

## Nov. 16, 2022

### Room I

#### Session A: Understanding and Controlling Various Inhomogeneity in Powders for Advanced Materials (57th Summer Symposium on Powder Technology)

09:00 – 11:20 Chair : Motoyuki Iijima (Yokohama National University, Japan)

09:00 – 09:30 1-I-A-01 INVITED

Surface modification using nanoparticle layer and its application

Kenji Iimura\*, Hiroshi Satone, Kouji Maeda

*University of Hyogo, Japan*

09:30 – 10:00 1-I-A-02 INVITED

Coated bio-based polymers by ceramic particles

Dumitru Nedelcu\*, Simona – Nicoleta Mazurchevici, Alina Mărguță, Bogdan Istrate, Constantin Cărașu

*"Gheorghe Asachi" Technical University of Iasi, Romania*

10:00 – 10:20 1-I-A-03

Direct polymer formation on powder surface by ball milling process

Yuki Nakashima\*, Manabu Fukushima

*National Institute of Advanced Industrial Science and Technology (AIST)*

10:20 – 10:40 1-I-A-04

Effect of kneading on the particle dispersion in the slurry with polyelectrolyte

Kenta Kitamura\*<sup>1,2</sup>, Takamasa Mori<sup>1,2</sup>

*1 Department of Chemical Science and Technology, Faculty of Bioscience and Applied Chemistry, Hosei University, Japan*

*2 Hosei University Research Institute for Slurry Engineering, Japan*

10:40 – 11:00

Coffee break

11:00 – 11:20 1-I-A-05

Design of controlled release dosage forms by powder bed and press-melting method

Hiromitsu Yamamoto \*, Koki Saito, Shota Niwa, Eri Nakayama, Toshiya Yasunaga, Noriko Ogawa

*Department of Pharmaceutical Engineering, School of Pharmacy, Aichi Gakuin University, Japan*

11:20 – 12:00 Chair : Makio Naito (Osaka University, Japan)

11:20 – 11:30

KONA Award ceremony

11:30 – 12:00 1-I-A-06 INVITED KONA Award lecture

Nanoparticle chromatography - From understanding of particle surfaces to property classification

Wolfgang Peukert\*, Lukas Gromotka

*Institute of Particle Technology, Friedrich-Alexander University Erlangen-Nürnberg, Germany*

12:00 – 13:20

Photo and Lunch

13:20 – 15:20 Chair : Naonori Sakamoto (Shizuoka University, Japan)

13:20 – 13:50 1-I-A-07 INVITED

Shaping and surface modification as keys towards innovative sorbent structures

Steven Mullens\*<sup>1</sup>, Nick Gys<sup>1,2</sup>, Kenny Wyns<sup>1</sup>, Bart Michiels<sup>1</sup>, Vera Meynen<sup>2</sup>

*1 Unit Sustainable Materials, VITO nv, Belgium*

*2 Laboratory for Adsorption and Catalysis, University Antwerp, Belgium*

13:50 – 14:20 1-I-A-08 INVITED

Preparation and characterization of phosphors based on the luminescence of 3d transition metal ions

Yuta Matsushima\*

*Yamagata University, Japan*

14:20 – 14:40 1-I-A-09

Synthesis and scale-up of MOF-801 powders as the precursor of Zr-based Materials

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

*1 Extreme Materials Institute, Korea Institute of Materials Science (KIMS), Republic of Korea*

*2 Composite Research Division, Korea Institute of Materials Science (KIMS), Republic of Korea*

14:40 – 15:00 1-I-A-10

Synthesis of NH<sub>4</sub>CoPO<sub>4</sub>·H<sub>2</sub>O platelets by wet milling with a bead mill and their conversion into LiCoPO<sub>4</sub> cathodes for Li-ion batteries

Akira Kondo \*<sup>1</sup>, Toshihiro Ishii<sup>1</sup>, Takahiro Kozawa<sup>2</sup>, Makio Naito<sup>2</sup>

*1 Ashizawa Finetech Ltd., Japan*

*2 Joining and Welding Research Institute, Osaka University, Japan*

15:00 – 15:20 1-I-A-11

Fabrication of mixed oxide ionic-electronic conductor-based porous/dense/porous-structured membrane by electrophoretic deposition process for oxygen separation application

Kento Ishii\*<sup>1</sup>, Chika Matsunaga<sup>2</sup>, Kiyoshi Kobayashi<sup>1</sup>, Adam J. Stevenson<sup>3</sup>, Caroline Tardival<sup>3</sup>, Tetsuo Uchikoshi<sup>1</sup>

*1 National Institute for Materials Science, Japan*

*2 National Institute of Advanced Industrial Science and Technology, Japan*

*3 Saint-Gobain Research Provence, France*

15:20 – 15:40

Coffee break

15:40 – 16:40 Chair : Yoshiyuki Shirakawa (Doshisha University, Japan)

15:40 – 16:00 1-I-A-12

Photocurable slurry design for shaping alumina ceramics with hollow space structures through free surface stereolithography

Motoyuki Iijima\*<sup>1</sup>, Taichi Abe<sup>2</sup>, Junichi Tatami<sup>1</sup>, Hitomi Kato<sup>3</sup>, Yusuke Fuji<sup>3</sup>

*1 Faculty of Environment and Information Sciences, Yokohama National University, Japan*

*2 Graduate School of Engineering Science, Yokohama National University, Japan*

*3 NGK INSULATORS, LTD.*

16:00 – 16:20 1-I-A-13

Rapid manufacturing process of porous SiO<sub>2</sub> components: green machining of photocured w/o Pickering emulsions

Yoshihiko Yamanoi\*<sup>1</sup>, Junichi Tatami<sup>2</sup>, Motoyuki Iijima<sup>2</sup>

