

Symposia 1

Materials Chemistry and Physics

Opening Ceremony

- President Jin-Sook Lee
- President, Chungnam National University

Plenary Talk

- Professor William A. Goddard III
- Caltech, USA

DAY 1

Monday, December 12

Q&A 5Mins

Session	Time	Program	Chairman
	10:30 – 10:40	[Opening Ceremony] President. Jin-Sook Lee (Chungnam National University, Korea)	
M1	10:40 – 11:40	[Plenary Talk] [Online] New theory and computational methods applied to designing better materials for energy, environment, and sustainability, with applications to batteries to electrocatalytic CO2 reduction, water splitting, and N2 reduction, and to Fuel Cells Prof. William A. Goddard III (Caltech, USA)	Prof. Hyeyoung Shin
	11:40 – 13:00	Lunch	
M2	13:00 – 13:30	[Keynote] Stretchable electroactive composites for soft electronics and energy devices Prof. Pooi See Lee (Nanyang Technological University, Singapore)	Prof. Kihyon Hong
	13:30 – 13:55	Understanding the interface phenomenon between solid electrolyte/electrode in all solid-state lithium batteries Prof. Sangbaek Park (Chungnam National University, Korea)	
	13:55 – 14:20	Atomically precise oxidation of 2D materials toward advanced devices Prof. Minsup Choi (Chungnam National University, Korea)	
	14:20 – 14:50	Transfer-Free, Large-Scale, High Quality Graphene Synthesized Directly at 100 oC, and N- and B-doped Graphene FETs using Transfer-Free Graphene Prof. Soon-Gil Yoon (Chungnam National University, Korea)	
	14:50 – 15:10	Intermission	
M3	15:10 – 15:40	[Keynote] [Online] Recent Development of Next Generation Batteries for Clean Energy Prof. Kiyoshi Kanamura (Tokyo Metropolitan University, Japan)	Prof. Hyun-Suk Kim
	15:40 – 16:10	Recent Development and Challenges of Positive Electrode Active Materials for Magnesium Rechargeable Batteries Prof. Shunsuke Yagi (The University of Tokyo, Japan)	
	16:10 – 16:35	Energy storage materials for the next generation Li-ion battery Prof. Chunjoong Kim (Chungnam National University, Korea)	
	16:35 – 16:45	Intermission	
M4	16:45 – 17:15	[Keynote] YNU-5: Strongly Acidic Large Pore Zeolite Prof. Naonobu Katada (Tottori University, Japan)	Prof. Kyubock Lee
	17:15 – 17:45	[Keynote] Potential of a CO2 permselective membrane reactor – CO2 separation and utilization Prof. Mikihiro Nomura (Shibaura Institute of Technology, Japan)	
	17:45 – 18:15	[Keynote] [Online] Tailor-made Cobalt-based Electrocatalysts for Oxygen Evolution Reaction Dr. Harun Tüysüz (Max-Planck-Institut für Kohlenforschung, Germany)	

DAY 2 Tuesday, December 13

Q&A 5Mins

Session	Time	Program	Chairman
T1	9:00 – 9:30	[Keynote] [Online] Quantifying Nanoscale Chemical Heterogeneity with Soft X-ray Microscopy Dr. David A. Shapiro (Lawrence Berkeley National Lab., USA)	Prof. Chunjoong Kim
	9:30 – 9:55	[Online] Lead-Free Perovskite-Inspired Materials for Indoor Photovoltaics: Status and Outlook Prof. Vincenzo Pecunia (Simon Fraser University, Canada)	
	9:55 – 10:10	Intermission	
T2	10:10 – 10:40	[Keynote] Metabolic engineering for sustainability and human well-being Prof. Yong-Su Jin (University of Illinois Urbana-Champaign, USA)	Prof. Hae-Min Park
	10:40 – 11:05	[Online] Interface Modification Based on 2D Nanomaterials for Surface Plasmon Resonance Biosensors Prof. Hongxia Chen (Shanghai University, China)	
	11:05 – 11:30	Ribosome-mediated biosynthesis in vitro Prof. Joongoo Lee (POSTECH, Korea)	
	11:30 – 13:00	Lunch	
T3	13:00 – 13:30	[Keynote] From Precursor Ink Chemistry to Interface Modification: Taking on Defects in Halide Perovskites Prof. Nakita K. Noel (University of Oxford, UK)	Prof. Jongchul Lim
	13:30 – 13:55	Vapour Deposited Perovskite Thin Films and Solar Cells Dr. Jay B. Patel (University of Oxford, UK)	
	13:55 – 14:20	Intermediate-Phase Engineering via Dimethylammonium Cation Additive for Stable Perovskite Solar Cells Dr. David P. McMeekin (University of Oxford, UK)	
	14:20 – 14:45	Long-range charge carrier mobility of metal halide perovskite via transient photo-conductivity Prof. Jongchul Lim (Chungnam National University, Korea)	
	14:45 – 15:00	Intermission	
T4	15:00 – 15:25	When Process Systems Engineering Meets Materials Science Research Prof. Joseph Sang-Il Kwon (Texas A&M University, USA)	Prof. Kosan Roh
	15:25 – 15:50	Learning from process flowsheets with artificial intelligence Prof. Artur M. Schweidtmann (TU Delft, Netherlands)	
	15:50 – 16:15	A unified multi-scale strategy for (bio)process scale-up and development Prof. Seyed Soheil Mansouri (Technical University of Denmark, Denmark)	
	16:15 – 16:30	Intermission(Photo time)	
T5	16:30 – 16:55	Recent advances in metal-assisted chemical etching Prof. Munho Kim (Nanyang Technological University, Singapore)	Prof. Minsup Choi
	16:55 – 17:20	Optical spectroscopic characterization of two-dimensional transitional metal dichalcogenides Prof. Shyama Rath (University of Delhi, India)	
	17:20 – 17:45	Green Synthesized Nano Materials For Potential Multifaceted Biomedical Applications Prof. Venkata Pammi (GMR Institute of Technol, India)	
	17:45 – 18:10	[Online] Intrinsic Area-Selective Atomic Layer Deposition of Aluminium and Gallium Nitrides in purely Thermal Mode Prof. Alexey Kovalgin (University of Twente, Netherlands)	
	18:30 – 21:00	Banquet	

