited)**

M. Yoshimura<sup>1</sup>

1. National Cheng Kung University, Taiwan

**9:20**

**[2B-O02] Utilization of amorphous  $\text{Li}_{1.5}\text{Al}_{0.5}\text{Ge}_{1.5}(\text{PO}_4)_3$  for ionic conductivity improvement of solid electrolyte by hot pressing.**

R. Z. Putra<sup>\*1</sup>; A. Mitani<sup>1</sup>; J. Kato<sup>1</sup>; M. Yoshida<sup>2</sup>

1.FDK Corporation, Japan

2.Gifu University, Japan

**9:40**

**[2B-O03]  $\text{Al}_2\text{O}_3$  as an effective sintering inhibitor for improving the stability of the  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$  cathode of solid oxide fuel cell**

Z. Pan<sup>\*1</sup>; C. Hu<sup>1</sup>; Z. Yan<sup>1</sup>

1.Harbin Institute of Technology, China

**10:00**

**[2B-O04] Glass-ceramic sintering for NASICON electrode and electrolytes**

K. Hayashi<sup>\*1</sup>; S. Jia<sup>1</sup>; B. Xun<sup>1</sup>; S. Ohno<sup>1</sup>; H. Akamatsu<sup>1</sup>

Kyushu university, Japan

**10:20**

**Break**

**Chair: R. K. Bordia (Clemson University)**

**10:40**

**[2B-I05] Thermodynamics and kinetics of densification of nanocrystalline oxides (Invited)**

R. H.R. Castro<sup>\*1</sup>

1.Lehigh University, US

**11:10**

**[2B-I06] Designing and sintering nanocrystalline materials with ultra-uniform microstructure (Invited)**

Y. Dong<sup>\*1</sup>

1.Tsinghua University, China

**11:40**

**[2B-O07] Dispersion, particle-packing structure, and sintering of surfactant-mediated  $\text{ZrO}_2$  and  $\text{ZrO}_2\text{-Ni}$  suspensions**

W. J. Tseng<sup>\*1</sup>; C-J. Tsai<sup>1</sup>; C-N. Chen<sup>1</sup>

1.National Chung Hsing University, Taiwan

**Chair: H. Gu (Shanghai University, China)**

**13:20**

**[2B-I09] Recent progress of silicon nitride ceramics (Invited)**

T. Ohji<sup>\*1,2</sup>; J. Tatami<sup>1</sup>

1.Yokohama National University (YNU), Japan

2.National Institute of Advanced Industrial Science and Technology (AIST), Japan

**13:50**

**[2B-I10] Formation/migration of faceted boundaries and related microstructural evolution in polycrystals (Invited)**

S. L. Kang<sup>\*1</sup>

1.Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

**14:20**

**[2B-O11] Exsolution and coarsening in metal-oxide systems**

I. Reimanis<sup>\*1</sup>

1.Colorado School of Mines, US

**14:40**

**[2B-O12] A new limit to accelerated solid-state sintering**

Y. Naunheim<sup>\*1</sup>; C. A. Schuh<sup>1</sup>

1.Massachusetts Institute of Technology, Department of Materials Science and Engineering, US

**15:00**

**Break**

**Chair: I. Reimanis (Colorado School of Mines, US)**

**15:20**

**[2B-I13] The core-rim structures as ubiquitous chemical phase transformation for sintering of structural and functional ceramics (Invited)**

H. Gu<sup>\*1</sup>

1. Shanghai University, China

**15:50**

**[2B-I14] Sintering mechanism and phase transformation in yttria stabilized zirconia (Invited)**

K. Matsui<sup>\*1</sup>; H. Yoshida<sup>1</sup>; Y. Ikuhara<sup>1</sup>

1. The University of Tokyo, Japan

**16:20**

**[2B-O15] Low sintering shrinkage porous mullite ceramics with high strength and low thermal conductivity via foam-gelcasting**

J. Xu<sup>\*1</sup>; L. Lin<sup>1</sup>; W. Hengchang<sup>1</sup>; G. Feng<sup>1</sup>

1. Northwestern Polytechnical University, China

**16:40**

**[2B-O16] Role of nickel addition on sintering and microstructure control of chromium-alloyed steel powder**

A.B. Nagaram<sup>\*1</sup>; M. V. Sundaram<sup>2</sup>; Y. Cao<sup>1</sup>; M. Andersson<sup>2</sup>; H. Magnusson<sup>3</sup>; E. Hryha<sup>1</sup>; L. Nyborg<sup>1</sup>

1. Chalmers University of Technology, Sweden

2. Hoganas AB, Sweden

3. Swerim AB, Sweden

Room C, 4th Floor

**Chair: S. Kitaoka (Japan Fine Ceramics Center, Japan)**

**8:50**

**[2C-I01] Invention of polycrystalline optical ceramics exceeding high quality single crystal (Invited)**

A. Ikesue<sup>\*1</sup>

1. World Lab. Co., Japan

**9:20**

**[2C-O02] Development of hafnium-based transparent oxide ceramics for radiation detection**

S. Kurosawa<sup>\*1,2</sup>; K. Harata<sup>1</sup>; K. Fujioka<sup>2</sup>

1. Tohoku University, Japan

2. Osaka University, Japan

**9:40**

**[2C-O03] Improved transparency in aluminum nitride (AlN) ceramics as high thermal conductivity materials for optical applications**

