

Program Book

The 23rd International Symposium on Eco-Materials Processing and Design

ISEPD 2025

January 13th–16th, 2025

Osaka International Conference Center
“Grand Cube Osaka”, Osaka, Japan

Organized by:
ISEPD Organizing Committee
Co-organized by:
SANKEN, Osaka University

Supported by:
Osaka Convention & Tourism Bureau
Nippon Sheet Glass Foundation for Materials Science and Engineering
MicrotracBEL Corp.
NIKKATO CORPORATION

Endorsed by:
New Ceramics Forum / The Ceramic Society of Japan



**OSAKA CONVENTION
& TOURISM BUREAU**



公益財団法人 日本板硝子材料工学助成会
Nippon Sheet Glass Foundation for Materials Science and Engineering

MICROTRAC
PARTICLE CHARACTERIZATION



NIKKATO CORPORATION



Welcome

The International Symposium on Eco-materials Processing and Design (ISEPD) was first held in 2000, and till now the symposium has been held annually for exchanging the knowledge of science and engineering of eco-materials more than two decades.

On a global basis, the ISEPD conference will cover outstanding advancements in research, production and use of eco-materials. This symposium series offers material researchers and users a valuable opportunity for new knowledge on eco-materials in the fields of green processing, advanced materials, energy conversion, environmental protection, long-term usage, and so on, but not limited. From very basic science to advanced application and industrialization, the ISEPD conference always challenges to provide academic platform for sharing various ideas and knowledges and for transferring them not only to communities but also societies. These efforts are important actions to solve some of the SDGs' goals and to realize our sustainable and bright future.

We sincerely welcome all of you to the ISEPD2025 in Osaka and hope that you will enjoy scientific dialogue and further deepen personal exchange through the symposium.

January 13, 2025



Tohru Sekino
ISEPD 2025 Chair

Organizing Committee

Conference Chair:

Tohru Sekino, Osaka University

Conference Co-chairs:

Tadachika Nakayama, Nagaoka University of Technology

Shu Yin, Tohoku University

Honorary Chairs:

Koichi Niihara, Nagaoka University of Technology

Kozo Ishizaki, Nagaoka University of Technology

Junichi Hojo, Kyushu University

Lian Gao, Shanghai Institute of Ceramics

Organizing Committee

General Chairs:

Soo Wohn Lee, Sun Moon University
Yubao Li, Sichuan University
Sanjay Mathur, University of Cologne
Jian-Feng Yang, Xi'an Jiaotong University
Wenbin Cao, University of Science and Technology Beijing
Santi Maensiri, Suranaree University of Technology
Ravi Kumar, IIT Madras

Local Steering Committee:

Tomoyo Goto, Osaka University
Tohru Sugahara, Kyoto Institute of Technology
Sung Hun Cho, Osaka University
Masaya Matsuoka, Osaka Metropolitan University
Yu Horiuchi, Osaka Metropolitan University
Yeongjun Seo, Osaka University
Yoshifumi Kondo, Osaka University
Do Hyung Han, Osaka University

International Advisory Committee:

Alfredo-Aguilar Elguezar, CIMAV
Anand S. Khanna, IIT Bombay
Banh Tien Long, Hanoi University of
Science and Technology
Bo Young Hur, Kyung Sang National
University
Byung Se Jun, Kyungnam National
University
Chuanxian Ding, Shanghai Institute of
Ceramics
Detlef Bahneman, University of Hannover
Djega Marriadassou, Paris VI University
Dongfeng Xue, Changchun Institute of
Applied Chemistry
G. P. Li, University of California, Irvine
Hao Du, Institute of Metal Research
Hideo Nakajima, Osaka University
Hirohisa Tanaka, Kwansai Gakuin
University
Hirotugu Takizawa, Tohoku University
Hiroshi Kageyama, Kyoto University
Hua-Tay Lin, Guangdong University of
Technology
Jianbao Li, Hainan University
Jianfeng Huang, Shanxi University of
Science and Technology
Jianfeng Yang, Xi'an Jiaotong University
Jing Sun, Shanghai Institute of Ceramics
Joaquin Lira-Olivares, Simon Bolivar
University
Jun Yang, Xi'an University of Architecture
and Technology
Junichi Matsushita, Tokai University
Katsuaki Sukanuma, Osaka University
Kezheng Sang, Chang'an University
Klaas de Groot, Leiden University

KyoungIl Moon, Korea Institute of
Industrial Technology
Lei Jiang, Beihang University
Leticia M. Torres-Martinaz, Universidad
Autonoma De Nuevo Leon
Masakazu Anpo, Osaka Metropolitan
University
Masanori Sakamoto, Osaka University
Masaya Nogi, Osaka University
Ngakan P. G. Suardana, Udayana
University
Ni Made Dwidiani MASc., Udayana
University
Ramaseshan Rajagopalan, IGCAR,
Kalpakkam
Rameshwar Adhikari, Tribhuvan University
Robert Hurt, Brown University
Sanjaya Mathur, University of Cologne
Santi Maensiri, Suranaree University of
Technology
Shaoxiong Zhou, Advanced Technology &
Materials Co. Ltd
Shun-Ichiro Tanaka, Tohoku University
Simo-Pekka Hannula, Helsinki University of
Technology
Somchai Thongtem, Chiang Mai University
Tasuki Ohji, AIST Nagoya
Weimin Wang, Wuhan University of
Technology
Xianhong Wang, Changchun Institute of
Applied Chemistry
Yasuo Uchiyama, Nagasaki University
Yoshihiro Hirata, Kagoshima University
Yuhua Wang, Lanzhou University
Yuki Yamada, Osaka University
Zhengyi Fu, Wuhan University of
Technology

Organizing Committee

Academic Committee:

Atsushi Nakahira, Osaka Metropolitan University
Byungha Shin, Korea Advanced Institute of Science and Technology
Eiji Tani, Advanced Industrial Science and Technology
Feng Pan, Tsinghua University
Geun Young Yeom, Sung Kyunkwan University
Guanjun Qiao, Jiangsu University
Haiqing Yin, University of Science and Technology Beijing
Hao Wang, Wuhan University of Technology
Heon Lee, Korea University
Hikaru Ogino, Advanced Industrial Science and Technology
Hirofumi Tanaka, Kyushu Institute of Technology
Hojung Chang, DanKuk University
Hyeongtag Jeon, Hanyang University
Hyung Mi Lim, Korea Institute of Ceramic Engineering and Technology
Hyung Sun Kim, Inha University
Jian-Feng Zhu, Shaanxi University of Science and Technology
Katsuro Hayashi, Kyushu University
Kazuhiko Maeda, Tokyo Institute of Technology
Jin Jyeok Kim, Chonnam National University
Kwang Ho Kim, Pusan National University
Kyung Nam Kim, Gangwon University
Li Fu, Northwest Polytechnical University
Li Oi Lun Helena, Pusan National University
Makoto Nanko, Nagaoka University of Technology

Masaya Matsuoka, Osaka Metropolitan University
Miki Inada, Kyushu University
Ru-Shi Liu, National Taiwan University, Taipei
Sang Yeop Park, Kangnung National University
Shu Yin, Tohoku University
Soichiro Sameshima, Kagoshima University
Soon-Ku Hong, Chungnam National University
Tae-Ho Kim, Sun Moon University
Tadachika Nakayama, Nagaoka University of Technology
Takanori Watari, Saga University
Takashi Shirai, Nagoya Institute of Technology
Wenbin Cao, University of Science and Technology Beijing
Won Yong Kim, Korea Institute of Industrial Technology
Xuebin Zheng, Shanghai Institute of Ceramics
Yamato Hayashi, Tohoku University
Yi Zeng, Shanghai Institute of Ceramics
YoungHee Kim, Korea Institute of Ceramic Engineering and Technology

Publication Committee:

Jian-Feng Yang, Xi'an Jiaotong University
Wenbin Cao, University of Science and Technology Beijing
Hyungsun Kim, Inha University
Tohru Sekino, Osaka University



General Information

Program:

Monday, January 13

Registration (Open at 15:00 till 19:00)

Welcome Reception (18:00~)

Tuesday, January 14

Registration (8:30~), Opening Ceremony, Plenary Lectures, Oral Sessions, Poster Session

Wednesday, January 15

Registration (8:30~), Plenary Lectures, Oral Sessions, Poster Session, Banquet

Social Program:

Welcome Reception

January 13 (Monday), from 18:00pm

at the Restaurant "**Grande Toque**" 12th Floor of the Grand Cube Osaka (conference venue. Tel (dial-in): 06-6441-1485)

*Included in the registration fees.

Symposium Banquet

January 15 (Wednesday), from 18:00pm

at the banquet hall "**Sanraku (山楽)**" in **RIHGA ROYAL HOTEL Osaka**, West Wing 2nd Floor.

<https://www.rihga.com/osaka>

*Hotel locates just neighbor of Grand Cube Osaka, and is connected via a passageway on the first floor of to Grand Cube Osaka.

*Included in the registration fees.

Symposium Tour

Please note that the symposium office will not prepare official symposium tour this time, but various information will be provided at the registration/information desk.

Information for Presenters:

Oral Presentation

ISEPD will provide LCD projectors and screens (Only HDMI support) in all meeting rooms for use during conference sessions. Presenters are asked to bring his/her own lap-top computers or equivalent devices (PDA etc.).

Authors who will not bring the PCs are asked to bring the presentation file (Power point or PDF only) by USB memory.