DAY 3 Tuesday, December 14

Q&A 5Mins

Session	Time	Program	Chairman
W1	10:00 – 10:40	Halide perovskite crystals and thin-films for optoelectronic applications Prof. William Jo (Ewha Womans University, Korea)	Prof. Tae-young Yang
	10:40 – 11:20	Triboelectrification for Biomedical Applications Prof. Sang-Woo Kim (Sungkyunkwan University, Korea)	
	11:20 – 12:00	1D Novel Sensing Platform: Body Temperature, Environmental Gas Monitoring and Exhaled Breath Biomarker Analysis Prof. Il-Doo KIM (KAIST, Korea)	
	12:00 – 13:30	Lunch	
W2	13:30 – 13:55	Functionalized Polyene based Thin Films and their Potential Applications in Advanced Devices Prof. Kyung Jin Lee (Chungnam National University, Korea)	Dr. B. Sravani
	13:55 – 14:20	Catalyst Overcoating Engineering towards Electrocatalysis Prof. Namgee Jung (Chungnam National University, Korea)	
	14:20 – 14:45	Advanced Polymer Materials for Next-generation Battery Applications Prof. Woo-Jin Song (Chungnam National University, Korea)	
	14:45 – 15:00	Selective recovery of rare earth elements via supercritical water desalination Prof. Tae Jun Yoon (Chungnam National University, Korea)	

Closing Remarks Prof. Soon-Gil Yoon

Symposia 2

New security and survival nexus : Climate change, energy, economy, health, and world affairs

Opening Ceremony

- President Jin-Sook Lee
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Plenary Talk

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Monday, December 12

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Tuesday, December 13

Time	Program	Chairman
13:00 – 14:00	[Online] New Paradigm for New Climate: Thoughts on a Just and Sustainable Transition Prof. John Byrne (University of Delaware, USA)	Prof. Hyun kim
14:00 – 14:30	Energy demand as the key to the energy transition in the colliding world Prof. Hana Kim (KAIST, Korea)	
14:30 – 15:00	[Online] Understanding smart energy transitions as a new source of distrust: The perspectives of Hong Kong citizens on the risks of regional inter-city energy collaboration in the Guangdong-Hong Kong-Macau Greater Bay Area (GBA) Prof. Mah Ngar-yin, Daphne (Hong Kong Baptist University, Hong kong)	
15:00 – 15:30	Distributional Effects of Climate Policies: A Microsimulation Approach Prof. Hocheol Jeon (Chungnam National University, Korea)	
15:30 – 16:00	Climate Migration in the Face of Armed Conflict : Reflections on the Role of Adaptation in Africa Prof. Hyun Kim (Chungnam National University, Korea)	
16:00 – 16:30	The Silent Epidemic of Loneliness beneath the Global COVID-19 Pandemic Prof. Joseph U. Kim (University of Utah, USA)	
16:30 – 17:00	Environmental/Resource Insecurity in the Context of International Politics Prof. Jih-Un Kim (Chungnam National University, Korea)	

Closing Remarks

Symposia 3

Interdisciplinary research session between mathematics, materials science and neural networks

Opening Ceremony

- President Jin-Sook Lee
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Plenary Talk

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13:00-13:30	[Online] From static descriptor to dynamic one for amorphous materials Prof. Yasumasa Nishiura (Tohoku University, Japan)	Dr. Jung Narina
13:30-14:00	Landau-de Gennes theory of Liquid Crystals with annulus domain Prof. Jinhae Park (Chungnam National University, Korea)	
14:00-14:30	AI for Science at the Rutherford Appleton Laboratory Dr. Jeyan Thiyagalingam (Science and Technology Facilities Council, UK)	
14:30-15:00	Learning disentanglement in auto - encoder Dr. Jaehoon Cha (Science and Technology Facilities Council, UK)	Prof. Jinhae Park
15:00-15:30	Collective behaviors of active elastic filaments in a non-dilute regime Dr. Narina Jung (Korea Institute for Advanced Study, Korea)	
15:30-16:00	The shape of supercritical fluids Prof. Tae Jun Yoon (Chungnam National University, Korea)	
16:00-16:30	0D, 1D, and 2D FeSe nanostructures: synthesis and optical characterization, biomedical applications Prof. Jaebeom Lee (Chungnam National University, Korea)	
16:30-17:00	Development of a soft exosuits with inertial measurement units Myungsoo Choi (Chungnam National University, Korea)	
17:00-17:30	Structural colors and sensing with chiral metasurfaces of aligned Magnetoplasmonic nanowires Nguyen Huu Quang (Chungnam National University, Korea)	
Closing Remarks		