# Opening Ceremony

***19[MON], 13:00~13:30***
**Chair**: Yoon-Bong Hahn, Chonbuk National University, Korea
**Opening Remarks**
**Congratulatory Remarks**

# Plenary Session 1

**Chair :** Eva Hemmer , University of Ottawa

***19[MON], 13:30~14:10***

**Field Matters: Efficient Water Splitting on Hematite Thin Films Grown By Magnetic Field-Assisted Processing**
Sanjay Mathur , Vanessa Rauch and Thomas Fischer Chair, University of Cologne, Germany

***19[MON], 14:10~14:50***

**Carbon Materials**
Rodney S. Ruoff , Professor, IBS Center on the UNIST, Korea

# Plenary Session 2

**Chair :** Steven Tidrow, Alfred University

***21[WED], 08:30~09:10***

**Recent Trend and Perspective View of Artificial Photosynthesis**
Kyung Byung Yoon , Professor, Sogang University, Korea

***21[WED], 09:10~09:50***

**Challenges and Options for Fossil Fuel-based Zero-Carbon Electricity Generation**
Turgut M. Gür, Professor of Materials Science and Engineering, Stanford University , USA

# Oral Presentation

## Symposium 1. Symposium on Materials for Solar Fuel Production and Applications

## August 19(MON)

| | | |
|---|---|---|
| **Session1-1** | Symposium on Materials for Solar Fuel Production and Applications | |
| **Chair:** | Kijung Yong(POSTECH), Yung-Jung Hsu(National Chiao Tung University) | |
| 15:10-15:40 | [SO1-1] | **Oxide-Based Photoelectrodes for Use in Solar Water Splitting [Keynote]**<br>Kyoung-Shin Choi (University of Wisconsin-Madison) |
| 15:40-16:10 | [SO1-2] | **Semiconductor Nanoheterostructures for Photoconversion Applications [Invited]**<br>Yung-Jung Hsu(National Chiao Tung University) |
| 16:10-16:40 | [SO1-3] | **Towards Artificial Photosynthesis of Solar Fuels [Invited]**<br>Hongxian Han<br>(Dalian Institute of Chemical Physics, Chinese Academy of Sciences) |
| 16:40-17:10 | [SO1-4] | **New Mixed Anion Materials for Water Splitting and CO2 Fixation [Invited]**<br>Kazuhiko Maeda (Tokyo Institute of Technology) |
| 17:10-17:40 | [SO1-5] | **Low Dimensional Reduction Catalysts for Efficient Photoelectrochemical and Electrochemical Fuel Production [Invited]**<br>Uk Sim (Chonnam National University) |
| 17:40-17:55 | [SO1-6] | **Sputtered crystalline lanthanum iron oxide photocathodes for photoelectrochemical water splitting**<br>Min-Kyu Son (Kyushu University) |
| 17:55-18:10 | [SO1-7] | **Highly Efficient and Stable Solar Water Splitting from Hierarchical Ferrite Phosphate/Bismuth Vanadate Nanocactus**<br>Truong-Giang Vo<br>(National Taiwan University of Science and Technology) |

# August 20(TUE)

| **Session1-2** | Symposium on Materials for Solar Fuel Production and Applications |
|---|---|
| **Chair:** | Yeo Boon Siang(National University of Singapore), Ji-Wook Jang(UNIST) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO1-8] | **Solar to Chemical Energy Conversion [Invited]**<br>Joel W Ager (University of California Berkeley) |
| 09:00-09:30 | [SO1-9] | **Sunlight-Assisted Electrocatalytic Reactions for Energy-Water Nexus [Invited]**<br>Hyunwoong Park (Kyungpook National University) |
| 09:30-10:00 | [SO1-10] | **Photocatalytic reduction of CO2 using multinuclear metal complexes [Invited]**<br>Yusuke Tamaki(Tokyo Institute of Technology) |
| 10:00-10:15 | [SO1-11] | **Solution-Processed Earth-Abundant Sb2Se3 Nanostructures as Photocathodes for Highly Efficient and Stable Photoelectrochemical Water Splitting**<br>Wooseok Yang (Yonsei University) |
| 10:15-10:30 | [SO1-12] | **Au@Cu7S4 Yolk-Shell Nanocrystals for NIR-driven Photocatalytic Hydrogen Production**<br>Chun Wen Tsao (National Chiao Tung University) |

| **Session1-3** | Symposium on Materials for Solar Fuel Production and Applications |
|---|---|
| **Chair:** | Yung-Jung Hsu(National Chiao Tung University),<br>Joel W Ager(University of California Berkeley) |

| | | |
|---|---|---|
| 10:50-11:20 | [SO1-13] | **TiO2 Photocatalysis for Energy Production and Comfortable Atmosphere [Keynote]**<br>Akira Fujishima(Tokyo University of Science) |
| 11:20-11:50 | [SO1-14] | **Interfacial Plane-Specific Photocatalytic Properties of Cu2O-Based Heterostructures [Invited]**<br>Michael H Huang(National Tsing Hua University) |
| 11:50-12:20 | [SO1-15] | **Photoelectrochemical Solar Water Splitting from Hetero-interface Engineering [Invited]**<br>Jong Hyeok Park (Yonsei University) |