Presentation time is; 30 min for Keynote, 20 min for Invited and Contributed Oral presentations, respectively, including discussion time. Presenting authors are asked to keep 5 min for the discussion (Q&A).

Poster Session Guidelines

Poster board panel size is A0 (approximately 84 cm-width and 119 cm-height). Pins to fix the poster will be provided.

Poster Session will be held at the Poster & Break Room (no. #1008)

Presenting author(s) are asked to put his/her poster in each Poster ID number panel till the noon (12pm) in each poster session days (January 14 and 15).

The authors are kindly asked to be present in the vicinity of their posters during the poster session to answer questions that interested viewers may have.

Student Poster Award evaluation will be carried out during the poster session time (13:00~14:00) in each days.

General Information

Wi-Fi:

Free Wi-Fi access is available at the Grand Cube Osaka.
For details, please see the sign in front of the elevator and registration desk.

Cloakroom:

Cloakroom will be available on Tuesday (Jan 14) and Wednesday (Jan 15). The cloak is located at the room no.#10-1. The operation time is;
Tuesday, January 14; from 8:30 am till 18:00
Wednesday, January 15; from 8:30 pm till 17:00
Those who have left luggage should come to pick it up by the end of opening time.

Lunch:

Lunch on Tuesday (January 14) and Wednesday (January 15) is basically on your own. However, a limited number of boxed lunches will be available on both days (first-come, first-served) near the registration desk. Price is 1,000JPY/box (cash only).

Venue & Access

Osaka International Convention Center: Grand Cube Osaka

5-3-51 Nakanoshima, Kita-ku, Osaka City, Osaka 530-0005, JAPAN

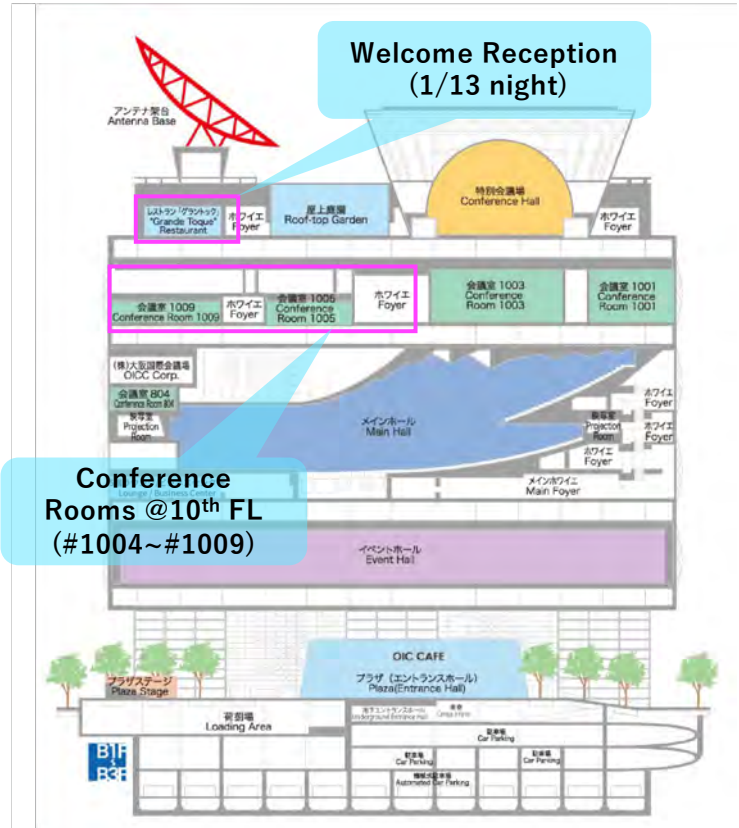
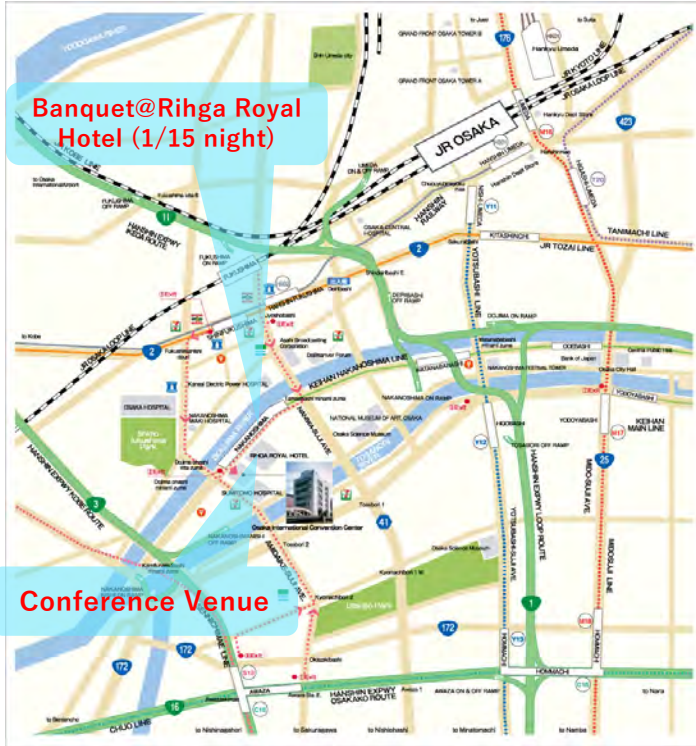
TEL: +81-(0)6-4803-5555

<https://www.gco.co.jp/>

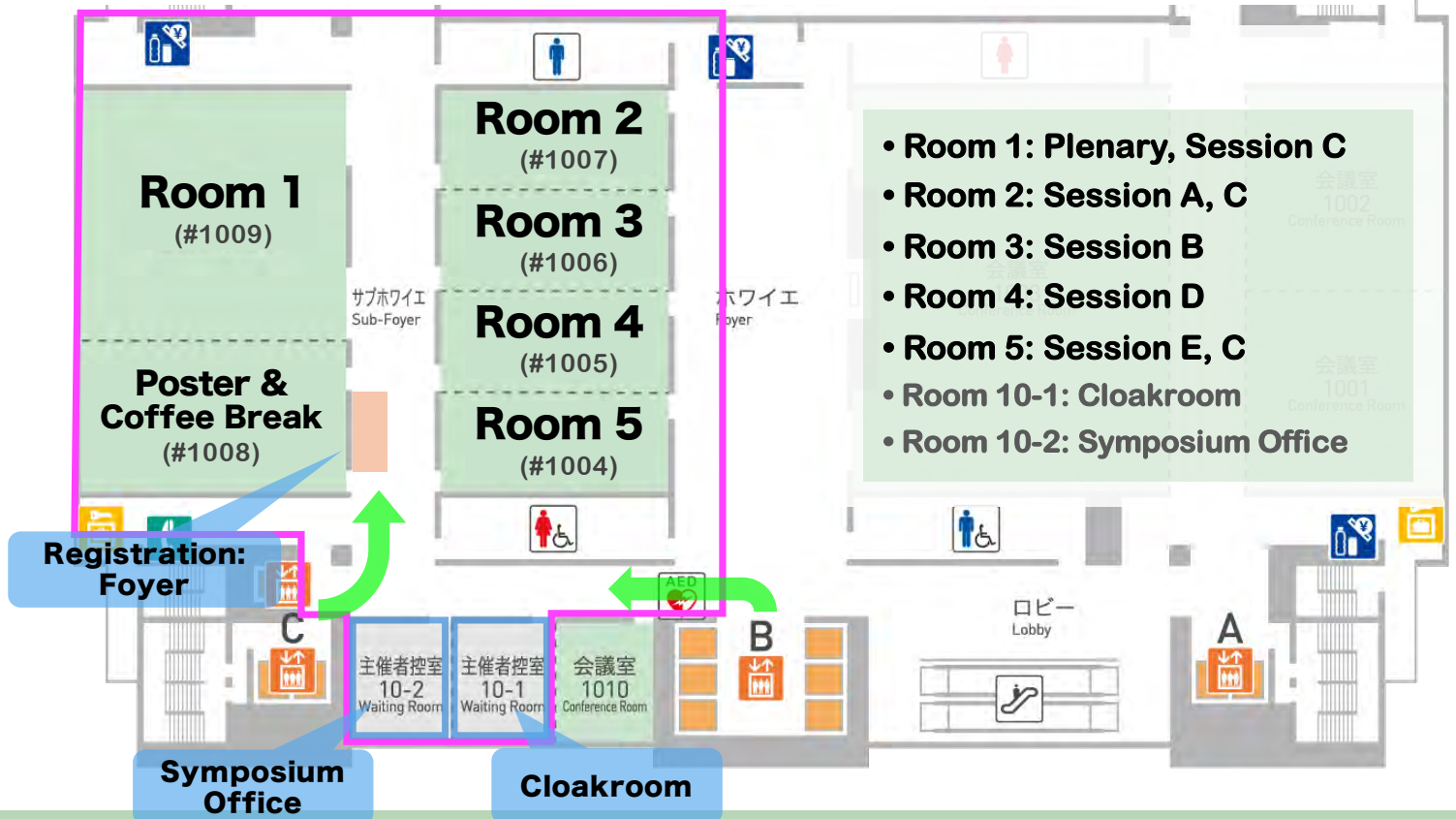


Venue & Floor Plan

Osaka International Convention Center: Grand Cube Osaka



Registration & Technical Session at 10th FL



Program at a Glance

Monday, January 13, 2025

at the Osaka International Convention Center (Grand Cube Osaka)

Time	Session	Room 1
15:00 - 19:00	Registration	Registration Foyer of the 10th FL
18:00 -	Welcome Reception	Welcome Reception at the Restaurant "Grande Toque" 12th FL of Grand Cube Osaka