*1 Graduate School of Engineering Science, Yokohama National University, Japan*

*2 Faculty of Environment and Information Sciences, Yokohama National University, Japan*

16:20 – 16:40 1-I-A-14

Verification of lattice fringe observation ratio of nanoparticles by high resolution TEM for evaluation of crystallinity

Naonori Sakamoto\*<sup>1,2,3,4</sup>, Yuki Nakano<sup>3</sup>, Takahiko Kawaguchi<sup>2,3</sup>, and Naoki Wakiya<sup>1,2,3,4</sup>

*1 Research Institute of Electronics, Shizuoka University, Japan*

*2 Graduate School of Integrated Science and Technology, Shizuoka University, Japan*

*3 Faculty of Engineering, Shizuoka University, Japan*

*4 Graduate School of Science and Technology, Shizuoka University, Japan*

## Room II

### Session B: Powder Processing for Advanced Materials

09:00 – 10:40 Chair : Takahiro Kozawa (Osaka University, Japan)

09:00 – 09:30 1-II-B-01 INVITED

Possible continuous(successive) fabrication of nano-structured ceramic materials via soft solution processing without firing of powders

Masahiro Yoshimura\*<sup>1,2</sup>

*1 Dept of Mater.,Sci. and Eng., National Cheng Kung University, Taiwan*

*2 Tokyo Institute of Technology, Japan*

09:30 – 10:00 1-II-B-02 INVITED

Wet chemical synthesis of II-VI powders for sintering transparent ceramics

Yiquan Wu\*

*Kazuo Inamori School of Engineering, New York State College of Ceramics, Alfred University*

10:00 – 10:20 1-II-B-03

Synthesis and color tuning of titania-based inorganic pigments without addition of other transition metal elements

Jindi Cao, Takuya Hasegawa, and Shu Yin\*

*IMRAM, Tohoku University*

10:20 – 10:40 1-II-B-04

Zn-Al layered double hydroxide film functionalized by luminescent octahedral molybdenum cluster: ultraviolet-visible photoconductivity response

Thi Kim Ngan Nguyen\*<sup>1</sup>, Fabien Grasset<sup>2,3,4</sup>, Stéphane Cordier<sup>4</sup>, Noée Dumait<sup>4</sup>, Tetsuo Uchikoshi<sup>2,3</sup>

*1 International Center for Young Scientists, ICYS-SENGEN, Global Networking Division, National Institute for Materials Science (NIMS), Japan*

*2 Research Center for Functional Materials, National Institute for Materials Science (NIMS), Japan*

*3 CNRS–Saint-Gobain–NIMS, UMI 3629, Laboratory for Innovative Key Materials and Structures (LINK), National Institute for Materials Science (NIMS), Japan*

*4 Univ. Rennes-CNRS-Institut des Sciences Chimiques de Rennes, France*

10:40 – 11:00

Coffee break

11:00 – 12:00 Chair : Yiquan Wu (Alfred University, U.S.A.)

11:00 – 11:20 1-II-B-05

Effect of conductive additives on all-solid-state batteries using active material with dry coating of solid electrolyte

Eiji Hayakawa\*, Hideya Nakamura, Shuji Ohsaki and Satoru Watano

*Department of Chemical engineering, Osaka Metropolitan University, Japan*

11:20 – 11:40 1-II-B-06

Template-free preparation of macroporous Mn<sub>3</sub>O<sub>4</sub> and its application as anodes for Li-Ion batteries

Takahiro Kozawa\*, Fumiya Kitabayashi, Kayo Fukuyama, Makio Naito

*Joining and Welding Research Institute, Osaka University, Japan*

11:40 – 12:00 1-II-B-07

Investigation of photothermal response and fluorescence imaging of water-soluble silicon quantum dots for theranostic applications

Irem Nur Gamze Ozbilgin\*<sup>1,2</sup>, Hiroyuki Yamada<sup>3,4</sup>, Junpei Watanabe<sup>3,5</sup>, Tomohiko Yamazaki<sup>1</sup>, Naoto Shirahata<sup>3,4,5</sup>, Tetsuo Uchikoshi<sup>1,2</sup>

*1 Research Center for Functional Materials, National Institute for Materials Science (NIMS), Japan*

*2 CNRS–Saint-Gobain–NIMS, IRL 3629, Laboratory for Innovative Key Materials and Structures (LINK), National Institute for Materials Science, Japan*

*3 International Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), Japan*

*4 Graduate School of Chemical Sciences and Engineering, Hokkaido University, Japan*

*5 Department of Physics, Chuo University, Japan*

12:00 – 13:20

Photo and Lunch

13:20 – 15:20 Chair : Mitsuaki Matsuoka (Kansai University, Japan)

13:20 – 13:50 1-II-B-08 INVITED

Controlling the electrical conductivity of porous silicon carbide ceramics

Young-Wook Kim\*<sup>1</sup>, In-Hyuck Song<sup>2</sup>

*1 University of Seoul, Republic of Korea*

*2 Korea Institute of Materials Science, Republic of Korea*

13:50 – 14:20 1-II-B-09 INVITED

Mechanical reliability of silicon nitride ceramics

Tatsuki Ohji\*<sup>1,2</sup>, and Junichi Tatami<sup>1</sup>

*1 Yokohama National University, Japan*

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

14:20 – 14:40 1-II-B-10

Preparation of multifunctional Fe<sub>3</sub>O<sub>4</sub>@Ag@TiO<sub>2-x</sub>N<sub>x</sub> core-shell composite particles for dye adsorption and visible-light photocatalysis

Ya-Hsueh Lin, Wenjea J. Tseng\*

*Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan*

14:40 – 15:00 1-II-B-11

Encapsulation of juvenile hormone analogues for controlled release system using supercritical carbon dioxide