| **Session1-4** | Symposium on Materials for Solar Fuel Production and Applications | |
|---|---|---|
| **Chair:** | Yun Jeong Hwang(Korea Institute of Science and Technology), Jihun Oh(KAIST) | |
| 13:30-14:00 | [SO1-16] | **Modification of tungsten based photocatalysts for solar chemical conversion [Invited]**<br>Wooyul Kim (Sookmyung Women's University) |
| 14:00-14:30 | [SO1-17] | **Two-dimensional metal carbide (MXene) electrocatalysts with active basal planes for hydrogen evolution [Invited]**<br>Zhi Wei She(Institute of Materials Research and Engineering, A*STAR) |
| 14:30-15:00 | [SO1-18] | **Designing water splitting catalysts using heuristic rules: advantages, dangers and alternatives [Invited]**<br>Federico Calle-Vallejo(Universitat de Barcelona) |
| 15:00-15:30 | [SO1-19] | **Synchrotron-based X-ray spectroscopy in energy materials [Invited]**<br>YAN-GU LIN(National Synchrotron Radiation Research Center) |

| **Session1-5** | Symposium on Materials for Solar Fuel Production and Applications | |
|---|---|---|
| **Chair:** | Hyunwoong Park(Kyungpook National University),Wooyul Kim (Sookmyung Women's University) | |
| 15:50-16:20 | [SO1-20] | **Understanding CO2 reduction activity of Cu electrocatalysts [Invited]**<br>Yun Jeong Hwang(Korea Institute of Science and Technology) |
| 16:20-16:50 | [SO1-21] | **Electrocatalysts for the Selective Reduction of Carbon Dioxide [Invited]**<br>Boon Siang Yeo(National University of Singapore) |
| 16:50-17:20 | [SO1-22] | **Electrocatalytic CO2 Conversion to Valuable Chemicals [Invited]**<br>Youngkook Kwon(Ulsan National Institute of Science and Technology) |
| 17:20-17:50 | [SO1-23] | **The Roles of Cu Nanostructures and Reaction Environment in Electrochemical CO2 Reduction [Invited]**<br>Jihun Oh(Korea Advanced Institute of Science and Technology) |
| 17:50-18:05 | [SO1-24] | **Enhanced Hydrogen Production from Ammonia Borane Using Au@Cu2O Core@Shell Nanocrystals**<br>Mei Jing Fang(National Chiao Tung University) |
| 18:05-18:20 | [SO1-25] | **Synthesis of Carbon-Decorated Nickel Oxide Nanocomposites for simultaneous sulphide degradation and hydrogen production**<br>Preethi - Vijayarengan<br>(Hindustan Institute of Technology and Science, Chennai) |

# August 21(WED)

| **Session1-6** | Symposium on Materials for Solar Fuel Production and Applications | |
|---|---|---|
| **Chair:** | Ji-Wook Jang(UNIST), Yung-Jung Hsu(National Chiao Tung University) | |
| 10:10-10:40 | [SO1-26] | **Toward Practical Solar Hydrogen Production by Photoelectrochemical Water Splitting [Kyenote]**<br>Jae Sung Lee(Ulsan National Institute of Science and Technology ) |
| 10:40-11:10 | [SO1-27] | **Photoelectrochemical and Photovoltaic Systems for Solar Fuel Production [Invited]**<br>Jingshan Luo (Nankai University) |
| 11:10-11:40 | [SO1-28] | **Revelation of Enhanced Photocatalytic Activity of Carbon Nitrides by Correlating with Chemical and Electronic Structures [Invited]**<br>Jih-Jen Wu(National Cheng Kung University) |
| 11:40-12:10 | [SO1-29] | **2D Inorganic Nanosheet-based Hybrids with Excellent Catalyst Functionalities [Invited]**<br>Seong-Ju Hwang(Ewha Womans University) |

| **Session1-7** | Symposium on Materials for Solar Fuel Production and Applications | |
|---|---|---|
| **Chair:** | Kijung Yong(POSTECH), Wooyul Kim(Sookmyung Women's University) | |
| 13:30-14:00 | [SO1-30] | **TiO2 nanoparticle Synthesis and Improving Photocatalytic Activities based on Heterostructure/Defect Engineering [Invited]**<br>Sovann Khan(Tokyo University of Science) |
| 14:00-14:15 | [SO1-31] | **ZnSe-AgInSe2 Alloyed Quantum Dots for Photocatalytic Hydrogen Production**<br>Ping-Yen Hsieh(National Chiao Tung University) |
| 14:15-14:30 | [SO1-32] | **Promoted photocatalytic performance of TiO2 nanotube photocatalysts via electrochemical Li-intercalation**<br>Woo hyeong Sim (Kangwon National University) |
| 14:30-15:00 | [SO1-33] | **Monolithic artificial leaf: PV-electrolysis based leaf design and product gas separation [Invited]**<br>Kijung Yong (POSTECH) |

