

Program

[Oral Presentation]

Monday, December 12th, 2022

Opening

09:30-09:45 Opening Remarks
Kentarō Shinoda, AIST, Japan

Keynote Lecture I

Session Chair: Kentarō Shinoda (AIST)

09:45-10:30 (Keynote) A New Generation of Industrial RF-ICP Torches for Powder
Processing and Synthesis
Javad Mostaghimi, University of Toronto, Canada

10:30-10:50 Break

Session I: Novel Spray Coatings

Session Chair: Mohammed Shahien (AIST) & Masahiro Kusano (NIMS)

10:50-11:20 (Invited) The Trigger for the Discovery of the RTIC Phenomenon and the
28-year History of the AD Method
Jun Akedo, AIST, Japan

11:20-11:50 (Invited) Mechanical, Thermal and Sliding Properties of Nano-Crystal
Structured Zirconia Coating by AD Method
Ryoto Takizawa, TOTO LTD., Japan

11:50-13:20 Lunch Break

13:20-13:50 (Invited) Broadening the Scope of Applications for Aerosol Deposition
Thomas Stöcker, Heraeus Deutschland GmbH & Co. KG, Germany

13:50-14:20 (Invited) Dense Ceramic Coating Technology by Plasma-assisted Aerosol
Deposition Method on Thermal Barrier Coating of Gas Turbine Blade
Takumi Bohno, Mitsubishi Heavy Industries, LTD., Japan

14:20-14:50 (Invited) Porous Garnet Thermophotovoltaic Emitters Prepared by Plasma-Assisted Aerosol Deposition
Taizo Shibuya, NEC Corporation, Japan

14:50-15:10 Break

Session II: Evaluation and Characterization of Advanced Coatings

Session Chair: Hideki Kakisawa (NIMS) & Takashi Nagoshi (AIST)

15:10-15:40 (Invited) Advanced Interfacial Microstructure Characterization for Understanding Cold Spray Deposition
Yuji Ichikawa, Tohoku University, Japan

15:40-16:10 (TICS SP) Measurement of Coefficient of Thermal Expansion for Ceramic Coatings in Various States of Self-Standing, On-Substrate, and Fragmented Conditions
Hideki Kakisawa, NIMS, Japan

16:10-16:40 (TICS SP) Synchrotron X-ray Multiscale CT Observation of Sintering Process for Reliable Ceramics
Gaku Okuma, NIMS, Japan

16:40-18:00 **Poster Session**
Poster list is included at the poster session section below.

18:30-20:30 Banquet

Tuesday, December 13th, 2022

Keynote Lecture II

Session Chair: Kentaro Shinoda (AIST)

- 08:00-08:45 (Keynote) Photoactive Surfaces for Green Hydrogen Production by Kinetic Spraying
Thomas Klassen, Helmut Schmidt University, University of the Federal Armed Forces Hamburg; Helmholtz-Zentrum Hereon GmbH, Geesthacht, Germany

Session III: Coatings for Carbon Neutrality

Session Chair: Makoto Watanabe (NIMS) & Masato Suzuki (AIST)

- 08:45-09:15 (Invited) Development and Evaluation of EBC for CMC
Takeshi Nakamura, IHI Corporation, Japan
- 09:15-09:45 (Invited) Development of Hydrogen Energy Technologies for a Carbon Neutral Society
Norihiko Iki, AIST, Japan
- 09:45-10:00 Break
- 10:00-10:30 (Invited) Synchrotron Radiation X-ray Diffraction Evidence for Chemical Bonding of Ferroelectric Ceramic Powders and Grain Orientations in Their Films Coated by Aerosol Deposition Method
Yoshihiro Kuroiwa, Hiroshima University, Japan
- 10:30-11:00 (TICS SP) Oxidation Resistant Coatings on Ferritic Stainless Steel for SOFC Interconnector
Hideyuki Murakami, NIMS, Japan
- 11:00-11:30 (TICS SP) Hybrid Aerosol Deposition Process and Its Applicability Towards Carbon Neutrality
Mohammed Shahien, AIST, Japan
- 11:30-12:30 Lunch Break

Keynote Lecture III

Session Chair: Kentaro Shinoda (AIST)

- 12:30-13:15 (Keynote) Thermostructural Coatings for Enhancing the Efficiency and Sustainability of Heat Engines
Sanjay Sampath, Center for Thermal Spray Research, Stony Brook University, USA

Session IV: Remanufacturing and Digital Manufacturing

Session Chair: Mitsutaka Matsumoto (AIST) & Hideyuki Murakami (NIMS)

- 13:15-13:45 (Invited) How to Enable Solid-Phase Deposition of Polymers?
Kazuhiro Ogawa, Tohoku University, Japan
- 13:45-14:15 (TICS SP) Temperature Variation with Sample Geometry and Its Control During Laser Powder Bed Fusion Process
Masahiro Kusano, NIMS, Japan
- 14:15-14:30 Break
- 14:30-15:00 (TICS SP) The Remanufacturing Research in AMRI, AIST
Mitsutaka Matsumoto, AIST, Japan
- 15:00-15:30 (TICS SP) Materials Integration for Additive Manufacturing
Makoto Watanabe, NIMS, Japan

Panel Discussion

Moderator: Kentaro Shinoda (AIST)

- 15:30-16:15 Future Direction of Coating Research

Closing

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- 16:15-16:30 Closing Remarks
Hideki Kakisawa, NIMS, Japan

[Poster Presentation]

- P01** Effect of Plasma Input Power on Fine-Particle Spraying of Yttria-Stabilized Zirconia in Hybrid Aerosol Deposition: Is the Particle Melted or Not?
Kentaro Shinoda, *et al.*, AIST, Japan
- P02** Effect of Powder Particle Size of Thermal Spray Interlayer on Laser Welding of Dissimilar Metals
Shoji Mihara, *et al.*, Toyohashi University of Technology, Japan
- P03** Fabrication and Characterization of Suspension Plasma Sprayed Aluminum Nitride Coatings
Satoshi Shimizu, *et al.*, Toyohashi University of Technology, Japan
- P04** Investigation of Orientation Dependence on Large Deformation Process of Brittle Material Particles at Room Temperature
Keiichi Sato, *et al.*, Shibaura Institute of Technology, Japan
- P05** Effect of Particle Morphology on YOF Deposition by Cold Spray
Tomoki Kawabe, *et al.*, Toyohashi University of Technology, Japan
- P06** Fabrication of Cu/TiO₂ Composite Coating by Cold Spray Process
Tomohiro Ono, *et al.*, Toyohashi University of Technology, Japan
- P07** Hard Dense Ceramic Coatings on Different Substrate Materials
Mohammed Shahien, *et al.*, AIST, Japan
- P08** A Novel Approach to Develop Oxidation Resistant Surface on Cast Ni-based Superalloys
Hideyuki Murakami, *et al.*, NIMS, Japan
- P09** Investigation of Low-Pressure Cold-Sprayed Particle Deposition on Low-Temperature Plasma-Treated Substrate
Hiroki Saito, *et al.*, Tohoku University, Japan
- P10** Hybrid Aerosol Deposition with a Supersonic Nozzle
Yuki Akedo, *et al.*, Tsukuba University, Japan