Tanjina Sharmin\*<sup>1,2</sup>, Kento Ono<sup>1,2</sup>, Taku Michael Aida<sup>1,2</sup>, Tomomitsu Satho<sup>3</sup>, Kenji Mishima<sup>1,2</sup>

*1 Faculty of Engineering, Fukuoka University, Japan*

*2 Research Institute of Composite Materials, Fukuoka University, Japan*

*3 Faculty of Pharmaceutical Sciences, Fukuoka University, Japan*

15:00 – 15:20 1-II-B-12

Spray-drying-assisted microstructure control of metal-organic frameworks for application to adsorbents and drug delivery carriers

Shunsuke Tanaka\*<sup>1,2</sup>, Shuhei Fujita<sup>1</sup>, Toshiki Nakajima<sup>1</sup>, Ryo Miyashita<sup>1</sup>, Kazunori Kadota<sup>3</sup>, Jun Yee Tse<sup>3</sup>, Hiromasa Uchiyama<sup>3</sup>, Yuichi Tozuka<sup>3</sup>

*1 Department of Chemical, Energy and Environmental Engineering, Kansai University, Japan*

*2 Organization for Research and Development of Innovative Science and Technology, Kansai University, Japan*

*3 Department of Formulation Design and Pharmaceutical Technology, Osaka Medical and Pharmaceutical University, Japan*

15:20 – 15:40  
Coffee break

15:40 – 16:50 Chair : Young-Wook Kim (University of Seoul, Republic of Korea)

15:40 – 16:10 1-II-B-13 INVITED

Nanostructured materials with advanced functional properties

A. Ferreiro<sup>1</sup>, G. Flores-Carrasco<sup>2</sup>, A. Urbieto<sup>3</sup>, P. Fernández<sup>3</sup>, L. Gomez-Villalba<sup>4</sup>, O. Milosevic<sup>5</sup>, M.E. Rabanal\*<sup>1</sup>

*1 Carlos III University and IAAB, High School of Engineering, Spain.*

*2 Tecnológico Nacional de México / ITS de Tepeaca, México,*

*3 Complutense University, Facultad Ciencias Físicas, Ciudad Universitaria, Spain*

*4 Institute of Geociencias-CSIC-UCM, Spain*

*5 Institute of Technical Sciences of Serbian Academy ad Arts, Serbia*

16:10 – 16:30 1-II-B-14

Effect of grinding process of coal fly ash on curing reaction of geopolymer from industrial by-products

Mitsuaki Matsuoka\*<sup>1</sup>, Takehiro Tanaka<sup>1</sup>, Norihiro Murayama<sup>1</sup>, Makio Naito<sup>2</sup>

*1 Department of Chemical, Energy and Environmental Engineering, Kansai University, Japan*

*2 Joining and Welding Research Institute, Osaka University, Japan*

16:30 – 16:50 1-II-B-15

Hydroxyapatite-SiC filters prepared by electrophoretic deposition

Christopher L. Hassam\*<sup>1,2</sup>, Masako Uematsu<sup>1,2,3</sup>, David Berthebaud<sup>1</sup> Tetsuo Uchikoshi<sup>1,2,3</sup>

*1 LINK (CNRS-Saint Gobain-NIMS IRL 3629), NIMS, Japan*

*2 Research Center for Functional Materials, NIMS, Japan*

*3 Graduate School of Chemical Sciences and Engineering, Hokkaido Univers*

## Room III

### Session E: Material Design and Evaluation

09:00 – 10:40 Chair : Chika Takai (Gifu University, Japan)

09:00 – 09:30 1-III-E-01 INVITED

Novel TiO<sub>2</sub>/Ag/TiO<sub>2</sub> cotton-based nanocomposites for wastewater treatment

Milica Milošević\*<sup>1</sup>, Marija Radoičić<sup>1</sup>, Jelena Spasojević<sup>1</sup>, Zoran Šaponjić<sup>2</sup>

*1 Department of Radiation Chemistry and Physics, Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, Serbia*

*2 Institute of General and Physical Chemistry, Serbia*

09:30 – 10:00 1-III-E-02 INVITED

Smart material of Li<sub>2</sub>O-(Nb/Ta)<sub>2</sub>O<sub>5</sub>-TiO<sub>2</sub> solid solution having a unique periodical structure and their applications

Hiromi Nakano\*

*Cooperative Research Facility Center, Toyohashi University of Technology, Japan*

10:00 – 10:20 1-III-E-03

Fabrication of high strength Al<sub>2</sub>O<sub>3</sub> with different orientation in each layer by EPD in strong magnetic field

Tohru S. Suzuki\*<sup>1</sup>, Atsushi Nagase<sup>2,1</sup>, Hajime Kiyono<sup>2</sup>, Tetsuo Uchikoshi<sup>1</sup>

*1 Research Center for Functional Materials, National Institute for Materials Science, Japan*

*2 Applied Chemistry, Faculty of Engineering, Shibaura Institute of Technology, Japan*

10:20 – 10:40 1-III-E-04

Enhanced NH<sub>3</sub> sensing performance of Mo<sub>6</sub> cluster sulfurized MoS<sub>2</sub> nanocomposite film

Meiqi Zhang\*<sup>1,2,3</sup>, Fabien Grasset<sup>2,3,4</sup>, Noée Dumait<sup>4</sup>, Stéphane Cordier<sup>4</sup>, Toshihiro Shimada<sup>1</sup>, Yuji Masubuchi<sup>1</sup>, Tetsuo Uchikoshi<sup>1,2,3</sup>

*1 Graduate School of Chemical Sciences and Engineering, Hokkaido University, Japan.*