## Symposium 2. Advanced Materials for Energy Storage

# August 19(MON)

| | | |
|---|---|---|
| **Session2-1** | Advanced Materials for Energy Storage | |
| **Chair:** | Jinwoo Lee(KAIST) , Yuanzhe Piao(Seoul National University) | |
| 15:10-15:40 | [SO2-1] | **Investigation of heterogeneous molecular structure for electrocatalysis application [keynote]**<br>Xin Wang(Nanyang Technological University) |
| 15:40-16:10 | [SO2-2] | **Operando characterization revealing multiscale dynamics in lithium-ion batteries [Invited]**<br>Jongwoo Lim(Seoul National University) |
| 16:10-16:40 | [SO2-3] | **Understanding Interfacial Reaction of LiCoO2 Positive Electrode in Aqueous Lithium-Ion Batteries [Invited]**<br>Hye Ryung Byon<br>(Korea Advanced Institue of Science and Technology) |
| 16:40-17:10 | [SO2-4] | **Tuning of aluminum concentration distribution in high nickel cathode particles for lithium ion batteries [Invited]**<br>Songhun Yoon (Chung-Ang University) |
| 17:10-17:40 | [SO2-5] | **Exploring New Cathode and Anode Materials for Rechargeable Sodium-Ion Batteries [Invited]**<br>Kyung-Wan Nam (Dongguk University) |
| 17:40-17:55 | [SO2-6] | **3D porous carbon/MoS2 composites with Fe3O4 nanoparticles as anodes for lithium-ion batteries with excellent cycling stability**<br>Youngmoo Jeon (Seoul National University) |
| 17:55-18:10 | [SO2-7] | **CoxSnyOz composite hollow spheres as anode materials for Lithium-ion batteries**<br>Loi Tuan Nguyen (Duy Tan University) |

# August 20(TUE)

| **Session2-2** | Advanced Materials for Energy Storage | |
|---|---|---|
| **Chair:** | Ho Seok Park(Sungkyunkwan University), Kyung-Wan Nam(Dongguk University) | |
| 08:30-09:00 | [SO2-8] | **Polymer sealed planar Na-NiCl2 batteries being operated at below 200°C [Invited]**<br>Keeyoung Jung<br>(Research Institute of Industrial Science and Technology) |
| 09:00-09:30 | [SO2-9] | **Recent progress in β"-alumina solid electrolytes for advanced secondary batteries [Invited]**<br>Younki Lee (Gyeongsang National University |
| 09:30-10:00 | [SO2-10] | **Rechargeable Li Battery Architectures Based on Li+-Selective Solid Electrolytes [Invited]**<br>Jong-Won Lee (Chosun Univeristy) |
| 10:00-10:15 | [SO2-11] | **Theoretical study on the high conductivity of Ca-doped Na3PS4**<br>Hyun-Jae Lee (Ulsan National Institute of Science and Technology) |
| 10:15-10:30 | [SO2-12] | **Surface Modification of Lithium Diborate (Li2O3-2B2O3) Glass Ceramic on Li[Ni0.8Co0.8Mn0.1]O2 Cathode for Lithium Ion Battery Applications**<br>Hyeongseop Kang (Kyunghee University) |

| **Session2-3** | Advanced Materials for Energy Storage | |
|---|---|---|
| **Chair:** | Keeyoung Jung(Research Institute of Industrial Science and Technology),<br>Younki Lee(Gyeongsang National University | |
| 10:50-11:05 | [SO2-13] | **Ultrastable High-Rate Li-S Batteries through Hierarchically Porous TiN synthesized by Multiscale Phase Separation**<br>Won-Gwang Lim (Korea Advanced Institute of Sicence and Technology) |
| 11:05-11:20 | [SO2-14] | **Highly Stable Lithium-Sulfur Batteries Based on Flower-like Niobium Nitride-Coated Separators**<br>Seoa Kim (Korea Advanced Insitute of Science and Technology) |
| 11:20-11:50 | [SO2-15] | **Ultracapacitive Energy Storage Using 2D Nanomaterials Under Extreme Conditions [invited]**<br>Ho Seok Park (Sungkyunkwan University) |

| | | |
|---|---|---|
| 11:50-12:05 | [SO2-16] | **Performance improvement of organic redox flow battery using transition-metal oxide powders**<br>JungYong Seo (Sungkyunkwan University) |
| 12:05-12:20 | [SO2-17] | **Half-Cell and Full-Cell Applications of High-Performance ZnTe-TiO2-C Nanocomposite as A Promising Anode Material for Li-ion batteries**<br>Hanh Quoc Nguyen (Gachon University) |

| | |
|---|---|
| **Session2-4** | Advanced Materials for Energy Storage |
| **Chair:** | Lawrence Yoon Suk Lee(The Hong Kong Polytechnic University),<br>Jong-Won Lee(Chosun Univeristy) |

| | | |
|---|---|---|
| 13:30-14:00 | [SO2-18] | **Solid-state lithium ion batteries with garnet based solid electrolyte supporting layer [Invited]**<br>Sang Cheol Nam<br>(Research Institute of Industrial Science and Technology) |
| 14:00-14:30 | [SO2-19] | **Easy Approach to Realize Low Cost and High Cell Capacity in Sodium Nickel-Iron Chloride Battery [Invited]**<br>Cheol-Woo Ahn (Korea Institute of Materials Science) |
| 14:30-15:00 | [SO2-20] | **Advanced materials for vanadium redox flow batteries [Invited]**<br>Soowhan Kim (Sungkyunkwan University) |
| 15:00-15:30 | [SO2-21] | **Defect Engineering of 2D Materials for Sensing and Energy Applications [Invited]**<br>Ruitao Lv (Tsinghua University) |

| | |
|---|---|
| **Session2-5** | Advanced Materials for Energy Storage |
| **Chair:** | Sang Cheol Nam(Research Institute of Industrial Science and Technology),<br>Cheol-Woo Ahn(Korea Institute of Materials Science) |

| | | |
|---|---|---|
| 15:50-16:20 | [SO2-22] | **Nanoarray Electrochemical Energy Storage Materials & Integrated Devices [Invited]**<br>Jinping Liu (Wuhan University of Technology) |
| 16:20-16:50 | [SO2-23] | **Strategies for Facile Intercalation of Magnesium Ions into a Layered Hosts [Invited]**<br>Hyun Deog Yoo (Pusan National University) |