X. Wu<sup>1</sup>; Y. Kodera<sup>\*2,1</sup>; J. E. Garay<sup>1</sup>

1. UC San Diego, US

2. Ryukoku University, Japan

**10:00**

**[2C-O04] Composition optimization using sintered Ce/Cr co-doped red oxide scintillator for dose-rate monitoring system for the decommissioning of nuclear power plant**

D. Matsukura<sup>\*1,2</sup>; S. Kurosawa<sup>2,3,4</sup>; C. Fujiwara<sup>1,2</sup>; A. Yamaji<sup>2,3</sup>; Y. Ohashi<sup>2,3</sup>; Y. Yokota<sup>2</sup>; K. Kamada<sup>2,3,2,3</sup>; H. Sato<sup>2,3</sup>; S. Toyoda<sup>2,3</sup>; M. Yoshino<sup>2,3</sup>; T. Hanada<sup>2</sup>; R. Murakami<sup>2</sup>; T. Horiai<sup>2,3</sup>

1. Tohoku University Graduate School of Engineering, Japan

2. Tohoku University, Institute for Materials Research, Japan

3. Tohoku University, New Industry Creation Hatchery Center, Japan

4. Osaka University, Institute of Laser Engineering, Japan

5. C & A Corporation, Japan

**10:20**

**Break**

**Chair: Yoshio Sakka (NIMS, Japan)**

**10:40**

**[2C-I05] Powder-free processing of advanced ceramics with multifunctional properties (Invited)**

R. P. Riedel<sup>\*1</sup>

1.TU Darmstadt, Germany

**11:10**

**[2C-O06] Effects of dopant on mass transfer along grain boundaries in polycrystalline alumina film under oxygen potential gradients at high temperatures**

S. Kitaoka<sup>\*1</sup>; T. Matsudaira<sup>1</sup>; T. Ogawa<sup>1</sup>; M. Takeuchi<sup>2</sup>; N. Shibata<sup>2,1</sup>; Y. Ikuhara<sup>2,1</sup>

1.Japan Fine Ceramics Center, Japan

2.The University of Tokyo, Japan

**11:30**

**[2C-O07] Near-zero sintering shrinkage of porcelain due to anorthite crystallization**

T. Akatsu<sup>\*1</sup>; D. Hao<sup>1</sup>; N. Kamochi<sup>2</sup>; M. Inada<sup>3</sup>; A. Shiraishi<sup>2</sup>

1.Saga University, Japan

2.Saga Ceramics Research Laboratory, Japan

3.Kyushu University, Japan

**11:50**

**[2C-O08] The role of inversion domain boundary on volume resistivity in MgO-doped AlN**

D. Kato<sup>\*1,2</sup>; B. Feng<sup>2</sup>; T. Nishi<sup>1</sup>; Y. Noritake<sup>1</sup>; T. Hishida<sup>1</sup>; N. Shibata<sup>2,4</sup>; K. Matsunaga<sup>3</sup>; Y. Ikuhara<sup>2,4</sup>

1.Niterra Co., Ltd., Japan

2.The University of Tokyo, Japan

3.Nagoya University, Japan

4.Japan Fine Ceramics Center, Japan

**Chair: M. Sokol (Tel-Aviv University, Israel)**

**13:20**

**[2C-I09] A novel PM process to breakthrough the paradox of strength, ductility and toughness (Invited)**

K. Ameyama<sup>\*1</sup>

1.Ritsumeikan University, Japan

**13:50**

**[2C-O10] Sintering behavior of high entropy cerate nanoparticles synthesized by polyol process**

F. Li<sup>\*1</sup>; G. Zhang<sup>2</sup>; H. Abe<sup>1</sup>

1.Osaka University, Joining and Welding Research Institute, Japan

2. Donghua University, Institute of Functional Materials, China

**14:10**

**[2C-O11] Role of shell structure in high temperature deformation of a CrMnFeCoNi high entropy alloy with harmonic structure**

S. Hosogi<sup>\*1</sup>; S. Onoue<sup>1</sup>; T. Kuno<sup>1</sup>; M. Kawabata-Ota<sup>1</sup>; H. Fujiwara<sup>1</sup>; K. Ameyama<sup>1</sup>

1.Ritsumeikan University, Japan

**14:30**

**[2C-O12] The electrical waveform behavior caused by applying nanosecond pulsed electric field conditions to sintered body**

H. Saito<sup>\*1</sup>; K. Yoshida<sup>1</sup>; K. Nagao<sup>2</sup>; K. Niihara<sup>1</sup>; T. Nakayama<sup>1</sup>

1.Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan

2.National Institute of Technology, Oyama College, Japan

**14:50**

**Break**

**Chair: Y. Kodera (Ryukoku University, Japan)**

**15:20**

**[2C-I13] Powder synthesis and controllable sintering of sulfide optical ceramics (Invited)**

Y. Wu<sup>\*1</sup>

1.Alfred University, US

**15:50**

**[2C-I14] MXene/alumina nanocomposites enabled by field-assisted sintering (Invited)**

M. Sokol<sup>1</sup>; B. Ratzker<sup>1</sup>; O. Messer<sup>1</sup>

1.Tel-Aviv University, Israel

**16:20**

**[2C-O15] Synthesis of a pseudo-single-crystal mesoporous TiO<sub>2</sub> thin film and evaluation of its photocatalytic activity**