Tuesday, January 14, 2025

at 10th FL, Osaka International Convention Center (Grand Cube Osaka)

Time	Session	Room 1				
8:30 -	Registration	Registration				
9:00 - 9:30	Welcome	Welcome speech				
9:30 - 10:10	Plenary session I	Plenary 1: PL-1 Nobuhito Imanaka , Osaka University <i>Unique Route to Realize Single-Crystal Growth of Non-stoichiometric Rare Earth Oxides and Aluminum Oxide</i>				
10:10 - 10:30	Break	Coffee break				
10:30 - 11:10	Plenary session I	Plenary 2: PL-2 Eva Hemmer , University of Ottawa <i>A Lanthanide Journey: Navigating Synthesis and Potential Applications of Lanthanide-based Nanomaterials</i>				
11:10 - 11:50	Plenary session I	Plenary 3: PL-3 Sangwoo Kim , Yonsei University <i>Ultrasound- and body motion-driven triboelectric power generation for self-sustained healthcare</i>				
11:50 - 13:00	Lunch	Lunch (Organizing Committee meeting)				
13:00 - 14:00	Poster	Poster Session (I) Room: Poster (10F, #1009)				
	Session	Room 1	Room 2	Room 3	Room 4	Room 5
14:00 - 14:10	Oral session	CO-01K	AO-01K	BO-011	DO-01K	EO-011
14:10 - 14:20				BO-02		EO-021
14:20 - 14:30						CO-02I
14:30 - 14:40		CO-03	AO-03		DO-03	
14:40 - 14:50				CO-04I		AO-04
14:50 - 15:00		CO-05I	AO-05I		BO-05	
15:00 - 15:10						
15:10 - 15:20						
15:20 - 15:30						
15:30 - 15:40						
15:40 - 16:00	Break	Coffee break				
16:00 - 16:10	Oral session	CO-06K	AO-06	BO-06I	DO-05I	EO-05
16:10 - 16:20			AO-07	BO-07	DO-06	EO-07
16:20 - 16:30		CO-07I				
16:30 - 16:40		CO-08	AO-09	CO-20I moved here	DO-08	
16:40 - 16:50						
16:50 - 17:00		CO-09				
17:00 - 17:10						
17:10 - 17:20						
17:20 - 17:30						

Wednesday, January 15, 2025

at 10th FL, Osaka International Convention Center (Grand Cube Osaka)

Time	Session	Room 1	Room 2	Room 3	Room 4	Room 5	
8:30 -	Registration	Registration					
9:00 - 9:10	Oral session	CO-10K	AO-10I		DO-09I	CO-25I	
9:10 - 9:20			AO-11	BO-10I	DO-10	CO-26I	
9:20 - 9:30		CO-11K	AO-12	BO-11	DO-11	CO-27	
9:30 - 9:40			CO-12I	AO-13K	BO-12	DO-12	CO-28
9:40 - 9:50							
9:50 - 10:00							
10:00 - 10:10							
10:10 - 10:20							
10:20 - 10:40	Coffee break	Coffee break					
10:40 - 10:50	Oral session	CO-13K	CO-19K	BO-13K	DO-13I	CO-29I	
10:50 - 11:00		CO-14I	CO-20I Move to Jan 14 Room 3	BO-14I	DO-14I	CO-30I	
11:00 - 11:10					DO-15	CO-31	
11:10 - 11:20		CO-15I	CO-21				
11:20 - 11:30							
11:30 - 11:40							
11:40 - 11:50							
11:50 - 13:00	Lunch	Lunch					
13:00 - 14:00	Poster	Poster Session (II) Room Poster (10F, #1009)					
14:00 - 14:10	Oral session	CO-16I	CO-22I				
14:10 - 14:20		CO-17I	CO-23				
14:20 - 14:30		CO-18	CO-24				
14:30 - 14:40							
14:40 - 14:50							
14:50 - 15:00							
15:00 - 15:20	Break	Coffee break					
	Session	Room 1					
15:20 - 16:00	Plenary session	Plenary 4: PL-4 Jian-Feng Yang , Xi'an Jiaotong University <i>Fabrication of SiC and SiC/Ti₃SiC₂ composites by Novel Two-Step Reaction Sintering</i>					
16:00 - 16:40	Plenary session	Plenary 5: PL-5 K. C. Hari Kumar , Indian Institute of Technology Madras (IIT Madras) <i>Applications of CALPHAD Method to Ceramic Systems</i>					
16:40 - 17:00	Closing	Closing Ceremony					
		Rihga Royal Hotel Osaka					
18:00 - 20:00		Banquet/Closing Ceremony					

Tuesday, January 14, 2025

Room 1 (10F, #1009)

Session: Plenary Lecture I

Chair(s): Tohru Sekino (Osaka University), Sanjay Mathur (University of Collogne)

9:30 - 10:10	Unique Route to Realize Single-Crystal Growth of Non-stoichiometric Rare Earth Oxides and Aluminum Oxide
PL - 1	<u>Nobuhito Imanaka</u> Department of Applied Chemistry, Faculty of Engineering, Osaka University
10:30- 11:10	A Lanthanide Journey: Navigating Synthesis and Potential Applications of Lanthanide-based Nanomaterials
PL - 2	<u>Eva Hemmer</u> Department of Chemistry and Biomolecular Sciences, University of Ottawa
10:10 - 10:30	<i>Coffee break</i>
11:10 - 11:50	Ultrasound- and Body Motion-driven Triboelectric Power Generation for Self-Sustained Healthcare
PL - 3	<u>Sangwoo Kim</u> Department of Materials Science and Engineering, Yonsei University / Center for Human-oriented Triboelectric Energy Harvesting, Yonsei University
11:50 - 13:00	<i>Lunch</i>

Wednesday, January 15, 2025

Room 1 (10F, #1009)

Session: Plenary Lecture II

Chair(s): Ravi Kumar (IIT Madras), Tadachika Nakayama (Nagaoka University of Technology)

15:20 - 16:00	Fabrication of SiC and SiC/Ti ₃ SiC ₂ composites by Novel Two-Step Reaction Sintering
PL - 4	<u>Jian-Feng Yang</u> State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University
16:00 - 16:40	Applications of CALPHAD Method to Ceramic Systems
PL - 5	<u>K. C. Hari Kumar</u> Department of Metallurgical & Materials Engineering, Indian Institute of Technology Madras (IIT Madras)
16:40 - 17:00	<i>Closing Ceremony</i>

Tuesday, January 14, 2025	
Room 2 (10F, #1007) Session A: Green processing of eco-materials I Chair(s): Seong-Hee Lee (Mokpo National University), Wei Ji (Wuhan University of Technology)	
14:00 - 14:30 AO-01K	Preparation of (Ni ₂ B+C)/Cu composites by high-efficiency in-situ powder metallurgy method and regulation on their properties <u>Lei Jia</u> , Zhen-lin Lu, Jian-ping Jia Xi'an University of Technology
14:30- 14:50 AO-02I	Manufacturing Technology and Industrial Applications for Eco-Friendly Clad Metals <u>Young-Rae Cho</u> , Dong-Hyun Bae Pusan National University
14:50- 15:10 AO-03	Microstructure evolution and deformation mechanism of entropic alloy during sliding wear in oxide dispersion strengthening <u>Jie Jin</u> Tsinghua University
15:10 - 15:30 AO-04	Facile process for ZnMN ₂ (M=Si, Ge) under ambient pressure from cyanamide compounds and group 14 oxides <u>Ren Zushi</u> , Yamato Hayashi, Jun Fukushima, Hirotsugu Takizawa Tohoku University
15:30 - 15:50 AO-05I	3D van der Waals Integration of 2D Nanomaterials for Electronics <u>Joohoon Kang</u> Sungkyunkwan University (SKKU)
15:50 - 16:00	<i>Coffee break</i>
Room 2 (10F, #1007) Session A: Green processing of eco-materials II Chair(s): Young-Rae Cho (Pusan National University), Yuki Yamaguchi (National Institute of Advanced Industrial Science and Technology (AIST))	
16:00 - 16:20 ★ AO-06	Room-temperature synthesis of BaTiO ₃ /Ag nanocomposite particles using ultrasound irradiation <u>Tatsuya Shishido</u> , Yamato Hayashi, Jun Fukushima, Hirotsugu Takizawa Tohoku University
16:20- 16:40 AO-07	Facile sonochemical synthesis of boehmite nanopowder from Al powder at room temperature for Congo red dye removal <u>Toshiki Yamanaka</u> , Yamato Hayashi, Jun Fukushima, Hirotsugu Takizawa Tohoku University

<p>16:40- 17:00</p> <p>AO-08</p>	<p>Influence of $(\text{HSiO}_{1.5})_n$ Sol-Gel Polymer Structure on High-yield Synthesis of Silicon Nanocrystals via a Green Magnesio-milling Process</p> <p>Yuting WEI, Yuping XU, Yunzi XIN, Kunihiko KATO, Takashi SHIRAI Department of Life Science and Applied Chemistry/School of Engineering, Nagoya Institute of Technology</p>
<p>17:00- 17:20</p> <p>AO-09</p>	<p>Precursor Structure-Driven Green and Sustainable Mechanochemical Synthesis of Functional Silicon Nanocrystals</p> <p>Yuping Xu, Yuting Wei, Yunzi Xin, Kunihiho Kato, Takashi Shirai Advanced Ceramics Research Center, Nagoya Institute of Technology</p>

