IGPAC 2025 Technical program

○: Presenter, ★: Invited Talk, ☆: Oral presentation

■■Mon, Oct 6, 2025 (2nd day) (Room A)■■

Green Process 1

(9:00) (Chair 1111)

1-A-1. ★High Level Introduction to the Advances in Cold Sintering

○ Clive A Randall (The Pennsylvania State University, United States)

1-A-2. ★TOTO's Contribution to Semiconductor Manufacturing through Aerosol Deposition

○ Tomokazu Ito (TOTO ltd., Japan)

(10:35) (Chair 1111)

1-A-3. ★Cold sintering assisted hybrid processing of high-performance ceramics

○Jing Guo (Xi'an Jiaotong University, China)

1-A-4. ★Next-Generation Low-Dimensional Nanomaterials: Innovative Exfoliation Methods and Device Integration

○ Jae-Young Choi (Sungkyunkwan University, Korea)

Green Process 2

(13:10) (Chair 1111)

1-A-5. ☆Green processing of 2D nanosheets for advanced electronic/energy materials

○ Minoru Osada (Nagoya University, Japan)

1-A-6. ★Exploring the synergy between chemistry and non-conventional sintering processes: a first step towards the eco-design of functional ceramics and devices

○ Catherine Elissalde[1], N. Bencharef[1,2], Y. Denis[1], C. Castro Chavarria[1,2], E. Martin[1,3], J. De Landtsheer[3], R. Aloui[4], B. Lafarge[4], M. Suchomel[1], M. Maglione[1], G. Goglio[1], E. Roitero[5], H. Reveron[5], J. Chevalier[5], T. Hérisson de Beauvoir[3], C. Estournès[3], G. Philippot[1], H. Debéda[1], U.C. Chung[1] (1 Univ. Bordeaux, CNRS, Bordeaux INP, ICMCB, UMR 5026, Pessac, France, 2 Univ. Bordeaux, CNRS, Bordeaux INP, IMS, UMR 5218, Talence, France, 3 CIRIMAT, Université de Toulouse, Toulouse INP, CNRS, Toulouse, France, 4 Roberval, Centre de recherche Royallieu, Université de Technologie de Compiègne, France, 5 INSA de Lyon, Université Claude Bernard Lyon 1, CNRS, MATEIS, UMR 5510, Villeurbanne, France)

1-A-7. ★Towards green processing for advanced ceramics by electric field/current-assisted technology

○ Hidehiro Yoshida, Kamarul Aiman Bin Shariffuddin, Hiroki Motomura, Kohta Nambu, Yang Ying, Fei Shen Ong, Hiroshi Masuda, Koji Morita, Takahisa Yamamoto (The University of Tokyo, Japan)

Green Process 3

(15:05) (Chair 1111)

1-A-8. ★Shaping the Future: Additive Manufacturing of Porous Ceramics

Swantje Funk, David Köllner, Michelle Weichelt, Larissa Wahl, ○Tobias Fey (Univ. Erlangen-Nuremberg, Germany)

1-A-9. ★Carbonate apatite arti

○ Kunio Ishikawa (Kyushu University, Japan)

1-A-10. ☆The current status and future prospects of the aerosol deposition method ～Focusing on the deposition mechanism with RTIC phenomenon～

○ Jun Akedo (National Institute of Advanced Industrial Science & Technology (AIST))

■■ Tue, Oct 7, 2025 (3rd day) (Room A)■■

Green Process for CN

(9:00) (Chair 1111)

2-A-1. ★Aerosol deposition of photo-cathode coatings for solar hydrogen generation

○ Thomas Klassen (Institute of Hydrogen Technology & Helmholtz-Zentrum hereon GmbH, Germany), A. Elsenberg, F. Gärtner, M. Schieda, A. Bruera, M. Borghi, G. Dolcetti, G. Bolelli, L. Lusvarghi

2-A-2. ★Development of zeolite adsorbent with low water sensitivity for CO2 capture

○ Toru Wakihara (The University of Tokyo, Japan)

Battery & Interface

(10:35) (Chair 1111)