N. Suzuki<sup>1</sup>; C. Terashima<sup>1</sup>; A. Fujishima<sup>1</sup>

1.Tokyo University of Science, Japan

**16:40**

**[2C-O16] Effects of layer expansion, impurity, and edge of kaolinite on the solid-state reaction with calcium carbonate**

S. Machida<sup>1</sup>; K. Katsumata<sup>1</sup>; A. Yasumori<sup>1</sup>

1.Tokyo University of Science, Japan

Room D, 4th Floor

**Chair: K. Shinagawa (Kyushu University, Japan)**

**8:50**

**[2D-I01] Mesoscale kinetic Monte Carlo simulation of sintering: model, parameter calibration, validation and applications (Invited)**

Z. Yan<sup>1</sup>; S. Zhou<sup>1</sup>; X. Liu<sup>1</sup>; S. Hara<sup>2</sup>; N. Shikazono<sup>3</sup>

1.Harbin Institute of Technology, China

2.Chiba Institute of Technology, Japan

3.The University of Tokyo, Japan

**9:20**

**[2D-O02] Phase-field study of densification and grain growth during sintering**

T. Takaki<sup>1</sup>; A. Nakazawa<sup>1</sup>; M. Nishimura<sup>1</sup>; S. Sakane<sup>1</sup>

1.Kyoto Institute of Technology, Japan

**9:40**

**[2D-O03] An interfacially consistent phase-field model for solid-state sintering without artificial void generation**

Q. Yang<sup>1,2</sup>; Y. Gao<sup>1</sup>; A. Kirshtein<sup>3</sup>; Q. Zhen<sup>1</sup>; C. Liu<sup>4</sup>

1.Shanghai University, US

2.Zhejiang Laboratory, China

3.Tufts University, US

4.Illinois Institute of Technology, US

**10:00**

**[2D-O04] Implementing nonlinear constitutive laws in ABAQUS for sintering deformation**

R. He<sup>1</sup>; P. Polak<sup>1</sup>; B. Saleem<sup>1</sup>; M. Xia<sup>1</sup>; J. Pan<sup>1</sup>

1.University of Leicester, UK

**10:20**

**Break**

**Chair: Z. Yan (Harbin Institute of Technology, China)**

**10:40**

**[2D-I05] Analysis of sintering behavior of blended elemental powders by MPFM/DEM combined method (Invited)**

K. Shinagawa<sup>1</sup>

1.Kyushu University, Japan

**11:10**

**[2D-I06] Grain refinement and sintering induced by electric fields through phase-field simulations (Invited)**

D. Gómez García<sup>1</sup>; J. A. Bejarano-Palma<sup>1</sup>; B. M. Moshtaghioun<sup>1</sup>

1.University of Seville, Department of Condensed Matter Physics, Spain

**11:40**

**[2D-O07] Monte Carlo simulation for liquid phase sintering of hard materials**

S. Terasaka<sup>1,2</sup>; S. Matsumoto<sup>3</sup>; H. Matsubara<sup>1,2</sup>; T. Kimura<sup>2</sup>

1. Tohoku University, Japan

2. Japan Fine Ceramics Center, Japan

3. Murata Manufacturing Co., Ltd., Japan

**12:00**

**[2D-O08] Microstructural evolution in solid-state sintering processes: multiphysics approach and numerical modeling**

J. Cumbunga<sup>1,2</sup>; S. Abboudi<sup>1</sup>; D. Chamoret<sup>1</sup>; S. Gomes<sup>1</sup>

1. ICB COMM UMR 6303, CNRS, Univ. Bourgogne Franche Comte, UTBM, France

2. Agostinho Neto University, Faculty of Engineering, Angola

**Chair: D. Gómez García (University of Seville, Spain)**

**13:20**

**[2D-I09] Exploring chemical pathways and kinetics for designed electroceramics by spark plasma sintering and solvent assisted sintering processes (Invited)**

C. Elissalde<sup>1</sup>; U. Chung<sup>1</sup>; E. Martin<sup>1</sup>; L. Villatte<sup>1</sup>; Y. Denis<sup>1</sup>; C. C. Chavarria<sup>2</sup>; M. Maglione<sup>1</sup>; H. Debéda<sup>2</sup>; S. Bordère<sup>3</sup>; C. Estournès<sup>4</sup>; M. Suchomei<sup>1</sup>; G. Philippot<sup>1</sup>; G. Goglio<sup>1</sup>

1. University of Bordeaux, CNRS, Bordeaux INP, ICMCB, UMR 5026, France

2. University of Bordeaux, IMS Laboratory, UMR 5218, France

3. CNRS, University of Bordeaux, Arts et Metiers Institute of Technology, Bordeaux INP, INRAE, I2M Bordeaux, UMR5295, France

4. CIRIMAT, CNRS-INP-UPS, University Toulouse 3 - Paul Sabatier, France

**13:50**

**[2D-I10] Reactive consolidation of tough, deformation-resistant tantalum monoboride, Zr-Ta multiboride, and medium entropy Zr-Ta-Nb diboride ceramics (Invited)**