Wednesday, January 15, 2025	
Room 2 (10F, #1007)	
Session A: Green processing of eco-materials III	
Chair(s): Jian-Feng Yang (Xi'an Jiaotong University), Yamato Hayashi (Tohoku University)	
09:00 - 09:20 AO-10I	Near room-temperature process for fabrication of dense ceramic via Acid-base chemical densification process <u>Yuki Yamaguchi</u> National Institute of Advanced Industrial Science and Technology (AIST)
09:20 - 09:40 ★ AO-11	Fabrication of whitlockite ceramics via low-temperature densification method based on cold sintering process <u>Shiori Nawa</u> , Yeongjun Seo, Yoshifumi Kondo, Sunghun Cho, Jonas Stadulis, Aleksej Zarkov, Tomoyo Goto, Tohru Sekino SANKEN, Osaka University
09:40 - 10:00 AO-12	Low-temperature sintering of advanced ceramics under high pressure <u>Wei Ji</u> , Zhengyi Fu Wuhan University of Technology
10:00 - 10:20 AO-13K	Molecular Precursors for the Development of Advanced Ceramics for Thermostructural Applications: From Lab-scale Research to Incubation of Start-ups <u>Ravi Kumar</u> Laboratory for High Performance Ceramics, Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras (IIT Madras)

Tuesday, January 14, 2025	
Room 3 (10F, #1006)	
Session B: Advanced eco-materials I	
Chair(s): Tadachika Nakayama (Nagaoka University of Technology), Bo Wang (Xi'an Jiaotong University)	
14:00 - 14:20 BO-01I	Synthesis of Substrate-free Inorganic Large-size Platelike Novel Pigments Particles with Excellent Pearl-effect Qiuyu Cheng, Ayahisa Okawa, Takuya Hasegawa, Yibei Xue, <u>Shu Yin</u> IMRAM, Tohoku University
14:20- 14:40 BO-02	Development of the NIR-to-NIR phosphor with high thermal stability for anti-counterfeiting and certification materials <u>Tae Wook Kang</u> , Seon Tae Kim, Young Ji Park, Jonghyeok Lee, Sun Woog Kim Korea Institute of Ceramic Engineering and Technology
14:40- 15:00 BO-03	Study on Composition-dependent Structure and Properties of the Spinel-type LiAlON Transparent Ceramics <u>Hao WANG</u> , Qiangguo Chen, Bingtian TU Wuhan University of Technology
15:00 - 15:20 ★ BO-04	Improvement of anisotropic thermal conductivity of h-BN filled epoxy composites by making the filler shape spherical <u>Huayuan Zhou</u> , Tohru Sekino, Takafumi Kusunose Division of Advanced Materials Science, Graduate School of Engineering, Kagawa University
15:20 - 15:40 BO-05	Tribological Behaviors of Diamond-like Carbon Films in Hydrocarbon Atmospheres <u>Guangan Zhang</u> State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences
15:40 - 16:00	<i>Coffee break</i>
Room 3 (10F, #1006)	
Session B: Advanced eco-materials II	
Chair(s): Shu Yin (Tohoku University), Hao Wang (Wuhan University of Technology)	
16:00 - 16:20 BO-06I	Development of Pressure Sensor for Grasping Robots Operating with Minimal Power Masaki Hozumi, <u>Tadachika Nakayama</u> , Ken Katagiri, Kotaro Kawahara, Takanori Miyoshi, Tomoyo Goto, Tohru Sekino, Koichi Nihara Nagaoka University of Technology

16:20- 16:40 BO-07	Synthesis of Eco-Friendly Metal Organic Decomposition (MOD) ink for Printed Electronics Applications Xiaodong LI , Yue DONG, Wang XIE Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), Northeastern University/ Deeseach Center for Advanced Ceramic Materials, School of Materials Science and Engineering, Northeastern University
<i>BO-08I</i>	<i>(Withdrawn)</i>
16:40- 17:00 BO-09I	Wood-derived 3D conductive cellular Bio-C@YB ₂ C ₂ ceramics for efficient electromagnetic shielding and Joule heating Bo Wang , Yi Ren, Jian-feng Yang Xi'an Jiaotong University

Wednesday, January 15, 2025	
Room 3 (10F, #1006)	
Session B: Advanced eco-materials III	
Chair(s): Yu Horiuchi (Osaka Metropolitan University), Ji Young Park (Hanyang University), Miki Inada (Kyushu University)	
09:20 - 09:40 BO-10I	Electricity generator via ionized water transport on NiFe LDH@CuO nanowire mesh Ji Young Park , Min Seo Park, Ye-Ji Lee, Jae-Ho Kim, Yong-Ho Choa Hanyang University
09:40 - 10:00 ★ BO-11	Actinide (Th, U) Oxide Materials: Synthesis and Innovative Approaches for Energy Conversion Beyond Nuclear Applications Andreas Lichtenberg , Sanjay Mathur University of Cologne
10:00 - 10:20 BO-12	Fabrication of Li ₄ SiO ₄ on silica porous glass for CO ₂ removal Su-Hyun BAEK, Miki Inada Kyushu University
10:20 - 10:40	<i>Coffee break</i>
10:40 - 11:10 BO-13K	Advances in Photon-harvesting Technologies for Perovskite Absorbers and Water Splitting Reactions Sanjay Mathur University of Cologne
11:10 - 11:30 BO-14I	Designing Catalytically Active Sites for Hydrogen Evolution by Using Metal-Organic Frameworks Yu Horiuchi , Masaya Matsuoka Osaka Metropolitan University
<i>BO-15I</i>	<i>(Withdrawn)</i>
<i>BO-16I, BO-17I</i>	<i>(Withdrawn)</i>

Tuesday, January 14, 2025	
Room 1 (10F, #1009)	
Session C: Energy conversion and storage materials & technologies I	
Chair(s): Takuya Hasegawa (Tohoku University), Pinit Kidkhunthod (Synchrotron Light Research Institute)	
14:00 - 14:30 CO-01K	Rational electrolyte design for advanced lithium batteries <u>Yuki Yamada</u> SANKEN, Osaka University
14:30- 14:50 CO-02I	Partially disordered rock-salt materials for lithium-ion batteries synthesized from spray pyrolysis <u>Kyojin Ku</u> Hanbat National University
14:50- 15:10 CO-03	Preparation and electrochemical properties of solid-state composite electrolyte membranes based on PVDF/inorganic ceramics Yu Chen, <u>Hao Zhang</u> Xi'an University of Architecture and Technology
15:10 - 15:30 CO-04I	Solar fuels: Research and development strategies to accelerate photocatalytic CO ₂ RR, PCE, MFC and Betavoltaics <u>SU IL IN</u> Department of Energy Science and Engineering, Daegu Gyeongbuk Institute of Science & Technology (DGIST)
15:30 - 15:50 CO-05I	External Magnetic and Electric Fields in Molecular and Materials Transformations <u>Thomas Fischer</u> , Sanjay Mathur Institute of Inorganic and Materials Chemistry, University of Cologne / Materials Alliance Cologne, Steinbeis Technology Transfer Centre
15:50 - 16:00	<i>Coffee break</i>
Room 1 (10F, #1009)	
Session C: Energy conversion and storage materials & technologies II	
Chair(s): Yuki Yamada (Osaka University), Thomas Fischer (University of Cologne)	
16:00 - 16:30 CO-06K	Inorganic filler-integrated composite polymer electrolyte for solid-state lithium batteries <u>Jae Hyun Kim</u> Daegu Gyeongbuk Institute of Science & Technology (DGIST)
16:30- 16:50 CO-07I	X-ray Absorption Spectroscopy : The State of The Art Synchrotron-based Characterization for Energy and Battery Materials <u>Pinit Kidkhunthod</u> , Saroj Rujirawat, Rattikorn Yimnirun, Santi Maensiri Synchrotron Light Research Institute

16:50- 17:10 CO-08	Observing dendrite growth in solid-state sodium metal batteries <u>Haibo Jin</u> , Chengzhi Wang, Shuaishuai Yang Beijing Institute of Technology
17:10- 17:30 CO-09	Na ⁺ superionic conductor solid electrolytes for low-temperature solid-state sodium metal batteries <u>Chengzhi Wang</u> , Haibo Jin Beijing Institute of Technology

Wednesday, January 15, 2025	
Room 1 (10F, #1009) Session C: Energy conversion and storage materials & technologies III Chair(s): Su Il IN (Daegu Gyeongbuk Institute of Science & Technology (DGIST)), Daniel Chua (National University of Singapore)	
09:00 - 09:30 CO-10K	Energy Challenges from a Materials Perspective <u>Federico Rosei</u> Department of Chemical and Pharmaceutical Sciences, University of Trieste
09:30 - 10:00 CO-11K	Identifying accurate crystal structure and upconversion emitting phases in complex materials through single-particle-level imaging and computational modeling <u>Yuwaraj K. Kshetri</u> , Bina Chaudhary, Tae-Ho Kim, Soo Wahn Lee Sun Moon University
10:00 - 10:20 CO-12I	Dual-mode Ratiometric Thermometry in Yb-Er/Tm Multi-doping Yttria Stabilized Zirconia Phosphor <u>Takuya Hasegawa</u> , Ayahisa Okawa, Shu Yin Tohoku University
10:20 - 10:40	<i>Coffee break</i>
Room 1 (10F, #1009) Session C: Energy conversion and storage materials & technologies IV Chair(s): Federico Rosei (University of Trieste), Kyojin Ku (Hanbat National University)	
10:40 - 11:10 CO-13K	Advanced Separator and Electrode Designs for High-Performance Zinc-Based Batteries: Insights into Zinc-Iodine, Zinc-Air, and Zinc-Polyiodide Systems <u>Anongnat Somwangthanaroj</u> , Warunyoo Yoopensuk, Nuttapon Suppanucroa, Jirapha Pimoei, Soorathep Kheawhom Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University
11:10 - 11:30 CO-14I	Novel Insights into the Lithiation-lithium plating Mechanism and Modulation Strategies of Silicon-Based Anodes <u>Jianming Tao</u> Fujian Normal University
11:30 - 11:50 CO-15I	Synthesis and Electrochemical Properties of Co-Ni Metal-Organic Framework-Based Hybrid Supercapacitors <u>Jae Su Yu</u> , Bhimanaboina Ramulu, Junied Arbaz Shaik Kyung Hee University
11:50 - 13:00	<i>Lunch</i>
13:00 - 14:00	<i>Poster session</i>