*2 Research Center for Functional Materials, National Institute for Materials Science (NIMS), Japan*

*3 Laboratory for Innovative Key Materials and Structures (LINK), IRL3629 CNRS-Saint Gobain-NIMS, National Institute for Materials Science, Japan*

*4 Institut des Sciences Chimiques de Rennes (ISCR), UMR 6626 CNRS – University of Rennes 1, France*

10:40 – 11:00

Coffee break

11:00 – 12:00 Chair : Tohru S. Suzuki (National Institute for Materials Science, Japan)

11:00 – 11:20 1-III-E-05

Sex determination of Japanese rhinoceros beetles based on their dropping shape using Mahalanobis-Taguchi system (MTS)

Chika Takai-Yamashita\*<sup>1</sup>, Seiji Yamashita<sup>2</sup>

*1 Faculty of Engineering, Gifu University, Japan*

*2 Graduate School of Engineering, Nagoya University, Japan*

11:20 – 11:40 1-III-E-06

Aggregation of phytoglycogen in water-ethanol mixtures characterized by small-angle X-ray scattering and dynamic light scattering measurements

Tero O. Kämäräinen\* <sup>1)</sup>, Kazunori Kadota <sup>1)</sup>, Jun Yee Tse <sup>1)</sup>, Hiromasa Uchiyama <sup>1)</sup>, Toshio Oguchi <sup>2)</sup>, Hiroshi Arima-Osonoi <sup>3)</sup>, Yuichi Tozuka <sup>1)</sup>

*1 Osaka Medical and Pharmaceutical University, Japan,*

*2 University of Yamanashi, Japan,*

*3 Comprehensive Research Organization for Science and Society, Japan*

11:40 – 12:00 1-III-E-07

Preparation and evaluation of three-component solid dispersion particles with using hydrophilic cyclodextrin derivative

Noriko Ogawa\*, Ayumi Nishikata, Toshiya Yasunaga, Hiromitsu Yamamoto

*Aichi Gakuin University, Japan*

12:00 – 13:20

Photo and Lunch



## Session C: International Symposium in Honor of Prof. Makio Naito

13:20 – 15:20 Chair : Sanjay Mathur (University of Cologne, Germany)

13:20 – 13:50 1-III-C-01 INVITED  
Powder processing for excellent advanced materials  
Makio Naito\*  
*Joining and Welding Research Institute, Osaka University, Japan*

13:50 – 14:20 1-III-C-02 INVITED  
The nexus of characterization and processing to produce high-quality ceramics  
Kevin G. Ewsuk\*  
*Retired - Sandia National Laboratories, USA*

14:20 – 14:50 1-III-C-03 INVITED  
Use of tetragonal zirconia polycrystals as biomedical implants  
Wei-Hsing Tuan\*<sup>1</sup>, Yung-Shin Cheng<sup>1</sup>, Che-Lun Tung<sup>1</sup>, Li-Yun Yeh<sup>1</sup>, Yu-Ping Lin<sup>1</sup>, Pei-Yi Hsu<sup>1</sup>, Po-Liang Lai<sup>2</sup>  
*1 Department of Materials Science and Engineering, National Taiwan University, Taiwan.*  
*2 Department of Orthopedic Surgery, Bone and Joint Research Center, Chang Gung Memorial Hospital at Linkou, College of Medicine, Chang Gung University, Taiwan.*

14:50 – 15:20 1-III-C-04 INVITED  
Silicon carbide ceramics with high thermal, electrical conductivity and other exceptional properties  
Pavol Sajgalik\*  
*Slovak Academy of Sciences, Slovakia*

15:20 – 15:40  
Coffee break

15:40 – 17:10 Chair : Kevin Ewsuk (Retired - Sandia National Laboratories)

15:40 – 16:10 1-III-C-05 INVITED  
Additive manufacturing: turning mind into matter  
Mrityunjay Singh\*  
*President, Global Alliance for Technology and Society, USA; President, World Academy of Ceramics, Italy; Past President, The American Ceramic Society;*

16:10 – 16:40 1-III-C-06 INVITED  
Effect of Al contained in polymer derived SiC crystals on creating stable crystal grain boundaries  
Toshihiro Ishikawa\*  
*Tokyo University of Science, Yamaguchi (Sanyo-Onoda City University), Japan*

16:40 – 17:10 1-III-C-07 INVITED  
Nanostructured ceramics for photon harvesting and drug delivery applications  
Sanjay Mathur\*  
*Chair, Inorganic and Materials Chemistry, University of Cologne, Germany*

## Room IV

### Session F: International Symposium on Modeling for Granular and Multi-phase Flows

09:00 – 10:40 Chair: Mikio Sakai (The University of Tokyo, Japan)

09:00 – 09:30 1-IV-F-01 INVITED

Hydrodynamics of liquid-liquid slug flow in mini-channels and its application for fine particle production

Satoko Fujioka\*

*Keio University, Japan*

09:30 – 10:00 1-IV-F-02 INVITED

Direct numerical simulation of granular and multiphase flows through filter microstructures obtained by image analysis

Toru Ishigami \*

*Hiroshima University, Japan*

10:00 – 10:20 1-IV-F-03

Filter performance analysis using convolutional deep learning neural networks

Mohammadreza Shirzadi\*, Toru Ishigami

*Graduate School of Advanced Science and Engineering, Hiroshima University, Japan*

10:20 – 10:40 1-IV-F-04

On the validity of reduced particle stiffness scaling for cohesive powder flows in DEM simulations

Shungo Nakae\*, Ryosuke Yamagami, Ei Leen Chan, Takuya Tsuji, Toshitsugu Tanaka, Kimiaki Washino