O. Vasykiv<sup>1</sup>; H. Borodianska<sup>1</sup>; D. Demirskyi<sup>1,2</sup>

1. National Institute for Materials Science, Japan

2. Tohoku University, Japan

**14:20**

**[2D-O11] Thermodynamic stability and mechanical evaluation of YSZ-WC composite ceramics fabricated by two sintering methods**

J-H. Choi<sup>1</sup>; S. Kim<sup>1</sup>; M-S. Nam<sup>1</sup>; S-M. Lee<sup>1</sup>; S-S. Ryu<sup>1</sup>; I-H. Jung<sup>1</sup>; S. Nahm<sup>1</sup>

1. Korea institute of Ceramic Engineering & Technology (KICET), Republic of Korea

**14:40**

**[2D-O12] Microstructure and high-temperature mechanical properties of WC-Co/high-speed steel composite with harmonic structure**

A. Koiso<sup>1</sup>; T. Kuno<sup>1</sup>; M. Kawabata-Ota<sup>1</sup>; H. Fujiwara<sup>1</sup>; K. Ameyama<sup>1</sup>

1. Ritsumeikan University, Japan

**15:00**

**Break**

**Chair: O. Vasykiv (National Institute for Materials Science, Japan)**

**15:20**

**[2D-I13] Densification of diamond-high entropy alloy composites (Invited)**

Y. Liu<sup>1</sup>; Y. Gao<sup>1</sup>; T. Qiu<sup>1</sup>; B. Liu<sup>1</sup>; J. Feng<sup>2</sup>

1. Central South University, China

2. Sino-Powder Superhard Materials Co., China

**15:50**

**[2D-I14] Structural and nanomechanical studies on spark plasma sintered aluminium-based high entropy alloy (Invited)**

P. A. Olubambi<sup>1</sup>, H. R. Makin<sup>1</sup>, O. O. Ayodele<sup>1</sup>

1 University of Johannesburg, South Africa

**16:20**

**[2D-O15] Microstructure change during high temperature deformation of a harmonic structure designed CrMnFeCoNi high entropy alloy**

S. Onoue<sup>\*1</sup>, T.Kuno<sup>1</sup>; M. Kawabata-Ota<sup>1</sup>; H. Fujiwara<sup>1</sup>; K.Ameyama<sup>1</sup>  
1.Ritsumeikan University, Japan

**16:40**

**[2D-O16] Effects of mechanical milling temperature on shell/core creation in harmonic structure design**

D. Matsuzaka<sup>\*1</sup>; T. Kuno<sup>1</sup>; M. Kawabata-Ota<sup>1</sup>; H. Fujiwara<sup>1</sup>; K. Ameyama<sup>1</sup>  
1.Ritsumeikan University, Japan



# Wednesday, August 30, 2023

## Technical sessions

Room A, International Conference Room, 5th Floor

**Chair: C. Manière (CRISMAT laboratory, France)**

**8:50**

**[3A-I01] Phase stability and reaction rates during oxyacetylene torch testing of TaC-HfC solid solutions prepared by spark plasma sintering (Invited)**

O. A. Graeve<sup>\*1</sup>; M. Sanchez<sup>1</sup>; K. A. Acord<sup>2,3</sup>; S. Frueh<sup>2</sup>; L. Rueschhoff<sup>2</sup>

1.University of California San Diego, US

2.Air Force Research Laboratory, US

3.The National Academies, US

**9:20**

**[3A-I02] Spark plasma sintering of thermoelectric materials (Invited)**

J-F. Li<sup>\*1</sup>

1.Tsinghua University, China

**9:50**

**[3A-O03] Densification, grain growth, and mechanical performance of selected ultra-high temperature carbides**

D. Demirskyi<sup>\*1</sup>; O. Vasylykiv<sup>2</sup>

1.Tohoku University, Japan

2.National Institute for Material Science (NIMS), Japan

**10:10**

**[3A-O04] Manufacturing of tungsten boride sputtering targets using industrial-scale spark plasma sintering**

M. Wiśniewska<sup>\*1</sup>; M. Marczewski<sup>1</sup>; A. M. Laptev<sup>1</sup>; A. Krawczyńska<sup>2</sup>; M. Lewandowska<sup>2</sup>; T. Mościcki<sup>3</sup>; D. Garbiec<sup>1</sup>

1.Poznan Institute of Technology, Lukasiewicz Research Network, Poland

2.Warsaw University of Technology, Faculty of Materials Science and Engineering, Poland

3.Polish Academy of Sciences, Institute of Fundamental Technological Research, Poland

**10:30**

**Break**

**Chair: O. A. Graeve, (University of California San Diego, US)**

**10:50**

**[3A-I05] New spark plasma sintering approaches coupled with 3D printing for complex shapes production (Invited)**

C. Manière<sup>\*1</sup>; C. Estournès<sup>2</sup>; E. A. Olevsky<sup>3</sup>

1.CRISMAT laboratory, France

2.CIRIMAT laboratory, France

3.San Diego State University, US

**11:20**

**[3A-O06] Electric field assisted sintering of gadolinium doped ceria for electrochemical devices**

L. Balice<sup>\*1</sup>; T. P. Mishra<sup>1</sup>; A. Dash<sup>1,2</sup>; M. Bram<sup>1</sup>; O. Guillon<sup>1</sup>

1.Forschungszentrum Juelich GmbH, IEK 1, Germany

2.Technical University of Denmark DTU, Denmark

**11:40**

**[3A-O07] Rapid densification kinetics of 3 mol% yttria-stabilized zirconia during current-surge stage of flash sintering**