Room 1 (10F, #1009)	
Session C: Energy conversion and storage materials & technologies V	
Chair(s): Soo Wohn Lee (Sun Moon University), Jianming Tao (Fujian Normal University)	
14:00 - 14:20 CO-16I	Carbon Nanocomposite Materials for Robust Proton Exchange Membrane Fuel Cells <u>Daniel HC Chua</u> National University of Singapore, Dept Materials Sci & Engrg
14:20 - 14:40 CO-17I	Graphene Technology for Next Generation Energy Storage Devices <u>Adisorn Tuantranont</u> , Tanom Lomas, Anurat Wisitsora-at, Chatwarin Poochai, Chakrit Sriprachuabwong National Security and Dual-use Technology Center, National Science and Technology Development Agency (NSTDA)
14:40 - 15:00 ★ CO-18	Plasma-Enhanced Thin Films on Current Collectors for Safer Na and Li Metal Anode Free Batteries <u>David Patrun</u> , Ziyaad Aytuna, Benedict Witulski, Thomas Fischer, Tom-Jonas Schneider, Sanjay Mathur Institute of Inorganic and Materials Chemistry, University of Cologne

Wednesday, January 15, 2025	
Room 2 (10F, #1007) Session C: Energy conversion and storage materials & technologies VI Chair(s): Jung Kyu Kim (Sungkyunkwan University), Yoshifumi Kondo (Osaka University)	
10:40 - 11:10 CO-19K	Design of Materials for Large-scale, Selective CO ₂ Electrolysis <u>Jihun Oh</u> Department of Materials Science and Engineering, KAIST
11:10 - 11:30 CO-20I	Interface Tailoring of Perovskite via Mesoporous Structured MoS ₂ for Efficient and Photostable Perovskite Solar Cells <u>Hyesung Park</u> Korea University
11:30 - 11:50 CO-21	Screening green solvents for perovskite solar cells fabrication <u>Jin-Soo Kim</u> , Juhwan Noh, Hyun-Sung Yun, Jino Im, Nam Joong Jeon Korea Research Institute of Chemical Technology
11:50 - 13:00	<i>Lunch</i>
13:00 - 14:00	<i>Poster session</i>
Room 2 (10F, #1007) Session C: Energy conversion and storage materials & technologies VII Chair(s): Jihun Oh (KAIST), Tomoyo Goto (Osaka University)	
14:00 - 14:20 CO-22I	Heterointerface manipulation for photo-/ and electro-chemical energy conversion <u>Jung Kyu Kim</u> Sungkyunkwan University
14:20 - 14:40 ★ CO-23	The Performance Enhancement in Energy Harvesting Through High Oxygen Concentration Annealing <u>Takanori Hiratani</u> , Daiju Matsumura, Takuya Tsuji, Ryosuke Izumi, Yuito Takasu, Tomoki Watanabe, Tohru Sekino, Hideki Hashimoto, Hirohisa Tanaka Graduate School of Science and Technology, Kwansei Gakuin University
14:40 - 15:00 CO-24	Flexible Tribovoltaic Nanogenerator Based on Dynamic P-N Junction Interface with Performance Boosting by Photoexcitation <u>Saichon Sriphan</u> , Supakarn Worathat, Utchawadee Pharino, Narong Chanlek, Phakkhananan Pakawanit, Kanokwan Choodam, Pongsakorn Kanjanaboos, Tosapol Maluangnont, Naratip Vittayakorn Faculty of Science, Energy and Environment, King Mongkut's University of Technology North Bangkok / School of Science, King Mongkut's Institute of Technology Ladkrabang

Wednesday, January 15, 2025	
Room 5 (10F, #1004) Session C: Energy conversion and storage materials & technologies VIII Chair(s): Hong-Baek Cho (Hanyang University), Siriporn Jungsuttiwong (Ubon Ratchathani University)	
09:00 - 09:20 CO-25I	High Entropy Spinel Oxides: Supercritical Hydrothermal Synthesis and Their Electrocatalytic Oxygen Evolution Activity <u>Kazuyuki Iwase</u> Tohoku University
09:20 - 09:40 CO-26I	Advanced Catalytic Materials for Hydrogen Production and System Integration <u>Uk Sim</u> , Chanmin Jo Korea Institute of Energy Technology (KENTECH) / Research Institute, NEEL Sciences, INC.
09:40 - 10:00 ★ CO-27	The Synergistic Effect of Nickel and Copper Phosphide for Ammonia Assisted Water Electrolysis to Produce Hydrogen <u>Chanmin Jo</u> , Minseo Jeon, Gyoung Hwa Jeong, Uk Sim Korea Institute of Energy Technology (KETNECH)
10:00 - 10:20 ★ CO-28	Advanced III-Nitride Nanostructures for Efficient and Eco-Friendly Hydrogen Production <u>Jeong-Kyun Oh</u> , Dae-Young Um, Bagavath Chandran, Sung-Un Kim, Cheul-Ro Lee, Yong-Ho Ra Jeonbuk national university
10:20 - 10:40	<i>Coffee break</i>
Room 5 (10F, #1004) Session C: Energy conversion and storage materials & technologies IX Chair(s): Kazuyuki Iwase (Tohoku University), Uk Sim (Korea Institute of Energy Technology)	
10:40 - 11:00 CO-29I	Advancing Energy Material Design through Experimental and DFT Synergies for Climate Solutions <u>Siriporn Jungsuttiwong</u> Ubon Ratchathani University
11:00 - 11:20 CO-30I	Carbonyl Iron Network-based Composite Films by Electric Field Inducement for Transparent Soft Actuator <u>Hong-Baek Cho</u> , Zhiming Shen, Tadachika Nakayama, Han Kim, Minseob Lim, Hoseong Son, Yong-Ho Choa Hanyang University
11:20 - 11:40 ★ CO-31	Soft Magnetic Actuation Enabled by $\text{Sm}_2\text{Fe}_{17-x}\text{Cu}_x\text{N}_3$ Hard Magnet <u>Kangmo Koo</u> , Hyunji Kang, Minsu Jeong, Hong-Baek Cho, Yong-Ho Choa Department of Materials Science and Chemical Engineering, Hanyang University

Tuesday, January 14, 2025	
Room 4 (10F, #1005)	
Session D: Environmental protection materials I	
Chair(s): Jun-ichi Matsushita (Tokai University), Sun Woog Kim (Korea Institute of Ceramic Engineering and Technology)	
14:00 - 14:30 DO-01K	TiO ₂ -based Heterojunction for Efficient Photocatalysis <u>Wenbin CAO</u> University of Science and Technology Beijing
14:30 - 14:50 ★ DO-02	Preparation of Ag ₃ PO ₄ and Its Heterojunction Structure with Transition Metal Dichalcogenides for Enhanced Photocatalytic Performance <u>Rini Larasati</u> , Ayahisa Okawa, Takuya Hasegawa, Shu Yin IMRAM, Tohoku University
14:50 - 15:10 ★ DO-03	Synthesis of Cs _{0.33} WO ₃ -g-C ₃ N ₄ -rGO Nanocomposite for Transparent Thermal Insulation and Photocatalysis Application. <u>Vinda Puspasari</u> , Ayahisa Okawa, Takuya Hasegawa, Shu Yin Institute for Multidisciplinary Research for Advanced Materials, Tohoku University
15:10 - 15:40 DO-04K	M _{0.3} WO ₃ Particles (M=Na, K) Prepared by Ball Milling Process for Infrared Shielding Applications <u>Wisanu Pecharapa</u> , Phonlawee Pinthong, Watcharakorn Moonseeda, Thanaphon Kansard College of Materials Innovation and Technology, King Mongkut's Institute of Technology Ladkrabang
15:40 - 16:00	<i>Coffee break</i>
Room 4 (10F, #1005)	
Session D: Environmental protection materials II	
Chair(s): Wenbin CAO (University of Science and Technology Beijing), Sunghun Cho (Osaka University)	
16:00 - 16:20 DO-05I	Photocatalytic Possibility of Surface Oxidation of Electrically Conductive Ceramics <u>Jun-ichi Matsushita</u> , Shu Yin Department of Materials Science, Tokai University
16:20- 16:40 DO-06	Development of spinel AB ₂ O ₄ compounds supported Sr ₃ Fe ₂ O _{7-δ} catalyst for methane combustion <u>Yeon-Bin Choi</u> , Tae Wook Kang, Seo Ra Woo, Su hee Kim, Jae-Seok Choi, Byung seo Bae, Sun Woog Kim Yeongwol Industrial Promotion Agency / Korea Institute of Ceramic Engineering and Technology
16:40- 17:00 DO-07	Discovery of spinel structure oxide materials-supported catalysts for methane decomposition with high sulfur resistance <u>Sun Woog Kim</u> , Tae Wook Kang, Seon Tae Kim, Do Yun Kim Korea Institute of Ceramic Engineering and Technology
17:00- 17:20 DO-08	Lanthanum oxyfluoride based catalysts for liquid-phase oxidation of phenol <u>Naoyoshi Nunotani</u> , Zhuowei Li, Shinji Tamura, Nobuhito Imanaka Osaka University