| | | |
|---|---|---|
| 16:50-17:05 | [SO2-24] | **Amorphous MoSx embedded in graphite oxide as fast-charging anode material for lithium ion batteries**<br>Han-Ik Joh(Konkuk University) |
| 17:05-17:20 | [SO2-25] | **NSMM Modeling and Design of Dielectric Materials**<br>Steven C. Tidrow (Alfred University) |
| 17:20-17:35 | [SO2-26] | **Few seconds Microwave-assisted Synthesis of Carbon-coated Silicon-graphene Film for Lithium-ion Batteries Anodes Using Electrochemically Exfoliated Graphene as Microwave Susceptor**<br>Jong Min Kim (Seoul National University) |
| 17:35-17:50 | [SO2-27] | **Tellurium-Red phosphorus Composites for Sodium-ion Battery Anode**<br>Doo Soo Kim (Gachon University) |
| 17:50-18:05 | [SO2-28] | **High Capacity Composite Sheets for Energy Storage Devices**<br>Ateeq ur Rehman(University of Agriculture, Faisalabad) |

## August 21(WED)

| | |
|---|---|
| **Session2-6** | Advanced Materials for Energy Storage |
| **Chair:** | Hee-Tak Kim(Korea Advanced Institute of Science and Technology)),<br>Qiang Zhang(Tsinghua University) |

| | | |
|---|---|---|
| 10:10-10:40 | [SO2-29] | **Recent Advances in Energy Chemistry of Li Metal Anode for Rechargeable Batteries [Invited]**<br>Qiang Zhang (Tsinghua University) |
| 10:40-11:10 | [SO2-30] | **Interface Design for Advanced Lithium Sulfur Batteries [Invited]**<br>Jia-Qi Huang (Beijing Institute of Technology) |
| 11:10-11:40 | [SO2-31] | **Achieving High Sulfur Utilization and Long Cycling Stability of Li Sulfur Batteries by Salt Anion Design [Invited]**<br>Hee-Tak Kim (Korea Advanced Institute of Science and Technology) |
| 11:40-12:10 | [SO2-32] | **Strategies for Polysulfide Fast Conversion in Lithium Sulfur Batteries and Research on Solid-State Lithium-Sulfur Batteries [Invited]**<br>Wen Yang (Beijing Institue of Technology) |

| | |
|---|---|
| **Session2-7** | Advanced Materials for Energy Storage |
| **Chair:** | Jingping Liu(Wuhan University of Technology),<br>Hyun Deog Yoo(Pusan National University) |

| | | |
|---|---|---|
| 13:30-14:00 | [SO2-33] | **Unconventional Sulfur Cathode Material for Room-Temperature Li-S and Na-S Batteries [Invited]**<br>Yanguang Li (Soochow University) |
| 14:00-14:30 | [SO2-34] | **Surface modification of MXenes for highly enhanced pseudocapacitive performance under neutral conditions [invited]**<br>Lawrence Yoon Suk Lee (The Hong Kong Polytechnic University) |
| 14:30-14:45 | [SO2-35] | **The electro-deposited lithium anode for lithium-metal batteries**<br>Bit Na Choi (Sungkyunkwan University) |
| 14:45-15:15 | [SO2-36] | **On the way to ceramic solid state batteries: materials and technologies [Invited]**<br>Dina Fattakhova-Rohlfing (Universität Duisburg-Essen ) |

## Symposium 3. Challenges in Thermal-to-Electrical Energy Conversion Technology for Innovative Novel Applications

## August 22(THU)

| | |
|---|---|
| **Session3-1** | Challenges in Thermal-to-Electrical Energy Conversion Technology for Innovative Novel Applications |
| **Chair:** | Woochul Kim(Yonsei University), Min-Wook Oh (Hanbat National University) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO3-1] | **Preparation of High-Performance Thermoelectric Materials with Defect Structures [Invited]**<br>Kyu Hyoung Lee (Yonsei University) |
| 09:00-09:30 | [SO3-2] | **Phonon dispersion and scattering in thermoelectrics [Invited]**<br>Yanzhong Pei (Tongji University) |
| 09:30-10:00 | [SO3-3] | **Modulating Crystal Structure, Microstructure, Electronic Structure and their effect on the Thermoelectric Properties [Invited]**<br>Min-Wook Oh (Hanbat National University) |

| | | |
|---|---|---|
| 10:00-10:30 | [SO3-4] | **Flexible Thermoelectric Devices Based on Bulk Materials for Body Heat Harvesting and personal Refrigeration [Invited]**<br>Woochul Kim (Yonsei University) |

## August 23(FRI)

| | |
|---|---|
| **Session3-2** | Challenges in Thermal-to-Electrical Energy Conversion Technology for Innovative Novel Applications |
| **Chair:** | Chung-Yul Yoo(Korea Institute of Energy Research),<br>Won Bo Lee(Seoul National University) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO3-5] | **Advanced Thermal Energy Harvesting Devices for Low-Power Electronic Applications [Invited]**<br>Dongyan Xu (The Chinese University of Hong Kong) |
| 09:00-09:30 | [SO3-6] | **Longitudinal spin-Seebeck effect in nickel ferrites and ferromagnetic metallic glasses [Invited]**<br>Hyungyu Jin (POSTECH) |
| 09:30-10:00 | [SO3-7] | **First-principles Study on Transport Coefficients of Aluminium Alloys: Bulk and Point-defect [Invited]**<br>Won Bo Lee (Seoul National University) |
| 10:00-10:30 | [SO3-8] | **Unraveling thermoelectric properties of bismuth telluride- and skutterudite-based devices by means of impedance spectroscopy [Invited]**<br>Chung-Yul Yoo (Korea Institute of Energy Research) |