K. Ren<sup>\*1</sup>; D. Liu<sup>2</sup>; J. Liu<sup>2</sup>; Y. Wang<sup>1</sup>

1.Beijing Institute of Technology, China

2.Southwest Jiaotong University, China

**12:00**

**[3A-O08] 3D printing of metal and ceramic injection molding feedstocks using composite extrusion modeling and post-processing of the printed parts**

A. Riaz<sup>\*1</sup>; T. Dreier<sup>1</sup>; P. Töllner<sup>1</sup>; A. Ahrend<sup>1</sup>; H. Seitz<sup>1</sup>

1.University of Rostock, Chair of Microfluidics, Germany

## Room B, 4th Floor

**Chair: Y. Ozaki (Kyushu University, Japan)**

**8:50**

**[3B-I01] Using shrink-fitting concept to attack the cracking nature of silicon carbide matrix containing non-shrinking particles during sintering (Invited)**

Y-W. Kim<sup>\*1</sup>

1. University of Seoul, Republic of Korea

**9:20**

**[3B-O02] Research on fabrication of silicon carbide ceramics with very low residual silicon content through reaction sintering**

J. Yang<sup>\*1</sup>

1. Xi'an Jiaotong University, China

**9:40**

**[3B-O03] Spark plasma sintering of FeB-Ni cemented carbides and their mechanical properties**

Y. Guo<sup>\*1</sup>; K. Matsugi<sup>1</sup>; Y. Choi<sup>1</sup>; Z. Xu<sup>2</sup>; J. Yu<sup>2</sup>

1. Hiroshima University, Japan

2. Yanshan University, China

**10:00**

**[3B-O04] In-situ synthesis of TiC-Ti<sub>3</sub>SiC<sub>2</sub> composites by SPS**

J. Qu<sup>\*1</sup>; K. Matsugi<sup>1</sup>; Y. Choi<sup>1</sup>; Z. Xu<sup>2</sup>; J. Yu<sup>2</sup>

1. Hiroshima University, Japan

2. Yanshan University, China

**10:20**

**Break**

**Chair: Y-W. Kim (University of Seoul, Republic of Korea)**

**10:50**

**[3B-I05] Application of persistent homology to pore configurations in sintered bodies (Invited)**

Y. Ozaki<sup>\*1</sup>

1. Kyushu University, Japan

**11:20**

**[3B-O06] Numerical predication of correlation between mechanical properties and microstructures of porous media**

S. Hara<sup>\*1</sup>

1. Chiba Institute of Technology, Japan

**11:40**

**[3B-O07] Comparison of sintered alumina made from spray dried (SD) and spray freeze granulation drying (SFGD) granules**

N. Kondo<sup>\*1</sup>; A. Shimamura<sup>1</sup>; M. Hotta<sup>1</sup>; J. Tatami<sup>2</sup>; S. Kawaguchi<sup>3</sup>

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

2. Yokohama National University, Japan

3. Preci Co., Ltd., Japan

**12:00**

**[3B-O08] The sintering process for making space bricks?**

N. Gupta<sup>\*1</sup>; V. Dawara<sup>1</sup>; A. Kumar<sup>1</sup>; K. Viswanathan<sup>1</sup>

1. Indian Institute of Science Bangalore, Department of Mechanical Engineering, India

## Room C, 4th Floor

**8:50**

**Chair: C. A. Randall (The Pennsylvania State University, US)**

**[3C-I01] Spark plasma sintering of Si<sub>3</sub>N<sub>4</sub> with transformation of amorphous to beta phase through alpha phase (Invited)**

M. Ohyanagi<sup>\*1</sup>; K. Shirai<sup>1</sup>; T. Imai<sup>1</sup>

1. Ryukoku University, Japan

**9:20**

**[3C-O02] SPS sintering with new functions, giving new possibilities to achieve new results**

L. P. Helldahl<sup>1</sup>; B. M. Mihiretie<sup>1</sup>; S. Suzuki<sup>2</sup>

1.Kagaku Analys AB, Sweden

2.Suga Co. Ltd, Japan

**9:40**

**[3C-O03] Application of high pressure in the spark plasma sintering processes**

A. Largeteau<sup>1</sup>; M. Prakasam<sup>1</sup>; F. Balima<sup>1</sup>; J. Guignard<sup>1</sup>; T. Yokozawa<sup>2</sup>

1.Univ. Bordeaux, CNRS, Bordeaux INP, ICMCB, France

2.Suga Co., Ltd., Japan

**10:00**

**[3C-O04] Preparation of unidirectional porous AlN ceramics via the combination of freeze casting and combustion synthesis**

Z. Shi<sup>1</sup>; Z. Wei<sup>1</sup>; J. Hu<sup>1</sup>

1. Xi'an Jiaotong University, China

**10:20**

**Break**

**Chair: M. Ohyanagi (Ryukoku University, Japan)**

**10:50**

**[3C-I05] Utilizing cold sintering in the design and integration of new functional composite materials (Invited)**

C. A. Randall<sup>1</sup>

1.The Pennsylvania State University. US

**11:20**

**[3C-O06] Cold sintering and thermal properties of ZSM-5 zeolite ceramics**

X-M. Chen<sup>1</sup>; F-W. Zhou<sup>1</sup>; J-Z. Shi<sup>1</sup>; X-L. Zhu<sup>1</sup>