2-A-3. ★ Water-based quasi-solid-state lithium ion batteries with easy direct recycling system

○ Shintaro Yasui and Yosuke Shiratori (Institute of Science Tokyo, Japan)

2-A-4. ★ Grain Boundary Atomic Structures and Their Dynamics in Ceramics

○ Yuuichi Ikuhara (University of Tokyo, Japan)

■Tue, Oct 7, 2025 (3rd day) (Room B)■

AD Process 1 -JEMS Co-sponsored Sessions-

(13:15) (Chair 1111)

2-B-1. ☆ Bonding and Layer Formation in Cold Gas Spraying and Aerosol Deposition

○ Frank Gaertner (Helmut Schmidt University, University of the Federal Armed Forces Hamburg, Germany)

2-B-2. ☆ Coating Formation Behavior Based on Strain Energy in the Aerosol Deposition Method

○ Yuki Furuya, Makoto Hasegawa (Yokohama National University, Japan)

2-B-3. ★ How to produce ceramics in the millimeter thickness range at room temperature by the Powder Aerosol Deposition Method (ADM)

○ Daniel Paulus, Daniela Schönauer-Kamin, Ralf Moos (University of Bayreuth, Germany)

2-B-4. ☆ An Entangled Material made from Fiber Aerosol Deposition Method Synthesis of Fiber Deposits Using Aerosol Deposition Method

○ Hongwu Yu , Naoshi Ikeda , Masakazu Mori , Jun Akedo , Jun Kano, and Jaehyuk Park (Institute of Science Tokyo, Japan)

2-B-5. ★ Aerosol deposition of functional films on metal and polymer substrates

○ Hana Ursic (Jozef Stefan Institute, Slovenia)

2-B-6. ☆ Effect of poling conditions on generation energy by Vibration using $BaTiO_3$ as-deposited thick films formed by Aerosol Deposition

○ Yoshihiro Kawakami (Research Institute for Electromagnetic Materials, Japan)

2-B-7. ☆ Study on wear mechanism of zirconia film toward new applications of AD method

○ Ryoto Takizawa, Katsumi Yoshida, (TOTO LTD., Japan)

■Tue, Oct 7, 2025 (3rd day) (Room C)■

Cold Sintering 1

(13:15) (Chair 1111)

2-C-1. ★ Non-Equilibrium Densification of MnO_2 Polymorph Cathodes via Cold Sintering for Advanced Zn-Ion Batteries

○ Ju-Hyeon Lee, Mike Mervosh, Rajagopalan Ramakrishnan, Clive Randall (The Pennsylvania State University, United States)

2-C-2. ★ Grain boundary impedance evolution during Cold Sintering Process of electroceramics

○ Thomas Herisson de Beauvoir, Catherine Elissalde, Claude Estournès (CNRS – CIRIMAT, France)

2-C-3. ☆ Diffusion Control at Solid Interfaces via Nonequilibrium Millimeter-Wave Irradiation

○ Takashi Teranishi, Nobuaki Nishikawa, Chihiro Toshioka, Rikuya Ueda, Akira Kishimoto (Okayama University, Japan)

2-C-4. ☆ Cold Sintering of Hexagonal Boron Nitride Bulk Ceramic

○ Hiroshi Nishiyama, (TAIYO YUDEN CO., LTD., Japan)

2-C-5. ☆ Near-zero thermal expansion of alumina/β-eucryptite composites densified via cold sintering process and post-crystallization"

○ Yeongjun Seo, Sangmin Lee, Tohru Sekino (The University of Osaka, Japan)

2-C-6. ☆ Sustainable Recycling of NKN-based materials via Cold Sintering

○ Alexander Martin, Kyle G. Webber, Kenichi Kakimoto (Nagoya Institute of Technology, Japan)

2-C-7. ☆ "Catalysis related to ferroelectric

○ Jun Kano, Naoshi Ikeda (Okayama University, Japan)

■ Wed, Oct 8, 2025 (4th day) (Room B) ■

AD Process 2 - JEMS Co-sponsored Sessions-

(9:00) (Chair 1111)

3-B-1. ★R&Ds of Oxide-based All-Solid-State Rechargeable Batteries using Aerosol Deposition

○ Yasutoshi Iriyama (Nagoya University, Japan)

3-B-2. ★ "Powder Aerosol Deposition and Polymers: Is There Hope for a Common Future?