Wednesday, January 15, 2025	
Room 4 (10F, #1005) Session D: Environmental protection materials III Chair(s): Toshihiro Isobe (Institute of Science Tokyo), Ayahisa Okawa (Tohoku University)	
09:00 - 09:20 DO-09I	Catalytic Combustion Type H ₂ Gas Sensor Based on Cerium Oxide <u>Shinji Tamura</u> , Asuki Sakurai, Nobuhito Imanaka Osaka University
09:20 - 09:40 ★ DO-10	Surface Functionalized BaTiO ₃ with Polydopamine for H ₂ Production <u>Jing Cao</u> , Yoshifumi Kondo, Yeongjun Seo, Sung Hun Cho, Tomoyo Goto, Tohru Sekino SANKEN, Osaka University
09:40 - 10:00 ★ DO-11	Enhanced PtRu by CeO ₂ hollow nanofibers: Hydrogen gas sensing with CO-resistant in fuel cell <u>Jun Young Kim</u> , Hyung Jin Mun, Kyoungmin Shim, Yong-Ho Choa Hanyang University
10:00 - 10:20 ★ DO-12	Boosting the Photocatalysis Performance of TiO ₂ -In ₂ O ₃ @g-C ₃ N ₄ via Applying Transverse Thermoelectric Field Generated from Textured n-Bi ₂ Te ₃ <u>Yajuan Zhang</u> , Yi Qin Shaanxi University of Technology & Science
10:20 - 10:40	<i>Coffee break</i>
Room 4 (10F, #1005) Session D: Environmental protection materials IV Chair(s): Wisanu Pecharapa (King Mongkut's Institute of Technology Ladkrabang), Shinji Tamura (Osaka University)	
10:40 - 11:00 DO-13I	Carbon materials for PFAS removal from water <u>Toshihiro Isobe</u> , Rin Tanaka, Yoshino Honda, Daiki Moriyama, Koichi Yamamoto, Bei Zhang, Jibao Liu, Yasuhide Mochizuki, Akira Nakajima, Manabu Fujii Institute of Science Tokyo
11:00 - 11:20 DO-14I	Advanced Self-Healing Approaches for Engineering Ceramics <u>Ayahisa Okawa</u> , Nguyen Thanh Son, Hisayuku Suematsu, Takuya Hasegawa, Yibei Xue, Shu Yin, Tohru Sekino, Tadachika Nakayama Institute of Multidisciplinary Research for Advanced Material (IMRAM), Tohoku University
11:20 - 11:40 ★ DO-15	Anti-plasma and Corrosion for Robust-Mechanical Al/Al ₂ O ₃ /Y ₂ O ₃ Multilayer Substrate <u>Jong-Soo Byeon</u> , Ji Min Kim, Gwang-Myeong Go, Ji Young Park, Yong-Ho Choa Hanyang Universty

Tuesday, January 14, 2025	
Room 5 (10F, #1004)	
Session E: Materials for bio-/biomedical applications I	
Chair(s): Taishi Yokoi (Institute of Science Tokyo), Ya-jing YE (Northwestern Polytechnical University)	
14:00 - 14:20 EO-01I	Preparation of phosphate invert glasses for biomedical applications by liquid phase method <u>Sungho Lee</u> National Institute of Advanced Industrial Science and Technology (AIST)
14:20- 14:40 EO-02I	Organically Modified Octacalcium Phosphates Based Materials for Biomedical Applications <u>Taishi Yokoi</u> Institute of Integrated Research, Institute of Science Tokyo
14:40- 15:00 EO-03I	Design Titanium-Based Materials for Advancing Dental Applications <u>Peng Chen</u> , Huiyong Yang, Taishi Yokoi Tohoku University
15:00 - 15:20 ★ EO-04	Carriers for hydrophobic drug molecules: lipid-coated hollow mesoporous silica particles, and the influence of shape and size on encapsulation efficiency <u>T. Schneider</u> , S. Iqbal, T. T. Truong, R. Ulrich-Müller, P. H. Nguyen, S. Ilyas, S. Mathur Department of Chemistry, Institute of Inorganic and Materials Chemistry, University of Cologne
15:20 - 16:00	<i>Coffee break</i>
Room 5 (10F, #1004)	
Session E: Materials for bio-/biomedical applications II	
Chair(s): Sungho Lee (National Institute of Advanced Industrial Science and Technology (AIST)), Peng Chen (Tohoku University)	
16:00 - 16:20 ★ EO-05	Study on Enhancing Non-Enzymatic Glucose Detection through Cobalt-Substituted Hafnia <u>Jeonghyeon Oh</u> , Avis Sin Hui Wee, Eun-byeol Park, Jaejin Hwang, Seon Je Kim, Hu Young Jeong, Myat Thet Khine, Pavan Pujar, Jaekwang Lee, Young-Min Kim, Sunkook Kim School of Advanced Material Science & Engineering, Sungkyunwan University (SKKU)
<i>EO-06I</i>	<i>(Withdrawn)</i>
16:20 - 16:40 ★ EO-07	Responses of mesenchymal stem cells and macrophages to silicate ions with different structures <u>Kazumasa Ikedo</u> , Masayasu Igarashi, Sungho Lee, Akiko Obata Nagoya Institute of Technology
16:40 - 17:00 EO-08	The regulation of tendon stem cell behaviour by designed nano-porous topography of microfibers <u>Ya-jing YE</u> , Yi-fan XU, Ya-bo HOU, Da-chuan YIN, Dan-bo SU, Zi-xu ZHAO Northwestern Polytechnical University

Tuesday, January 14, 2025	
Room Poster (10F, #1009) Session: Poster Session (I)	
AP-01	Ultra-low temperature solid state diffusion bonding additive manufacturing process on pure titanium by laser shock peening surface treatment <u>Yu Peng</u> , Jinglong Li, Jjiangtao Xiong Northwestern Polytechnical University, State Key Laboratory of Solidification Processing,
AP-02	Temperature-dependent microstructure and mechanical properties of the joints diffusion bonded on Ti ₂ AlNb by using Ti foil as insert metal <u>Jiafen Song</u> , Jinglong Li, Jjiangtao Xiong Northwestern Polytechnical University, State Key Laboratory of Solidification Processing
AP-03	Effect of Ce on the precipitation of sigma and ferrite phase during the solidification process of 254SMO stainless steel <u>Yunong Li</u> , Dening Zou, Wei Guo, Jinglong Li, Jiangtao Xiong Northwestern Polytechnical University, State Key Laboratory of Solidification Processing/ Shanxi Key Laboratory of Friction Welding Technologies, Northwestern Polytechnical University/ Xi ' an University of Architecture and technology, School of Metallurgical Engineering
AP-04	Study of microstructure characteristics and corrosion behavior of dissimilar aluminum alloy RFSSW joint <u>Da Zhang</u> State Key Laboratory of Solidification Processing, Northwestern
AP-05	Study on the fracture behavior of Ti-6Al-4V diffusion bonded joints with typical interfacial voids <u>Zhaoxi Li</u> , Jinglong Li School of material science and engineering, Northwestern Polytechnical University
BP-01	Microstructure and Mechanical Properties of Clad Materials Fabricated by Cold Roll-Bonding of Dissimilar Aluminum Sheets <u>Seong Hee Lee</u> Department of Advanced Materials Science and Engineering, Mokpo National University
★ BP-02	Surface-Modified MXene via Molten Salt Method for the Fabrication of Lithium-Ion Capacitors <u>Jihye Park</u> , Soojung Hwang, Hangeol Kim, Hayeon Kim, Yongseok Jun Department of Energy Environment Policy and Technology, Graduate School of Energy and Environment (KU-KIST Green School), Korea University/ Department of Integrative Energy Engineering, College of Engineering, Korea University