1.Zhejiang University, China

**11:40**

**[3C-O07] Low-temperature sintering behavior of  $\text{Li}_{6.4}\text{La}_3\text{Zr}_{1.4}\text{Ta}_{0.6}\text{O}_{12}$  solid electrolyte nanoparticles**

T. Fuchigami<sup>1</sup>; H. Yamamoto<sup>1</sup>; N. Tanibata<sup>1</sup>; M. Nakayama<sup>1</sup>; K. Kakimoto<sup>1</sup>

1.Nagoya Institute of Technology, Japan

**12:00**

**[3C-O08] Preparation of dielectric oxynitride  $\text{BaTaO}_2\text{N}$  dense ceramic films through electrophoretic deposition**

H. Takeuchi<sup>1</sup>; D. Miyamoto<sup>1</sup>; Y. Masubuchi<sup>1</sup>; M. Higuchi<sup>1</sup>; K. Ishii<sup>2</sup>; T. Uchikoshi<sup>2</sup>

1.Hokkaido University, Japan

2.National Institute for Materials Science, Japan

Room D, 4th Floor

**Chair: W. Jiang (Donghua University, China)**

**8:50**

**[3D-I01] Challenges in additive manufacturing of multimodal metal powder mixtures (Invited)**

J-S. Lee<sup>1</sup>; T. Im<sup>1</sup>; H. Oh<sup>1</sup>; J. Pyo<sup>1</sup>; J-P. Choi<sup>2</sup>; C. S. Lee<sup>1</sup>

1.Hanyang University, Republic of Korea

2.Department of 3D Printing, Korea Institute of Machinery and Materials (KIMM), Republic of Korea

**9:20**

**[3D-I02] Multiphysics simulation of flash sintering (Invited)**

K. Koutoati<sup>1</sup>; J. Chaix<sup>1</sup>; D. Bouvard<sup>1</sup>; M. Lachal<sup>1</sup>; T. Fabre<sup>1</sup>; R.Bouchet<sup>1</sup>; M. Steil<sup>1</sup>

1. Université Grenoble Alpes, France

**9:50**

**[3D-O03] Thermal-structural simulation of ceramics with multiplicative decomposition in deformation and master sintering curve**

C. Natsumeda<sup>1</sup>; K. Matsui<sup>1</sup>; T. Yamada<sup>1</sup>; J. Tatami<sup>1</sup>

1.Yokohama National University, Japan

**10:10**

**[3D-O04] Deformation under gravity of stainless-steel binder jetted components during the sintering step**

A. Cabo Rios<sup>1,2</sup>; E. Olevsky<sup>2,3</sup>; E. Hryha<sup>1</sup>; M. Persson<sup>4</sup>

1.Chalmers University of Technology, Sweden

2.San Diego State University, US

3.University of California, US

4.Digital Metal AB, Sweden

**10:30**

**Break**

**Chair: J-S. Lee (Hanyang University, Republic of Korea)**

**10:50**

**[3D-I05] Spark plasma sintering of mesoporous powders (Invited)**

W. Jiang<sup>1</sup>; L. Wang<sup>1</sup>; M. Wang<sup>1</sup>

1.Donghua University, China

**11:20**

**[3D-O06] Strategies to sinter lead-free KNN piezoceramics for energy harvesting MEMS at low temperature**

U-C. Chung<sup>1</sup>; C. Castro<sup>2</sup>; B. Plano<sup>2</sup>; M. Maglione<sup>1</sup>; C. Elissalde<sup>1</sup>; H. Debéda<sup>2</sup>

1.University of Bordeaux, CNRS, Bordeaux INP, ICMCB, UMR 5026, France

2.University of Bordeaux, IMS Laboratory, UMR 5218, France

**11:40**

**[3D-O07] Low temperature sintering of tetragonal zirconia: interplay between processes, chemistry and densification**

E. Martin<sup>1</sup>; M. Rua Taborda<sup>1</sup>; U-C. Chung<sup>1</sup>; S. Fourcade<sup>1</sup>; C. Labrugère<sup>3</sup>; D. Michau<sup>1</sup>; G. Clermont<sup>2</sup>; M. Dourges<sup>2</sup>; M. Duttine<sup>1</sup>; F. Mauvy<sup>1</sup>; C. Elissalde<sup>1</sup>; G. Goglio<sup>1</sup>

1.Bordeaux University/CNRS/Institute of Condensed Matter Chemistry of Bordeaux (ICMCB, UMR 5026), France