| | |
|---|---|
| **Session3-3** | Challenges in Thermal-to-Electrical Energy Conversion Technology for Innovative Novel Applications |
| **Chair:** | In Chung(Seoul National University), Sang Hyun Park (KIER) |

| | | |
|---|---|---|
| 10:50-11:20 | [SO3-9] | **Ultrahigh power factor and thermoelectric figure merit in n-type PbSe via conduction band engineering [Invited]**<br>In Chung (Seoul National University) |
| 11:20-11:50 | [SO3-10] | **New horizons in Thermoelectric Materials: inorganic-organic hybrids and machine learning for inorganic crystals [Invited]**<br>Kedar Hippalgaonkar (Institute of Materials Research and Engineering) |
| 11:50-12:05 | [SO3-11] | **Evaluation of thermoelectric power based on electrical contact resistance at operating temperature**<br>Yeongseon Kim (KAIST) |

## Symposium.4 Advanced Materials for Perovskite and Next Generation Solar Cells

# August 20(TUE)

| **Session4-1** | Advanced Materials for Perovskite and Next Generation Solar Cells | |
|---|---|---|
| **Chair:** | Min Jae Ko(Hanyang University) , Junghwan Kim (KIST) | |
| 08:30-09:00 | [SO4-1] | **Clean, Green and Free: Solar Electricity via Organic-Inorganic Hybrids for 2035 [Keynote]**<br>Sembukuttiarachilage Ravi Silva (University of Surrey) |
| 09:00-09:30 | [SO4-2] | **Sn Based Perovskite Solar Cells: From Inception To Reality [Invited]**<br>Jae-Joon Lee (Dongguk University) |
| 09:30-10:00 | [SO4-3] | **Interfacial Modification for Improved Performance in Perovskite Solar Cells [Invited]**<br>Yuelong Li (Nankai University) |
| 10:00-10:30 | [SO4-4] | **Rational Design of Halide Materials for Efficient and Stable Perovskite Solar Cells [Invited]**<br>Jun Hong Noh (Korea University) |

| **Session4-2** | Advanced Materials for Perovskite and Next Generation Solar Cells | |
|---|---|---|
| **Chair:** | Hyun Suk Jung (SUNGKYUNKWAN UNIVERSITY) , Il Jeon(The University of Tokyo) | |
| 10:50-11:20 | [SO4-5] | **Surface Chemistry of III-V Colloidal Quantum Dots for Photovoltaic Applications [Invited]**<br>Sohee Jeong (SKKU) |
| 11:20-11:50 | [SO4-6] | **Photovoltaic Performance of Inverted Polymer Solar Cells using Multi-functional Quantum-dots Monolayer as Electron Transport Layer [Invited]**<br>DONG ICK SON (KIST) |
| 11:50-12:05 | [SO4-7] | **Organic Photovoltaics for Low-light Applications**<br>Jahandar Muhammad (KIMS) |

| **Session4-3** | Advanced Materials for Perovskite and Next Generation Solar Cells | |
|---|---|---|
| **Chair:** | Jae-Joon Lee(Dongguk University) , Jun Hong Noh(Korea University) | |
| 13:30-14:00 | [SO4-8] | **The Challenges of Printable Mesoscopic Perovskite Solar Cells [Keynote]**<br>Hongwei Han (Huazhong University of Science and Technology) |

| | | |
|---|---|---|
| 14:00-14:30 | [SO4-9] | **Stability of unstable perovskite: Recent strategies for making stable perovskite solar cells [Invited]**<br>Chang Kook Hong (Chonnam National University) |
| 14:30-15:00 | [SO4-10] | **Carbon Nanotubes to Outperform Metal in Perovskite Solar Cells via Dopant Engineering and Hole-Selectivity Control [Invited]**<br>Il Jeon (The University of Tokyo) |
| 15:00-15:15 | [SO4-11] | **Low temperature processed 2D based ETL for high performance inverted planar p-i-n perovskite solar cells**<br>Pramila Patil (Chonbuk National University) |
| 15:15-15:30 | [SO4-12] | **Surface passivation of perovskite film for efficient and stable solar cells**<br>Abd Rashid bin Mohd Yusoff (Swansea University) |

| | |
|---|---|
| **Session4-4** | Advanced Materials for Perovskite and Next Generation Solar Cells |
| **Chair:** | Dong Ick Son (KIST) , Jung-Yong Lee(KAIST) |

| | | |
|---|---|---|
| 15:50-16:20 | [SO4-13] | **Toward Ambient Air Stable Halide Perovskite Solar Cells [Invited]**<br>Junghwan Kim (KIST) |
| 16:20-16:50 | [SO4-14] | **Color-tunable Semitransparent Organic Solar Cells [Invited]**<br>Kyungkon Kim (Ewha Womans University) |
| 16:50-17:20 | [SO4-15] | **Impact of 3D Morphology on the Photovoltaic Property of All-Polymer Solar Cells Processed by Non-halogenated Solvents [Invited]**<br>BongSoo Kim (UNIST) |
| 17:20-17:50 | [SO4-16] | **Toward large-area applicable high efficiency organic solar cells:development of materials [Invited]**<br>Hae Jung Son (KIST) |