*Osaka University, Japan*

10:40 – 11:00

Coffee break

11:00 – 12:00 Chair: Satoko Fujioka (Keio University, Japan)

11:00 – 11:30 1-IV-F-05 INVITED

GPU accelerated multiphase flow, particle and solid interaction solver in one-fluid formulation

Liang Yang\*<sup>1</sup>, Andrew Buchan<sup>2</sup>, Jianhui Yang<sup>3</sup>

*1 Division of energy and sustainability, Cranfield University, UK*

*2 School of Engineering and Materials Science, Queen Mary University of London, UK*

*3 TOTAL E&P UK Limited, UK*

11:30 – 12:00 1-IV-F-06 INVITED

Resolved CFD–DEM Simulations of three-phase flows using controlled interface models

Kimiaki Washino\*, Giang T. Nguyen, Taichi Tsujimoto, Naoto Fujii, Ei L. Chan, Takuya Tsuji, Toshitsugu Tanaka

*Osaka University, Japan*

12:00 – 13:20

Photo and Lunch

13:20 – 15:20 Chair: Liang Yang (Cranfield University, UK)

13:20 – 13:50 1-IV-F-07 INVITED

Modelling of reacting flows and industry applications in steel industry decarbonization

Yansong Shen\*

*University of New South Wales, Australia*

13:50 – 14:10 1-IV-F-08

DEM-CFD modeling of limestones flowing-down in a combustion field in a rotary kiln

Susumu Tsuchiya\*<sup>1</sup>, Masaya Muto<sup>2</sup>, Yuta Umeno<sup>3</sup>, Takayuki Nishiie<sup>3</sup>, Ryoichi Kurose<sup>4</sup>

*1 Yabashi Industries CO., LTD., Japan*

*2 Department of Environmental Technology, Meijo University, Japan*

*3 Numerical Flow Designing CO., LTD., Japan*

*4 Department of Mechanical Engineering and Science, Kyoto University, Japan*

14:10 – 14:30 1-IV-F-09

Development of in-line measuring method of rheological properties for non-Newtonian food fluids

Nobuaki Ikeda\*<sup>1,3</sup>, Ayuri Kimoto<sup>1</sup>, Satoko Fujioka<sup>2</sup>, Koichi Terasaka<sup>2</sup>

*1 Graduate School of Keio University, Japan*

*2 Keio University, Japan*

*3 Kewpie Corporation, Japan*

14:30 – 15:00 1-IV-F-10 INVITED

ISPH-DEM coupling simulation for estimating internal erosion in soil

Mitsuteru Asai\*, Kumpei Tsuji

*Kyusyu University, Japan*

15:00 – 15:20 1-IV-F-11

A phase-change approach to landslide simulations: coupling finite strain elastoplastic TLSPH with non-Newtonian IISPH

Daniel Morikawa\*<sup>1</sup>, Mitsuteru Asai<sup>2</sup>, Haruki Osaki<sup>3</sup>

*1 JAMSTEC, Japan*

*2 Kyushu University, Japan*

15:20 – 15:40

Coffee break

15:40 – 17:10 Chair: Yansong Shen (UNSW, Australia))

15:40 – 16:10 1-IV-F-12 INVITED

On computational granular dynamics based digital twin: core technologies in the DEM

Mikio Sakai\*

*The University of Tokyo, Japan*

16:10 – 16:30 1-IV-F-13

Digitalization of powder processes through granular and multiphase flow simulation

Chitra Palaniswamy\*, Kenji Yamaguchi, Shoma Kato, Kaoru Watanabe

*Kozo Keikaku Engineering Inc.*

16:30 – 16:50 1-IV-F-14

Reduced-order models for the identification and calibration of DEM parameters

Shuo Li\*<sup>1</sup>, Guangtao Duan<sup>1</sup>, Mikio Sakai<sup>2</sup>

*1 Department of Nuclear Engineering & Management, School of Engineering, The University of Tokyo, Japan,*

*2 Resilience Engineering Research Center, School of Engineering, The University of Tokyo, Japan*

16:50 – 17:10      1-IV-F-15

Transient 3D CFD study of the dynamic raceway and fuel injection in blast furnaces

Yuting Zhuo\* and Yansong Shen

*University of New South Wales, Australia*

## Nov. 17, 2022

### Room I

#### Session A: Understanding and Controlling Various Inhomogeneity in Powders for Advanced Materials (57th Summer Symposium on Powder Technology)

09:00 – 10:00 Chair: Shingo Ishihara (Tohoku University, Japan)

09:00 – 09:20 2-I-A-01

Interface study of the lithium-ion conducting electrolyte-electrode compatibility using Focused Ion Beam, Scanning Electron Microscopy-Electron Dispersive X-ray Spectroscopy, and Laser Raman Microscopy

Efi Dwi Indari\*<sup>1</sup>, Shota Azuma<sup>1</sup>, Kento Ishii<sup>1</sup>, David Lechevalier<sup>2</sup>, Tetsuo Uchikoshi<sup>1</sup>, Vladimir Ouspenski<sup>3</sup>, Caroline Tardivat<sup>3</sup>

*1 Fine Particles Engineering group, National Institute for Materials Science, Japan*

*2 NIMS-Saint-Gobain-CNRS International Collaboration Center Link/UMI3629, Japan*

*3 Saint-Gobain Research Paris, France*

09:20 – 09:40 2-I-A-02

The effect of particle shape on diffusion behavior of fine particles in turbulent jet

Kenji Tanno\*, Kazuki Tainaka

*Central Research Institute of Electric Power Industry, Japan*

09:40 – 10:00 2-I-A-03

The change of particles dispersion state in slurries during thickening and its effect on the density of green bodies