2.Bordeaux University/CNRS/Institute of Molecular Sciences, France

3.Bordeaux University/CNRS/Placamat, France

# Thursday, August 31, 2023

## Technical sessions

Room A, International Conference Room, 5th Floor

**Chair: S. Tanaka (Nagaoka University of Technology, Japan)**

**8:50**

**[4A-I01] Integrated 3D-printing and spark plasma sintering of transparent ceramics (Invited)**

E. Torresani\*<sup>1</sup>; C. Park<sup>1</sup>; C. Haines<sup>2</sup>; D. Martin<sup>3</sup>; E. A. Olevsky<sup>1</sup>

1.San Diego State University, US

2.US Army DEVCOM Army Research Laboratory, US

3.US Army DEVCOM Armaments Center, US

**9:20**

**[4A-O02] Fabrication of transparent fluorapatite laser ceramics by spark plasma sintering**

H. Furuse\*<sup>1</sup>; K. Morita<sup>1</sup>; T. S. Suzuki<sup>1</sup>; B-N. Kim<sup>1</sup>

1.National Institute for Materials Science, Japan

**9:40**

**[4A-O03] Preparation of Al<sub>2</sub>O<sub>3</sub>/YAG composite by electric field treatment**

J. Liu\*<sup>1</sup>; L. Chen<sup>1</sup>; S. Yao<sup>1</sup>; D. Liu<sup>1</sup>

1.Southwest Jiaotong University, China

**10:00**

**[4A-O04] Carbon contamination during pulsed electric current sintering of alumina**

Y. Ogashiwa\*<sup>1</sup>; Y. Ueno<sup>1</sup>; Y-L. Kuo<sup>1</sup>; M. Nanko<sup>1</sup>

1.Nagaoka University of Technology, Japan

**10:20**

**Break**

**Chair: E. Torresani (San Diego State University, US)**

**10:40**

**[4A-I05] Translucent crystal-oriented barium-sodium niobate ceramics prepared by shaping in rotated magnetic field and subsequent HIP sintering (Invited)**

S. Tanaka\*<sup>1</sup>

1.Nagaoka University of Technology, Japan

**11:10**

**[4A-I06] Transparent tetragonal zirconia prepared through nanoparticle gel-casting and stress assisted sintering below 1000°C (Invited)**

M. Yoshida\*<sup>1</sup>; M. Hada<sup>1</sup>; O. Sakurada<sup>1</sup>; K. Morita<sup>2</sup>

1.Gifu University, Japan

2.National Institute for Materials Science, Japan

**11:40**

**[4A-O07] Microstructure control and high transparency of gas-pressure sintered  $\alpha$ -SiAlON ceramics by adding various rare-earth oxides**

K. Aminaka\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>; T. Takahashi<sup>2</sup>

1.Yokohama National University, Japan

2.Kanagawa Institute of Industrial Science and Technology, Japan

**12:00**

**[4A-I08] Rigid body motion of multiple particles in solid-state sintering (Invited)**

F. Wakai\*<sup>1</sup>

1.National Institute for Materials Science, Japan

## Room B, 4th Floor

**Chair: M. Yoshimura (National Cheng Kung University, Taiwan)**

**8:50**

**[4B-I01] *in-situ* OCT observation of evolution of internal structure of alumina during sintering (Invited)**

J. Tatami\*<sup>1</sup>; F. Sakamoto<sup>1</sup>; M. Tajima<sup>1</sup>; M. Izawa<sup>1</sup>; M. Iijima<sup>1</sup>; T. Takahashi<sup>2,1</sup>

1. Yokohama National University, Japan

2. Kanagawa Institute of Industrial Science and Technology, Japan

**9:20**

**[4B-O02] Estimation of sintering kinetics of a single hematite ore pellet using optical dilatometer.**

R. A. Anand\*<sup>1</sup>; N. N. Viswanathan<sup>1</sup>; M. M. Pande<sup>1</sup>

1. Indian Institute of Technology, Bombay, India

**9:40**

**[4B-O03] A review on MOX fuels sintering studies at CEA**

L. Ramond\*<sup>1</sup>; F. Lebreton<sup>1</sup>; J. Simeon<sup>1</sup>; M. Le Guellec<sup>1</sup>; F. La Lumia<sup>1</sup>; G. Cunha Costa Miranda<sup>1</sup>; A. Ndiaye<sup>2</sup>; T. Gervais<sup>2</sup>; G. Bernard-Granger<sup>1</sup>

1. CEA Marcoule, University of Montpellier, France

2. Orano Melox, France

**10:00**

**[4B-O04] In-situ OCT observation of internal structural evolution during drying of SiO<sub>2</sub> slurry and subsequent sintering in the same field of view**

H. Kuroda\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>; T. Takahashi<sup>2</sup>

1. Yokohama National University, Japan

2. Kanagawa Institute of Industrial Science and Technology, Japan

**10:20**

**Break**

**Chair: J-M. Missiaen (Universite Grenoble Alpes, France)**

**10:40**

**[4B-O05] Reversible low-temperature sintering of nanostructured silver microparticles for sustainable printed electronics**

D. van Impelen\*<sup>1</sup>; L. Gonzalez-Garcia<sup>1</sup>; T. Kraus<sup>1,2</sup>

1. Saarland University/Institute of new Materials/INM, Germany

2. Saarland University/Colloid and Interface Chemistry, Germany

**11:00**

**[4B-O06] Effect of Li<sub>2</sub>CO<sub>3</sub> addition on sintering behavior and electrical properties of reduction-resistant (Ba,Ca)(Ti,Sn)O<sub>3</sub> ceramics**

K. Uematsu<sup>1</sup>; W. Sakamoto\*<sup>1</sup>

1. Chubu University, Japan

**11:20**

**[4B-O07] Low-temperature sintering of Li<sub>1.3</sub>Al<sub>0.3</sub>Ti<sub>1.7</sub>(PO<sub>4</sub>)<sub>3</sub> (LATP) solid electrolyte by surface modification of sintering additive**