## Symposium.5 Spectral Conversion Materials for Energy Applications

## August 19(MON)

| | |
|---|---|
| **Session5-1** | Spectral Conversion Materials for Energy Applications |
| **Chair:** | Jose Marques-Hueso(Heriot-Watt university),<br>Kang Taek Lee (Gwangju Institute of Science and Technology (GIST) |

| | | |
|---|---|---|
| 15:10-15:40 | [SO5-1] | **Hydrogen Production from Water over Novel Zirconium-Tin Oxide Photocatalyst [Invited]**<br>Nobuhito Imanaka (Osaka University) |
| 15:40-16:10 | [SO5-2] | **Two-dimensional transition metal dichalcogenides for optoelectronics and chemiresistive applications [Invited]**<br>Jungwook Choi (Yeungnam University) |
| 16:10-16:40 | [SO5-3] | **Solar Spectral Conversion and Extrinsic Sensitization in Natural and Artificial Photosynthesis [Invited]**<br>Byoungjin SO (University of Jena) |
| 16:40-16:55 | [SO5-4] | **Hybrid ZnO@Nanocarbon Quantumdots with Fast Charge Transfer for Application in Solar Energy Conversion**<br>Kyu Seung Lee (Korea Institute of Science and Technology) |
| 16:55-17:25 | [SO5-5] | **One-dimensional optical cavity for ultra-broadband light trapping in organic photovoltaics [Invited]**<br>Quan Liu (ICFO-The Institute of Photonic Sciences) |

## August 20(TUE)

| | |
|---|---|
| **Session5-2** | Spectral Conversion Materials for Energy Applications |
| **Chair:** | Jose Marques-Hueso(Heriot-Watt university), Eva Hemmer(University of Ottawa) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO5-6] | **Lanthanide-based Nanomaterials: An Expanding Toolbox for Bioimaging and Photonic Applications [Keynote]**<br>Xiaogang n/a LIU (National University of Singapore) |
| 09:00-09:30 | [SO5-7] | **Small-Sized Lanthanide-doped Nanocrystals for Time Domain Imaging in the Second Biological Window [Invited]**<br>Guanying Chen (Harbin Institute of Technology) |

| | | |
|---|---|---|
| 09:30-10:00 | [SO5-8] | **Intracellular and Extracellular Dynamics of Upconversion Nanoparticles in Vesicles Investigated by Optical Microscopy [Invited]**<br>kang Taek Lee (Gwangju Institute of Science and Technology (GIST) |
| 10:00-10:30 | [SO5-9] | **Developing Near-Infrared Sensitized Core-Shell-Shell Upconversion Nanoparticles as pH Responsive Probe [Invited]**<br>Manoj K Mahata (Gwangju Institute of Science and Technology (GIST) |

| | |
|---|---|
| **Session5-3** | Spectral Conversion Materials for Energy Applications |
| **Chair:** | Jose Marques-Hueso(Heriot-Watt university), Kang Taek Lee (GIST) |

| | | |
|---|---|---|
| 10:50-11:20 | [SO5-10] | **Multicolor Emission in Nd3+-Sensitized Gd3+-based Core/Shell/Shell Upconverting Nanoparticles [Invited]**<br>Sidney JL Ribeiro(São Paulo State University (UNESP) |
| 11:20-11:50 | [SO5-11] | **Combatting concentration quenching in lanthanide-doped upconversion nanoparticles [Invited]**<br>Tianying Sun (City University of Hong Kong) |
| 11:50-12:05 | [SO5-12] | **Effect of the encapsulation on upconversion phosphors and PLQY measurements**<br>Jose Marques-Hueso(Heriot-Watt university) |
| 12:05-12:20 | [SO5-13] | **Exploring Multimodality in Lanthanide-Based Luminescent Systems**<br>Eva Hemmer(University of Ottawa) |

| | |
|---|---|
| **Session5-4** | Spectral Conversion Materials for Energy Applications |
| **Chair:** | Jose Marques-Hueso(Heriot-Watt university), Eva Hemmer(University of Ottawa) |

| | | |
|---|---|---|
| 13:30-14:00 | [SO5-14] | **Interfacial properties determine the functional behavior in composite nano-systems for energy harvesting [keynote]**<br>Alberto Vomiero (Luleå University of Technology) |
| 14:00-14:30 | [SO5-15] | **Nano templates for spectrum conversion technology [Invited]**<br>Doo-Hyun Ko(Kyung Hee University) |
| 14:30-15:00 | [SO5-16] | **Visible/near-infrared driven photocatalyst based on upconversion nanoparticles and g-C3N4 [Invited]**<br>Yong Il Park(Chonnam National University) |
| 15:00-15:30 | [SO5-17] | **From molecues to Ln-doped oxides [Invited]**<br>Gunnar Westin(Uppsala University) |