○ Marc C. Thiel, Karen Lienkamp (Saarland University, Germany)

Device Application 1

(10:50) (Chair 1111)

3-B-3. ★Strategies to overcome the main challenges of Spark Plasma Sintering process and to design advanced ceramics with tailored properties

○ Claude ESTOURNÈS, Julien DE LANDTSHEER, Nicolas ALBAR, Mélanie ROUSSELLE, Geoffroy CHEVALLIER, Alicia WEIBEL, Florence ANSART, Guillaume FRADET, Charles MANIERE, Catherine ELISSALDE, Thomas HERISSON de BEAUVOIR (CNRS-CIRIMAT, France)

3-B-4. ☆ Synthesis of SrTiO3/TiN core/shell-type nanoparticles and thermoelectric properties of the SPS-sintered nanocomposites

○ Michitaka Ohtaki (Kyushu University, Japan)

3-B-5. ☆ Hybrid Aerosol Deposition of Dense Ceramic Coatings: Process Insights and Recent Advances

○ Mohammed Shahien, Kentaro Shinoda (Integrated Research Center for Resilient Infrastructure, National Institute of Advanced Industrial Science and Technology (AIST))

■ Wed, Oct 8, 2025 (4th day) (Room C) ■

Cold Sintering 2

(9:00) (Chair 1111)

3-C-1. ★ Cold assisted sintering of alpha and gamma alumina

○ Ian M. Reaney (University of Sheffield, United Kingdom)

3-C-2. ★ Mechanism of Water-Assisted Solid-State Reaction"

○ Kenji Toda (Niigata University, Japan)

Device Application 2

(10:50) (Chair 1111)

3-C-3. ★Reliability management of short-term and long-term with cold sintering

○ Shuichi Funahashi[1], Hiroaki Ide[1], Ayumi Shinagawa[1], Tatsuya Fukutani[1], Satoshi Yokomizo[1], Julian Fanghanel[2], Clive A. Randall[2], Masahiko Kimura[1] (1 Murata Manufacturing Co., Ltd., Japan)

3-C-4. ☆ Electrochemical CO2 reduction catalytic activity of Zn-Al layered double hydroxides

○ Ryosuke Nakazato, Keeko Matsumoto, N. C. Rosero-Navarro, Akira Miura, Kiyoharu Tadanaga (Hokkaido University, Japan)

3-C-5. ☆ Synthesis process of nanocomposite particles for electrochemical ceramic cells by spray pyrolysis

○ Hiroyuki Shimada, Yuki Yamaguchi, Masaya Fujioka, Mizuki Momai (National Institute of Advanced Industrial Science and Technology (AIST))

■■Wed, Oct 8, 2025 (4th day) (Room A)■■

Green Process for CE

(13:25) (Chair 1111)

3-A-1. ☆ Solidification of gel raw materials for Acid-base chemical densification process: Low-temperature solidification and decomposition in base solutions

○ Yuki Yamaguchi, Masaya Fujioka, Rei Nakayama, Hirofumi Sumi, Satoshi Hiroi, Koji Ohara (National Institute of Advanced Industrial Science and Technology (AIST))

3-A-2. ★ Chemothermal Pulverization Process -An attempt at recycling ceramics-

○ Naoki Ohashi and Hiroyo Segawa (National Institute for Materials Science, Japan)

3-A-3. ★ "Interface-Selective Debonding of Multi-Material Assemblies by Electrical Pulsed Discharge for Inner-Loop Circular Economy

○Chiharu Tokoro (Waseda University, Japan)

3-A-4. ★ "Calcium and CO2 Circulation in Cement Materials toward Circular Economy and Carbon Neutrality

○ Takafumi Noguchi (The University of Tokyo, Japan)