BP-03	<p>Enhancement of elasticity in ultrafine Ni-Ti-Nb-Ta eutectic alloys with combinatorial elastic deformation behavior</p> <p><u>Sung Hwan Hong</u>, Hae Jin Park, Ki Buem Kim Department of Nanotechnology and Advanced Materials Engineering, Sejong University</p>
BP-04	<p>Strategies for Designing Color Alloys: Development of Al-Mg-Si Alloys Based of the ADC12 and AZ91</p> <p>Gyeol Chan Kang, Hae Jin Park, Sung Hwan Hong, <u>Ki Buem Kim</u> Department of Nanotechnology and Advanced Materials Engineering, Sejong University</p>
★ BP-05	<p>Molecular Transformations for Direct Synthesis of Thorium(IV) Oxide-Based Thin Films</p> <p><u>Andreas Lichtenberg</u>, Sanjay Mathur University of Cologne, Institute of Inorganic and Materials Chemistry</p>
★ BP-06	<p>Making Insulating Al₂O₃ Electrically Conductive without Loss of Translucency Using a Small Amount of Segregated ITO Path</p> <p><u>Yushiro Takamatsu</u>, Tohru Sekino, Takafumi Kusunose Division of Science for Creative Emergence, Graduate School of Science for Creative Emergence, Kagawa University/ SANKEN, Osaka University/ Department of Engineering and Design, Faculty of Engineering and Design, Kagawa University</p>
CP-01	<p>Halide double perovskite-based integrated self-charging power unit with mechanical energy harvesters and storage devices</p> <p><u>Hyun Suk Kim</u> Department of Energy and Materials Engineering, Dongguk University</p>
★ CP-02	<p>Sustainable and Eco-Friendly Lithium Extraction from Seawater Using Al₂O₃/MLG Membranes</p> <p><u>Dae Yeop Jeong</u>, Won Il Park Division of Materials Science and Engineering, Hanyang University</p>
CP-03	<p>Enhanced output performance of piezoelectric composites via plasma annealing treatment</p> <p>HakSu Jang, Hyeon Jun Park, HyoMin Jeon, <u>Kwi-Il Park</u> Department of Materials Science and Metallurgical Engineering, Kyungpook National University/ Innovative Semiconductor Education and Research Center for Future Mobility, Kyungpook National University</p>
CP-04	<p>Triboelectric Performance of PDMS-based Nanogenerators</p> <p><u>Kang Min Kim</u>, Jeong Ho Ryu Korea Institute of Industrial Technology/ Department of Materials Science and Engineering, Korea National University of Transportation</p>
CP-05	<p><i>(Withdrawn)</i></p>

CP-06	<p>The Study of Sustainable and Non-Toxic Zinc-Tin-Oxide as a Channel Material for Thin Film Transistor Application</p> <p><u>Dong-Hyun Lim</u>, Hye-Joo Kang, Il-Kwon Oh</p> <p>Department of Intelligence Semiconductor Engineering, Ajou University/ Department of Electrical and Computer Engineering, Ajou University</p>
CP-07	<p>Atomic Layer Deposition of HfO₂ for Passivation Coating</p> <p><u>Youngmin Song</u>, Soon-Kyeong Park, Il-Kwon Oh</p> <p>Department of Intelligence Semiconductor Engineering, Ajou University/ Department of Electrical and Computer Engineering, Ajou University</p>
CP-08	<p>Polyanion Single-ion Conducting Polymer Electrolyte for Improving Lithium-ion Transference Number</p> <p>Seungjin Lee, <u>Changseop Kim</u>, Gyungmin Hwang, Deokhee Yun, Joonhyeon Jeon</p> <p>Department of Advanced Battery Convergence Engineering, Dongguk University</p>
CP-09	<p>A strong and robust CNN-TNN hybrid model for improving the SOC estimation of EV battery</p> <p>Jungwoo Ho, Yunsun Kim, Byeongjik Han, Sohyeon Lee, Daewon Chung, <u>Joonhyeon Jeon</u></p> <p>Department of Advanced Battery Convergence Engineering, Dongguk University</p>
CP-10	<p>Synthesis of (Nb,Ti)₂AlC MAX Phase and (Nb,Ti)₂C MXene</p> <p>Siyeon Kim, Young-In Lee, <u>Jongmin Byun</u></p> <p>Department of Materials Science and Engineering, Seoul National University of Science and Technology</p>
★ CP-11	<p>Synthesis and Optimization of Tin Oxides Quantum Dots by Solution Process for Performance Enhancement in Perovskite Solar Cells</p> <p><u>Suparoek Yarin</u>, Siripatsorn Thanasanvorakun, Vasan Yarangsi, Kritsada Hongsith, Wakul Bumrungsan, Prapasiri Phimsarn, Sukrit Sucharitakul, Surachet Phadungdhithhada, Supab Choopun</p> <p>Department of Physics and Material Science, Faculty of Science, Chiang Mai University/ Office of Research Administration, Chiangmai University</p>
★ DP-01	<p>Plasma-Enhanced CVD: Surface-Engineering Solutions for Functional Materials</p> <p><u>David Patrun</u>, Ziyaad Aytuna, Benedict Witulski, Tom-Jonas Schneider, Thomas Fischer, Nurgül Tosun, Sanjay Mathur</p> <p>Department of Chemistry, Institute of Inorganic and Materials Chemistry</p>
DP-02	<p>Defective Hf-based Metal-Organic Frameworks with Ni cocatalysts for Photocatalytic Hydrogen Peroxide Production</p> <p><u>Yoshifumi Kondo</u>, Kotaro Honda, Yasutaka Kuwahara, Kohsuke Mori, Tohru Sekino, Hiromi Yamashita</p> <p>SANKEN, Osaka University/ Graduate School of Engineering, Osaka University</p>
DP-03	<p>Controlled Synthesis and Characterization of ZrO₂ Nanotubes via Cellulose-Templated Sol-Gel Method</p> <p><u>Sunghun Cho</u>, Tohru Sekino, Tomoyo Goto, Yeongjun Seo</p> <p>SANKEN, Osaka University</p>

<p>★ DP-04</p>	<p>Characteristic and Lead Removal Property of Hydroxyapatite Synthesized by Hydrothermal Method Yuma Amemiya, Tomoyo Goto, Yoshifumi Kondo, Yeongjun Seo, Sung Hun Cho, Tohru Sekino SANKEN, Osaka University/ Institute for Advanced Co-Creation Studies, Osaka University</p>
<p>EP-01</p>	<p>Microstructure evolution and mechanical properties of SrTiO₃ ceramic joint brazed by SnO–ZnO–P₂O₅–SiO₂ Phosphate glass Ding Hao, Wei Guo, pengkun Liu, Jiafen Song, Jingru Xin State Key Laboratory of Solidification Processing, Northwestern Polytechnical University/ School of Materials Science and Engineering, Northwestern Polytechnical University</p>
<p>EP-02</p>	<p>D-Ribose-Glycated OCP/Collagen Scaffolds: A Novel Approach for Sustainable Bone Tissue Engineering and Enhanced Biocompatibility Seon-Mi Byeon, Hye-Jin Song, Jung-Eun Park, Yong-Seok Jang, Tae-Sung Bae, Min-Ho Lee Department of Dental Biomaterials/Jeonbuk National University, Institute of Biodegradable Materials, School of Dentistry</p>
<p>★ EP-03</p>	<p>Nanocarriers for the encapsulation of RNA T. Schneider, H. Ibrahim, S. Ilyas, S. Mathur Department of Chemistry and Biochemistry, Institute of Inorganic and Materials Chemistry, University of Cologne</p>
<p>EP-04</p>	<p>Preparation of a Porous Poly(Lactic acid-co-Glycolic acid)/Calcium Silicate Glass Composite Jae Ho Choi, Sang-Hoon Rhee Department of Dental Biomaterials Science School of Dentistry, Seoul National University</p>
<p>EP-05</p>	<p>Magnesium-incorporated and visible light-crosslinked collagen/hyaluronic acid composite hydrogel for enhanced healing of infected wounds Yu-Jin Kim, Youngmee Jung Center for Biomaterials, Korea Institute of Science and Technology</p>

Wednesday, January 15, 2025	
Room Poster (10F, #1009) Session: Poster Session (II)	
AP - 06	Fabrication of SiC Nanowire Based Elastic Aerogel Hongjie Wang , De Lu, Lei Su, Shuhai Jia State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University/ School of Mechanical Engineering, Xi'an Jiaotong University
★ AP - 07	Electrochemical Crack Healing of TiC Ceramics at Room Temperature Jinyu LIU , Yeongjun SEO, SungHun CHO, Tomoyo GOTO, Yoshifumi KONDO, Tohru SEKINO SANKEN, Osaka University/ Institute for Advanced Co-Creation Studies, Osaka University
AP - 08	Process for magnesium oxide through separation of dolomite JaeSeok Choi , SeoRa Woo, EunHye Oh, SungBum Choi Advanced Resources Team, Yeongwol Industrial Promotion Agency
AP - 09	Fabrication of Humidity Control Ceramics from Drinking-Water Treatment Sludge and Onggi Soil Kyungsun Kim , Min-Jin Lee, Haejin Hwang Department of Materials Science and Engineering, Inha University
AP - 10	Low-Temperature Sintering of Calcia-Stabilized Zirconia: Mechanical Properties and Hydrothermal Stability Yeongjun Seo , Katsuya Niidome, Sunghun Cho, Takeshi Motomochi, Satoshi Takeda, Masayuki Takai, Tohru Sekino SANKEN, Osaka University/ Daiichi Kigenso Kagaku Kogyo Co. Ltd.
BP - 07	Designing and Surface Functionalization of Photo reactive Hetero structure from a Multicomponent Amorphous Alloy Hae Jin Park , Sung Hwan Hong, Ki Buem Kim Department of Nanotechnology and Advanced Materials Engineering, Sejong University
BP - 08	Water-Soluble Conjugated Polyelectrolytes as Biological Sensing Components Taek Seung Lee Organic and Optoelectronic Materials Laboratory, Department of Organic Materials Engineering, Chungnam National University
★ BP - 09	Study on Developing Lightweight Conductors Through Cu Metallization of CNT Fiber Eun Soo Shim , Serin Park, Hyun Ah Eom, Jae-Hong Lim Department of Materials Science and Engineering, Gachon University
★ BP - 10	Void-Free Copper Filling of Glass Substrates Using Additives Serin Park , Eun Soo Shim, Se Eun Nam, Jae-Hong Lim Department of Materials Science and Engineering, Gachon University
★ BP - 11	Study on Copper Filling and Adhesion Techniques for large Through-Hole Si ₃ N ₄ Substrates Kangeun Lee , Juno Lee, Donggyu Yook, Jae-Hong Lim Department of Materials Science and Engineering, Gachon University