## Symposium.6 Materials for Nanogenerators and Self-powered Electronics

## August 20(TUE)

| | |
|---|---|
| **Session6-1** | Materials for Nanogenerators and Self-powered Electronics |
| **Chair:** | Jung Ho Kim(University of Wollongong),<br>Zhou Li (Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences) |

| | | |
|---|---|---|
| 15:50-16:20 | [SO6-1] | **Self-powered Medical Electronics [Keynote]**<br>Zhou Li (Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences) |
| 16:20-16:50 | [SO6-2] | **Lipids: Source of Static Electricity of Regenerative Natural Substances and Non-Destructive Energy Harvesting [Invited]**<br>Unyong Jeong (Pohang University of Science and Technology) |
| 16:50-17:20 | [SO6-3] | **The Balance between Surface Electron Transfer and Electrostatic Discharge: An Insight into Triboelectric Effect [Invited]**<br>Yunlong Zi (The Chinese University of Hong Kong) |
| 17:20-17:50 | [SO6-4] | **Tunable triboelectric charge transfer on the ferroelectric surfaces [Invited]**<br>YUNSEOK KIM (Sungkyunkwan University) |
| 17:50-18:05 | [SO6-5] | **Accumulating triboelectric charges driven-air breakdown and thereby continuous direct current generation**<br>Minki Kang (Sungkyunkwan University) |

## August 21(WED)

| | |
|---|---|
| **Session6-2** | Materials for Nanogenerators and Self-powered Electronics |
| **Chair:** | Sanghoon Lee(DGIST), Zhen Wen(Soochow University) |

| | | |
|---|---|---|
| 10:10-10:40 | [SO6-6] | **Exploring the Self-Powered Human-Machine Interfaces [keynote]**<br>Chengkuo Lee (National University of Singapore) |
| 10:40-11:10 | [SO6-7] | **Design and Development of Biomolecular Piezoelectric Materials [Invited]**<br>JU HYUCK LEE (Daegu Gyeongbuk Institute Science and Technology) |
| 11:10-11:40 | [SO6-8] | **Self-Powered Disinfection System Controlled by Human Motions [Invited]**<br>Zong-Hong Lin (National Tsing Hua University) |

| | | |
|---|---|---|
| 11:40-11:55 | [SO6-9] | **Utilizing ferroelectric HfO2 for low-power multi-level neuromorphic devices**<br>Jun Hee Lee (UNIST) |
| 11:55-12:10 | [SO6-10] | **Intrinsic Reconfigurable OR↔AND Switches based on Piezo-phototronic Gated Optofluidic Channels**<br>Yuvasree Purusothaman (Jeju National University) |

| | |
|---|---|
| **Session6-3**<br>**Chair:** | Materials for Nanogenerators and Self-powered Electronics<br>Zong Hong Lin(National Tsing Hua University),<br>Su Yeon Lee(Korea Research Institute of Chemical Technology) |

| | | |
|---|---|---|
| 13:30-14:00 | [SO6-11] | **Mechano-Neuromodulation of Peripheral Nervous System using Triboelectric Neurostimulator [Invited]**<br>Sanghoon Lee (DGIST) |
| 14:00-14:30 | [SO6-12] | **High-Performance Flexible Triboelectric Nanogenerators Based on Ingeniously Designed Electrode Materials [Invited]**<br>Zhen Wen (Soochow University) |
| 14:30-15:00 | [SO6-13] | **Rational Design of Composite Materials for High-Performance Piezoelectric Nanogenerators [Invited]**<br>Su Yeon Lee (Korea Research Institute of Chemical Technology) |

| | |
|---|---|
| **Session6-4**<br>**Chair:** | Materials for Nanogenerators and Self-powered Electronics<br>Zong Hong Lin(National Tsing Hua University),<br>Su Yeon Lee(Korea Research Institute of Chemical Technology) |

| | | |
|---|---|---|
| 15:15-15:45 | [SO6-14] | **Self-Powered Sensing Based on Triboelectric Nanogenerator and Impedance Matching Effect [Invited]**<br>Xuhui Jeff Sun (Soochow University) |
| 15:45-16:15 | [SO6-15] | **Nanofiber air filters for enhanced trapping of particulate matters [Invited]**<br>Junghyo Nah (Chungnam National University) |
| 16:15-16:45 | [SO6-16] | **Challenges of integration of single-crystalline LiNbO3 piezoelectric transducers with low capacitance with energy harvesting circuits [Invited]**<br>Samuel MARGUERON (ENSMM - École Nationale Supérieure de Mécanique et des Microtechniques) |
| 16:45-17:00 | [SO6-17] | **Multimodal energy device and its enhancement via ferroelectric polarization**<br>Hong-Joon Yoon (Sungkyunkwan University) |

## August 22(THU)

| | |
|---|---|
| **Session6-5** | Materials for Nanogenerators and Self-powered Electronics |
| **Chair:** | Ju Hyuck Lee(Daegu Gyeongbuk Institute Science and Technology), Yunlong Zi(The Chinese University of Hong Kong) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO6-18] | **Synthesis and applications of advanced alkaline niobate thin films [Invited]**<br>Ausrine Bartasyte (University of Franche-Comté) |
| 09:00-09:30 | [SO6-19] | **Strategically Designed Silicon Embedded SiOx Framework for High Energy Lithium Rechargeable Batteries [Invited]**<br>Jung Ho Kim (University of Wollongong) |
| 09:30-09:45 | [SO6-20] | **Capacitive Thermal-to-Electric Energy Conversion Devices**<br>Steven C. Tidrow (Alfred University) |
| 09:45-10:00 | [SO6-21] | **Photo-Erasable Memory Behavior of Ferroelectric Trigonal Selenium Micro-Rods**<br>Nagamalleswara Rao Alluri (Jeju National University) |
| 10:00-10:30 | [SO6-22] | **Multifunctional Nanogenerators for Self-Powered Electronics [Invited]**<br>Sang-Woo Kim (Sungkyunkwan University) |