K. Ishii\*<sup>1</sup>; Y. Taniguchi<sup>3</sup>; G. Kawamura<sup>3</sup>; H. Muto<sup>3</sup>; A. Matsuda<sup>3</sup>; K. Takada<sup>2</sup>; T. Uchikoshi<sup>2</sup>

1. Nagoya Institute of Technology, Advanced Ceramics Research Center

2. National Institute for Materials Science, Japan

3. Toyohashi University of Technology, Japan

## Room C, 4th Floor

**Chair: X-M. Chen (Zhejiang University, China)**

**8:50**

**[4C-I01] Cold sintering of functional oxide materials (Invited)**

O. Guillon\*<sup>1,2</sup>; M. Bram<sup>1</sup>; M. Kindelmann<sup>2,1</sup>; J. Mayer<sup>2,1</sup>

1. Forschungszentrum Juelich, Germany

2. RWTH Aachen University, Germany

**9:20**

**[4C-O02] Functional materials of spinel ceramics with cold sintering**

S. Funahashi<sup>\*1</sup>; S. Yokomizo<sup>1</sup>; E. Kobayashi<sup>1</sup>; M. Kimura<sup>1</sup>

1.Murata Manufacturing Co., Ltd., Japan

**9:40**

**[4C-O03] A route towards fabrication of stable superhydrophobic ZnO-polymer composite ceramics using the cold sintering process**

X. Zhao<sup>\*1</sup>

1.Chongqing University, China

**10:00**

**[4C-O04] Fabrication of dense ceramics for perovskite oxides under 150°C via acid-base chemical reaction**

Y. Yamaguchi<sup>\*1</sup>; K. Nomura<sup>1</sup>; H. Shimada<sup>1</sup>; H. Sumi<sup>1</sup>

1.National Institute of Advanced Industrial Science and Technology (AIST), Japan

**10:20**

**Break**

**Chair: O. Guillon (Forschungszentrum Juelich, Germany)**

**10:40**

**[4C-I05] Cold sintering of zeolite ceramics with high crystallinity and superior properties (Invited)**

X-M. Chen<sup>\*1</sup>; J-Z. Shi<sup>1</sup>; F-W. Zhou<sup>1</sup>; X-L. Zhu<sup>1</sup>; L. Li<sup>1</sup>

1.Zhejiang University, China

**11:10**

**[4C-O06] Cold sintering of ZnO ceramic based composites**

J. Guo<sup>\*1</sup>; M. Si<sup>1</sup>; H. Wang<sup>2</sup>

1.Xi'an Jiaotong University, China

2.Southern University of Science and Technology, China

**11:30**

**[4C-O07] Investigating the complexity of sintering mechanisms involved in cold sintering process using ZnO as a case study**

T. Herisson de Beauvoir<sup>\*1</sup>; C. Estournès<sup>1</sup>

1.CIRIMAT CNRS INP UPS Universite Toulouse 3 Paul Sabatier, France

**11:50**

**[4C-O08] Cold sintering of the Al-O-H system**

K. Yamaguchi<sup>\*1</sup>; S. Hashimoto<sup>1</sup>

1.Nagoya Institute of Technology, Japan

**12:10**

**[4C-O09] Designing novel dielectric composites with high thermal conductivity via cold sintering**

J. Mena-Garcia<sup>\*1,2</sup>; A. Ndayishimiye<sup>2</sup>; Z. Fan<sup>2</sup>; S. E. Perini<sup>2</sup>; W. Li<sup>1</sup>; B. Poudel<sup>1</sup>; S. Priya<sup>1</sup>; B. Foley<sup>3</sup>; J. Gaskins<sup>3</sup>; C. A. Randall<sup>1,2</sup>

1.The Pennsylvania State University, US

2.Materials Research Institute, US

3.Laser Thermal, US

Room D, 4th Floor

**Chair: K. Morita (National Institute for Materials Science)**

**8:50**

**[4D-I01] Sintering in metal extrusion additive manufacturing (MEX): effect of printing defects and of reaction with the atmosphere (Invited)**

J-M. Missiaen<sup>\*1</sup>; D. Bouvard<sup>1</sup>; J-M. Chaix<sup>1</sup>; G. Singh<sup>2</sup>; L. Olmos<sup>3,1</sup>

1.Universite Grenoble Alpes, France

2.IIT Bombay, India

3.Universidad Michoacana de San Nicolas de Hidalgo, Mexico

**9:20**

**[4D-O02] Effects of particle dispersion states on rapid manufacturing process of transparent silica glass components from photocurable suspensions**

M. Iijima\*<sup>1</sup>; R. Arita<sup>1</sup>; J. Tatami<sup>1</sup>

1.Yokohama National University, Japan

**9:40**

**[4D-O03] Anisotropic shrinkage and microstructural characterization of additively manufactured 94% alumina**

K. T. Strong\*<sup>1</sup>; D. Cillessen<sup>1</sup>; J. Nance<sup>1</sup>

1.Sandia National Laboratories, US

**10:00**

**[4D-O04] Design of highly stabilized photocurable pickering emulsion for 3D-printing rapid sinterable porous silica components**

S. Tsutaki\*<sup>1</sup>; J. Tatami<sup>1</sup>; M. Iijima<sup>1</sup>

1.Yokohama National University, Japan