BP - 12	<p>Correlation between oxide formation and eutectic phases of Al-Mg based alloys in a long time oxidation at high temperatures</p> <p>Seong-Ho Ha, Bong Hwan Kim, Young Ok Yoon, Hyun Kyu Lim, Shae K. Kim</p> <p>Materials Supply Chain R&D Department , Korea Institute of Industrial Technology</p>
BP - 13	<p>Guiding Block Copolymer Thin Film Self-Assembly Through Transient Thickness Gradients</p> <p>Janghun Ko, Bong Hoon Kim</p> <p>Robotics and Mechatronics Engineering, DGIST</p>
CP - 12	<p>Fabrication of perovskite solar cells using flash infrared annealing of SnO₂ quantum dots as electron transport layers</p> <p>Supab Choopun, Kritsada Hongstith, Suparoek Yarin, Vasana Yarangsi, Prapasiri Phimsarn, WaKul Bumrungras, Sukrit Sucharitakul, Surachet Phadungdhitidhada</p> <p>Department of Physics and Materials Science, Faculty of Science, Chiang Mai University/ Office of Research Administration, Chiang Mai University</p>
CP - 13	<p><i>(Withdrawn)</i></p>
★ CP - 14	<p>Characteristics of Li-O₂ Batteries Using 4-Hydroxy-TEMPO as a Redox Mediator in DME-Based Electrolyte</p> <p>Sumin Song, Duckrye Chang</p> <p>Korea Institute of Industrial Technology (KITECH)</p>
★ CP - 15	<p>Optimization of Battery Defect Detection Based on Data Augmentation Techniques and Classification Models</p> <p>Eugene Jeong, Moonyoung Choi, Nahye Kim, Sangchul Lee</p> <p>School of Undergraduate Studies, Daegu Gyeongbuk Institute of Science and Technology/ Division of Nanotechnology, Daegu Gyeongbuk Institute of Science and Technology</p>
CP - 16	<p>Metal-Metal Oxide Heterostructures from Monodisperse Nanodot Array via Block Copolymer Self-Assembly</p> <p>Jisoo Lim, Hyeong Min Jin</p> <p>Department of Materials Science and Engineering, Chungnam National University/ Department of Organic Materials Engineering, Chungnam National University</p>
CP - 17	<p>Fabrication of Hollow Carbon Fibers Using Dopamine and Metal Nanoparticles</p> <p>HyunSoo Chang, Hyeong Min Jin</p> <p>Department of Materials Science and Engineering, Chungnam National University/ Department of Organic Materials Engineering, Chungnam National University</p>
CP - 18	<p>Hierarchical porous carbon nanofiber based on multidimensional self-assembly</p> <p>Tae Yeon Kim, Hyeong Min Jin</p> <p>Department of Materials Science and Engineering, Chungnam National University</p>

CP - 19	<p>Hierarchical Porous Carbon-Cobalt Oxide Hybrid Electrodes for Enhancing Energy Density in Supercapacitors</p> <p>Bo Myeong Choi, Hyeong Min Jin</p> <p>Department of Materials Science and Engineering, Chungnam National University/ Department of Organic Materials Engineering, Chungnam National University</p>
★ CP - 20	<p>Ferroelectret Energy Harvesting Enabled by Ice-Templated Porous PVDF Structure</p> <p>Hyomin Jeon, Hyejeong Choi, Kwi-II Park</p> <p>Department of Materials Science and Metallurgical Engineering, Kyungpook National University/ Innovative Semiconductor Education and Research Center for Future Mobility, Kyungpook National University</p>
★ CP - 21	<p>Stacked Unicouple Modules based on Bismuth Telluride and Tin Telluride for Multiple-Temperature Workable Thermoelectric Energy Conversion</p> <p>Hyejeong Choi, Kwi-II Park</p> <p>Innovative Semiconductor Education and Research Center for Future Mobility, Kyungpook National University/ Department of Materials Science and Metallurgical Engineering, Kyungpook National University</p>
CP - 22	<p>Synthesis of Ni-Al Layered Double Hydroxides for Catalysts in Solid Oxide Cells (SOCs)</p> <p>Gyui Ham, Kangsanin Kim, Kyungsun Kim, Haejin Hwang</p> <p>Department of Materials Science and Engineering, Inha University</p>
CP - 23	<p>Disordered Vertical Structures for High-Sensitivity SERS with Minimal Defect Influence</p> <p>Jin Man Kim, Hyeong Min Jin</p> <p>Department of Materials Science and Engineering, Chungnam National University/ Department of Organic Materials Engineering, Chungnam National University</p>
★ DP - 05	<p>Effect of Metal Addition on Peroxo-Modified Titanate Nanotube Photocatalysts</p> <p>Hiroya Yasunari, Yoshifumi Kondo, Hyunsu Park, Hisataka Nishida, Yeongjun Seo, Sung Hun Cho, Tomoyo Goto, Tohru Sekino</p> <p>SANKEN, Osaka University/ Institute for Advanced Co-Creation Studies, Osaka University</p>
DP - 06	<p>Removal of Cr(III) from Water by Ion-Exchange Reaction of Seaweed-Like Sodium Titanate Mat</p> <p>Tomoyo Goto, Yoshifumi Kondo, Tohru Sekino</p> <p>SANKEN, Osaka University/ Institute for Advanced Co-Creation Studies, Osaka University</p>
DP - 07	<p>Effect of Synthesis Temperature on the Structural and Photocatalytic Properties of Nanostructured Peroxo-Titanate</p> <p>Do Hyung Han, Hyunsu Park, Tomoyo Goto, Sunghun Cho, Yeongjun Seo, Yoshifumi Kondo, Tohru Sekino</p> <p>SANKEN, Osaka University/ Institute for Advanced Co-Creation Studies, Osaka University</p>

<p>★ EP - 06</p>	<p>Evaluation of structure and solubility of Ta₂O₅-containing phosphate invert glasses prepared by liquid phase method Hayato Asano, Minori Takahashi, Akiko Obata, Makoto Sakurai, Fukue Nagata, Sungho Lee National Institute of Advanced Industrial Science and Technology (AIST)/ Department of Applied Chemistry, Graduate School of Engineering, Chubu University/ Division of Advanced Ceramics, Graduate School of Engineering, Nagoya Institute of Technology</p>
<p>★ EP - 07</p>	<p>Bioresorbable magnesium silicide thin film compound as a narrow band material for biomedical electronics Ji-Woo Gu, Jun-Seok Shim, Minjung Chae, Yoonseong Jung, Su-Min Kim, Ju-Young Kim, Hyejin Jang, Myoung-Ryul Ok, Seung-Kyun Kang Department of Materials Science and Engineering, Seoul National University/ Biomaterials Research Center, Biomedical Research Division, Korea Institute of Science and Technology (KIST)/ Department of Materials Science and Engineering, Ulsan National Institute of Science and Technology/ Research Institute of Advanced Materials (RIAM), Seoul National University/ Nano Systems Institute SOFT Foundry, Seoul National</p>
<p>EP - 08</p>	<p>Analysis of Multiple Electrophysiological Signal Patterns Using Self-adhesive and Conductive Graphene Hydrogel Electrodes Deukhee Kim, Hyun Joo Lee, Jiwon Oh, Hyung Ju Park, Huh Chul, Yongseok Jun, Yong Ju Yun Department of Energy Environment Policy and Technology, Graduate School of Energy and Environment (KU-KIST Green School), Korea University/ Department of Energy Environment Policy and Technology, Department of Integrative Energy Engineering, Graduate School of Energy and Environment (KU-KIST Green School), Korea University/ Energy Materials Research Center, Clean Energy Research Division, Korea Institute of Science and Technology (KIST)/ Diagnostic & Therapeutic Systems Research Section, Digital Convergence Research Laboratory, Electronics and Telecommunications Research Institute (ETRI)</p>
<p>EP - 09</p>	<p>Densification of Hydroxyapatite/Zirconia Nanocomposites via Cold Sintering Process Combined with Biomineralization Yeongjun Seo, Shiori Nawa, Tomoyo Goto, Sunghun Cho, Tohru Sekino SANKEN, Osaka University/ Institute for Advanced Co-Creation Studies, Osaka University</p>
<p>EP - 10</p>	<p>An Artificial Olfactory System Based on a Chemi-Memristive Device Suk Yeop Chun, Jung Ho Yoo Electronic Materials Research Center, Korea Institute of Science and Technology (KIST)/ School of Advanced Materials Science and Engineering, Sungkyunkwan University</p>
<p>EP - 11</p>	<p>Bone regeneration effect on the hybrid coated Mg with CaP carrier and BMP hydrogel Seo-Young Kim, Yu-Kyoung Kim, Hao An, Seon-Hwa Jeong, Jeong-Hui Ji, Min-Ho Lee Dept. of Dental Biomaterials and Institute of Biodegradable material and Oral Bioscience, School of Dentistry, Jeonbuk National University</p>

**The 23rd International Symposium
on Eco-Materials Processing and Design**

ISEPD 2025

January 13th–16th, 2025

**Osaka International Conference Center
“Grand Cube Osaka”, Osaka, Japan**

The ISEPD Organizing Committee

<https://www.isepd.org/2025/>

ISEPD2025 Symposium Office:

Department of Advanced Hard Materials
SANKEN, Osaka University
Ibaraki, Osaka 567-0047, JAPAN
Tel: +81-(0)6-6879-8435, -8436
Fax: +81-(0)6-6879-8439
E-mail: isepd2025office@isepd.org



Printed on January 13, 2025