Takamasa Mori\*, Daiki Takahashi, Daiki Fuji, Kenta Kitamura

*Department of Chemical Science and Technology, Faculty of Bioscience and Applied Chemistry, Hosei University, Japan*

10:00 – 10:20

Coffee break

10:20 – 12:00 Chair: Hideya Nakamura (Osaka Metropolitan University, Japan)

10:20 – 10:40 2-I-A-04

3D observation of internal structure of porous ceramics by confocal laser fluorescent microscopy

Masako Uematsu\*<sup>1,2</sup>, Kento Ishii<sup>1</sup>, Tetsuo Uchikoshi<sup>1,2</sup>

*1 National Institute for Materials Science, Japan*

*2 Hokkaido University, Japan*

10:40 – 11:00 2-I-A-05

Effect of packing structure on the relationship between saturation and elastic modulus by persistent homology

Shingo Ishihara\*<sup>1</sup>, George Franks<sup>2</sup>, Junya Kano<sup>1</sup>

*1 Tohoku University, Japan*

*2 University of Melbourne, Australia*

11:00 – 11:20 2-I-A-06

Origins of formation of non-uniform particle-filled structure in green compact prepared from concentrated slurry

Satoshi Tanaka\*

*Nagaoka University of Technology*

11:20 – 11:40 2-I-A-07

Heterogeneous evolution of pore distribution during sintering of a submicron alumina powder observed by using synchrotron X-ray CT

Gaku Okuma\*<sup>1</sup>, Toshio Osada<sup>1</sup>, Haruki Minagawa<sup>2</sup>, Yutaro Arai<sup>3</sup>, Ryo Inoue<sup>2</sup>, Hideki Kakisawa<sup>1</sup>, Satoshi Tanaka<sup>4</sup>, Fumihiro Wakai<sup>1</sup>

*1 Research Center for Structural Materials, National Institute for Materials Science (NIMS), Japan*

*2 Department of Mechanical Engineering, Tokyo University of Science, Japan*

*3 Department of Materials Science and Technology, Tokyo University of Science, Japan*

*4 Department of Materials Science and Technology, Nagaoka University of Technology, Japan*

11:40 – 12:00 2-I-A-08

Density inhomogeneity appearing during sintering of alumina green body visualized by operando OCT observation

Junichi Tatami\*<sup>1</sup>, Mitsuki Tajima<sup>1</sup>, Motoyuki Iijima<sup>1</sup>, Takuma Takahashi<sup>2</sup>

*1 Yokohama National University, Japan*

*2 Kanagawa Institute of Industrial Science and Technology, Japan*

12:00 – 13:00

Lunch

13:00 – 17:30

Excursion

## Room II

### Session D: Energy and Environment

09:00 – 10:00 Chair: Tetsuo Uchikoshi (National Institute for Materials Science, Japan)

09:00 – 09:30 2-II-D-01 INVITED

Advanced physical separation technology to achieve both of carbon neutrality and resource recycling  
Chiharu Tokoro\*<sup>1,2</sup>

1 Waseda University

2 The University of Tokyo

09:30 – 10:00 2-II-D-02 INVITED

Recent research and development of biocoke in Thailand

Jintawat Chaichanawong\*

Advanced Material Processing Research Lab, Faculty of Engineering, Thai-Nichi Institute of Technology, Thailand

10:00 – 10:20

Coffee break

10:20 – 12:00 Chair: Yutaro Takaya (The University of Tokyo, Japan)

10:20 – 10:40 2-II-D-03

Degradation of polyphenylene sulfide non-woven bag-filter media by HCl or NO<sub>2</sub> gases at high temperature

Kunihiro Fukui\*, Genki Ichiba, Masaaki Yamada, Tomonori Fukasawa, Toru Ishigami

Chemical Engineering Program, Graduate School of Advanced Science and Engineering, Hiroshima University, Japan

10:40 – 11:00 2-II-D-04

Light-dependent ionic-electronic conduction of octahedral molybdenum cluster film prepared by electrophoretic deposition

Tetsuo Uchikoshi\*<sup>1,2</sup>, Thi Kim Ngan Nguyen<sup>2,3</sup>, Kenshi Harada<sup>2,4</sup>, Fabien Grasset<sup>2,5</sup>, Stéphane Cordier<sup>5</sup>, Noée Dumait<sup>5</sup>, Motohide Matsuda<sup>4</sup>

1 Research Center for Functional Materials, National Institute for Materials Science (NIMS), Japan

2 CNRS–Saint-Gobain–NIMS, IRL 3629 LINK, National Institute for Materials Science, Japan

3 International Center for Young Scientists (ICYS), National Institute for Materials Science, Japan

4 Graduate School of Science and Technology, Kumamoto University, Japan.

5 Univ. Rennes-CNRS-Institut des Sciences Chimiques de Rennes (ISCS), UMR6226, France

11:00 – 11:20 2-II-D-05

Reduction characteristics of trace elements concentration on mineral liberation from pulverized coal

Ayaka Takeda\*, Hiroyuki Akiho, Yoshiko Hiei, Naoki Noda, Hisao Makino

Central Research Institute of Electric Power Industry, Japan

11:20 – 11:40 2-II-D-06

Galvanic corrosion inhibition from the aspect of bonding orbital theory in Cu/Ru barrier CMP

Ganggyu Lee\*<sup>1</sup>, Sungmin Kim<sup>1</sup>, Hojin Jeong<sup>2</sup>, Donghwan Kim<sup>1</sup>, Myungju Woo<sup>1</sup>, Yeram Lee<sup>1</sup>, Kangchun Lee<sup>3</sup>,  
Yewhan Kim<sup>4</sup>, Taeseup Song<sup>1</sup>, and Ungyu Paik<sup>1</sup>

*1 Department of Energy Engineering Hanyang University, Republic of Korea*

*2 Department of Nanoscale Semiconductor Engineering, Hanyang University, Republic of Korea*

*3 Foundry Process Development Team, Semiconductor R&D center, Samsung Electronics, Republic of Korea*

*4 Memory Material Engineering Group, Memory Business Division, Samsung Electronics, Republic of Korea"*

11:40 – 12:00 2-II-D-07

Analysis on scattered fine particles characteristics imitating microparticulates movement from metal cutting

Andrey Stephan Siahaan\*<sup>1</sup>, Hideki Kawai<sup>2</sup>, Hiroshi Nogami<sup>1</sup>

*1. Tohoku University, Japan*

*2. Muroran Institute of Technology, Japan*

12:00 – 13:00

Lunch

13:00 – 17:30

Excursion



## Room III

### Session C: International Symposium in Honor of Prof. Makio Naito

09:00 – 10:00 Chair: Rolf Wäsche (Retired - BAM, Germany)

09:00 – 09:30 2-III-C-01 INVITED

Process technologies and applications of Basalt fiber reinforced SiOC composites

~ From polymer process technologies to ceramic-like composite performance ~

Rainer Gadow\*

*Universitaet Stuttgart, Germany*

09:30 – 10:00 2-III-C-02 INVITED

Synchrotron X-ray evaluations of magnesium/steel joints fabricated using impact welding

Dileep Singh\*

*Argonne National Laboratory, USA*

10:00 – 10:20

Coffee break

10:20 – 11:50 Chair: Rainer Gadow (University of Stuttgart, Germany)

10:20 – 10:50 2-III-C-03 INVITED

Formation of grain boundary phases during sintering of niobium carbide with nickel matrix

Rolf Wäsche\*<sup>1</sup>, Gabriele Steinborn<sup>1</sup>, Ilona Dörfel<sup>1</sup>, Martina Menneken<sup>2</sup>, Shuigen Huang<sup>3</sup> and Mathias Woydt<sup>1</sup>

*1 Federal Institute for Materials Research and Testing (BAM), Germany (retired)*

*2 Federal Institute for Materials Research and Testing (BAM), Germany*

*3 Katholieke Universiteit Leuven (KUL), Belgium*

10:50 – 11:20 2-III-C-04 INVITED

Atomic structure controlled synthesis of single walled carbon nanotubes via the floating catalyst chemical vapor deposition (FC-CVD) method

Esko I. Kauppinen\*

*Aalto University School of Science, Department of Applied Physics, Finland*

11:20 – 11:50 2-III-C-05 INVITED

Rational design in photoresponsive hierarchical nanomaterials processing

Olivera Milosevic\*<sup>1</sup>, Maria Eugenia Rabanal<sup>2</sup>, Lidija Mancic<sup>1</sup>, Milica Milosevic<sup>3</sup>

*1 Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Serbia*

*2 University Carlos III, Materials Science and Engineering and Chemical Engineering Department, Spain*

*3 Vinca Institute of Nuclear Sciences, University of Belgrade, National Institute of the Republic of Serbia, Serbia*

12:00 – 13:00

Lunch

13:00 – 17:30

Excursion

## Nov. 18, 2022

### Room I

#### Session E: Material Design and Evaluation

09:00 – 11:10 Chair: Maria Eugenia Rabanal (Carlos III University of Madrid, Spain)

09:00 – 09:30 3-I-E-01 INVITED

Surface modification of low-dimensional nanostructured oxides for controlling various physical-chemical functions

Yonghyun Cho<sup>1</sup>, Yoshifumi Kondo<sup>1,2</sup>, Hyunsu Park<sup>1</sup>, Hisataka Nishida<sup>1</sup>, Sunghun Cho<sup>1</sup>, Tomoyo Goto<sup>1,3</sup>, Tohru Sekino\*<sup>1</sup>

*1 SANKEN, Osaka University, Japan*

*2 Graduate School of Engineering, Osaka University, Japan*

*3 Institute for Advanced Co-Creation Studies, Osaka University, Japan*

09:30 – 09:50 3-I-E-02

The quantitative evaluation of correlation between flame retardant filler/matrix resin interfacial properties and mechanical properties in 2DPGFRP using AE test method

Miyu Sugai\*<sup>1</sup>, Masashi Koyama<sup>2</sup>

*1 Graduate School of Mechanical Engineering, Meisei University, Japan*

*2 Program in Mechanical Engineering, Meisei University, Japan*

09:50 – 10:10 3-I-E-03

Thermal diffusivity of thermal insulation composite made of fumed Al<sub>2</sub>O<sub>3</sub>, SiC powder and ceramic fiber by the laser flash method

Megumi Akoshima\*<sup>1</sup>, Haruka Abe<sup>1</sup>, Akira Kondo<sup>2</sup>, Makio Naito<sup>2</sup>

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

*2 Osaka University, Japan*

10:10 – 10:30 3-I-E-04

An novel evaluating method for surface smoothness of composite film of well-dispersed silica particles

Quanyue Wen\*, Fumiya Tanahashi, Masayoshi Fuji

*Nagoya Institute of Technology, Advanced Ceramics Research Center, Japan*

10:30 – 10:50 3-I-E-05

Research on the compressive strength of mortar incorporating biomineralized waste tire rubber fine aggregate

Chung-Hao Wu\*<sup>1</sup>, Yuan-Shun Yang<sup>2</sup>, Zheng-Wen Xu<sup>2</sup>

*1 Department of Civil Engineering, National Kaohsiung University of Science and Technology, Taiwan*

*2 Department of Civil Engineering, Chung Yuan Christian University, Taiwan*

10:50 – 11:10 3-I-E-06

Fabrication of ceramic-metal dual phase oxygen separation membrane by spark plasma sintering process

Aunsaya Eksatit\*<sup>1,2</sup>, Kento Ishii<sup>1</sup>, Kiyoshi Kobayashi<sup>1</sup>, Tohru S. Suzuki<sup>1</sup>, Tetsuo Uchikoshi<sup>1,2</sup>

*1 National Institute for Materials Science, Japan*

*2 Graduate School of Chemical Sciences and Engineering, Hokkaido University, Japan*

11:30 – 14:00

Lunch

## Room II

### Session D: Energy and Environment

09:00 – 10:50 Chair: Tatsuki Ohji (AIST, Japan)

09:00 – 09:30 3-II-D-01 INVITED

Novel catalytic combustion-type carbon monoxide gas sensor having high selectivity at moderate temperature

Nobuhito Imanaka\*

*Osaka University, Japan*

09:30 – 10:00 3-II-D-02 INVITED

Polymer-derived microstructured carbon/SiCX (X=O, N)-based high temperature strain gauge

Ralf Riedel\*<sup>1</sup>, Emmanuel Ricohermoso<sup>1</sup>, Emanuel Ionescu<sup>1,2</sup>

*1 Technische Universität Darmstadt, Germany*

*2 Fraunhofer Institution for Materials Recycling and Resource Strategies IWKS, Germany*

10:00 – 10:20 3-II-D-03

Transparent coating made of transition metal clusters for solar control applications

Clement Lebastard\*<sup>1-2-3</sup>, Maxence Wilmet<sup>4</sup>, Jeremie Teisseire<sup>4</sup>, Karine Costuas<sup>1</sup>, Fabien Grasset<sup>1-2-3</sup>, Stephane Cordier<sup>1</sup>, Tetsuo Uchikoshi<sup>2-3</sup>

*1 Univ. Rennes-CNRS-Institut des Sciences Chimiques de Rennes, France*

*2 CNRS-Saint-Gobain-NIMS, IRL 3629, Laboratory for Innovative Key Materials and Structures, National Institute for Materials Science, Japan*

*3 Research Center for Functional Material, National Institute for Materials Science, Japan*

*4 Saint-Gobain Research Paris, France*

10:20 – 10:50 3-II-D-04 INVITED

Interface engineering for high-performance all-solid-state batteries with lithium metal anodes

Taeseup Song\*<sup>1</sup>, Ho Bum Park<sup>1</sup>, Jeongheon Kim<sup>1</sup>, Seungwoo Lee<sup>1</sup>, Yeon-Gil Jung<sup>2</sup>, Jeong-gu Yeo<sup>3</sup>, Jeonghyun Kim<sup>4</sup>

*1 Department of Energy Engineering Hanyang University, Republic of Korea*

*2 School of Materials Science and Engineering, Changwon National University, Republic of Korea*

*3 Energy Conversion & Storage Materials Laboratory, Korea Institute of Energy Research, Republic of Korea*

*4 Department of Electronics Convergence Engineering, Kwangwoon University, Republic of Korea*

10:50 – 12:10 Chair: Junichi Tatami (Yokohama National University, Japan)

10:50 – 11:10 3-II-D-05

Stable artificial solid electrolyte interphase with lithium chloride and lithium selenide for dendrite-free lithium metal anodes

Yongmin Jung\*, Jaeik Kim, Joonhyeok Park, Keemin Park, Taeseup Song, Ungyu Paik

*Department of Energy Engineering Hanyang University, Republic of Korea*

11:10 – 11:30 3-II-D-06

Size control and particle formation mechanism of sulfide-based solid electrolyte particles via liquid-phase synthesis

Shuji Ohsaki\*, Takeru Yano, Akihiro Hatada, Chinatsu Tatsuda, Eiji Hayakawa, Hideya Nakamura, Satoru Watano

*Department of Chemical Engineering, Osaka Metropolitan University, Japan*

11:30 – 11:50      3-II-D-07

A novel prospect of sulfide-based ceramics for energy saving applications

Cédric Bourghès<sup>\*1,2</sup>, Guillaume Lambard<sup>1</sup>, Toshiyuki Nishimura<sup>1</sup>, Satoshi Ishii<sup>1</sup>, Takao Mori<sup>1</sup>

*1 WPI International Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS), Japan*

*2 International Center for Young Scientist (ICYS), National Institute for Materials Science (NIMS), Japan*

11:50 – 12:10      3-II-D-08

In-situ photodeposition of MoS<sub>x</sub> as a co-catalyst on TiO<sub>2</sub> nanoparticles for efficient photocatalytic H<sub>2</sub> evolution

Xinxin Jiang\*, Masayoshi Fuji

*Nagoya Institute of Technology, Japan*

12:10 – 14:00

Lunch

## Room III

### Session C: International Symposium in Honor of Prof. Makio Naito

09:00 – 10:30 Chair: Wolfgang Peukert (Friedrich Alexander University - Erlangen Nuremberg, Germany)

09:00 – 09:30 3-III-C-01 INVITED

Unique Li<sup>+</sup>/e<sup>-</sup> path construction by environmental friendly and cost-effective solvent-free electrode manufacturing for high energy density li-ion batteries

Ungyu Paik\*, Keemin Park, Seungcheol Myeong, Jiwoon Kim, Minsung Kim

*Department of Energy Engineering, Hanyang University, Seoul, Republic of Korea*

09:30 – 10:00 3-III-C-02 INVITED

Stereolithography and molding techniques for the production of ceramic 3D structures

Shoji Maruo\*

*Yokohama National University, Japan*

10:00 – 10:30 3-III-C-03 INVITED

Advanced materials for space applications

Loredana Santo, Fabrizio Quadrini\*

*University of Rome Tor Vergata*

11:30 – 14:00

Lunch