## Symposium.7 Materials for super ultra low energy and emission vehicle

## August 20(TUE)

| | |
|---|---|
| **Session7-1** | Materials for super ultra low energy and emission vehicle |
| **Chair:** | Kwan-Young Lee(Korea University ), Junhua Li (Tsinghua University) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO7-1] | **Automotive Tandem Three-Way Catalyst composed of PGM-free HC-PROX and CO-SCR [Keynote]**<br>Atsushi Satsuma (Nagoya University) |
| 09:00-09:15 | [SO7-2] | **Oxidation of C3H8, iso-C5H12 and C3H6 under near-stoichiometric and fuel-lean conditions over aged Pt-Pd/Al2O3 catalysts with different Pt:Pd ratios**<br>Do Heui Kim (Seoul National University) |
| 09:15-09:45 | [SO7-3] | **Enhancing the Performance of Diesel Oxidation Catalysts via Support Modification**<br>Jae-Soon Choi (LG Chem ) |

| | | |
|---|---|---|
| 09:45-10:00 | [SO7-4] | **Rational Design of Highly Efficient Ceria Catalysts for Low-Temperature CO Oxidation**<br>Jeong Woo Han(Pohang University of Science and Technology) |
| 10:00-10:15 | [SO7-5] | **Mechanism of CO-oxidation on Pd/CeO2(100): The unique surface-structure of CeO2(100) and the role of peroxide**<br>Hosik Lee(Ulsan National Institute of Science & Technology) |
| 10:15-10:30 | [SO7-6] | **Fully Dispersed Rhodium Ensemble Catalyst with Enhanced Low-Temperature Activity**<br>Hojin Jeong(KAIST) |

| | |
|---|---|
| **Session7-2** | Materials for super ultra low energy and emission vehicle |
| **Chair:** | Do Heui Kim (Seoul National University), Atsushi Satsuma (Nagoya University) |

| | | |
|---|---|---|
| 10:50-11:20 | [SO7-7] | **Low temperature oxidation catalyst and hydrocarbon trapping for cold-start emission control [Invited]**<br>SUNG BONG KANG (Gwangju Institute of Science and technology (GIST)) |
| 11:20-11:35 | [SO7-8] | **Development cold-start hydrocarbon trap using Cu-impregnated hierarchically structured MFI type zeolite**<br>Eunhee Jang(Korea University) |
| 11:35-11:50 | [SO7-9] | **Catalytic ozone-oxidation of soot using potassium-substituted lanthanum manganese perovskite oxide catalysts**<br>Dae-Won Lee(Kangwon National University) |
| 11:50-12:05 | [SO7-10] | **CeO2-Ag/TiO2 catalyst for low temperature combustion of PM**<br>Min June Kim(Korea University) |
| 12:05-12:20 | [SO7-11] | **Vertical film drying of colloidal dispersion using Lattice-Boltzmann method and continuum model**<br>Hyun Wook Jung(Korea University) |

| | |
|---|---|
| **Session7-3** | Materials for super ultra low energy and emission vehicle |
| **Chair:** | Ki Bong Lee(Korea University),<br>Jeong Woo Han(Pohang University of Science and Technology) |

| | | |
|---|---|---|
| 13:30-14:00 | [SO7-12] | **NOx & VOCs Abatement by the Designed Complex Micro-Structure Catalysts [Keynote ]**<br>Junhua Li (Tsinghua University) |

| | | |
|---|---|---|
| 14:00-14:30 | [SO7-13] | **Challenges and Solutions for SCR Catalytic System to Meet Next-generation Emission Standards [Invited]**<br>Young Jin Kim(Hyundai Motor Group) |
| 14:30-14:45 | [SO7-14] | **Development of NOx Adsorbents for Lean NOx Trap**<br>Ki Bong Lee(Korea University) |
| 14:45-15:00 | [SO7-15] | **1-d modelling and model-based fault detection for selective catalytic reduction systems**<br>Sanha Lim(Seoul National University) |

## Symposium.8 Critical Materials for Energy Aapplications

## August 19(MON)

| | |
|---|---|
| **Session8-1** | Critical Materials for Energy Aapplications |
| **Chair:** | Taek-Soo Kim(Korea Institute of Industrial Technology),<br>Jungshin Kang (Korea Institute of Geoscience and Mineral Resources) |

| | | |
|---|---|---|
| 15:10-15:40 | [SO8-1] | **Recycling Precious Metals and Rare Metals from Scraps [Keynote]**<br>Toru H Okabe (The University of Tokyo) |
| 15:40-16:10 | [SO8-2] | **Catalytic Combustion-type Carbon Monoxide Gas Sensor with Platinum-loaded Oxide Ion Conducting Solids [Invited]**<br>Nobuhito Imanaka (Osaka University) |
| 16:10-16:40 | [SO8-3] | **Production of high-purity magnesium metal through electrolytic processes using North Korean magnesite [Invited]**<br>Jungshin Kang (Korea Institute of Geoscience and Mineral Resources) |
| 16:40-16:55 | [SO8-4] | **Direct Reduction of Metal Oxides by Oxygen Ion Conducting Membrane Assisted Electrolysis Process**<br>Kyoung-Tae Park (Korea Institute of Industrial Technology) |
| 16:55-17:10 | [SO8-5] | **An efficient and stable g-C3N4 decorated CdS nanosheets doped Fe3O4 catalyst for the enhancement of H2 evolution via photocatalytic water splitting**<br>Ankireddy Seshadri Reddy (Gachon University) |

| | | |
|---|---|---|
| 17:10-17:25 | [SO8-6] | **Magnetic properties of the 1-dimensional Nd2Fe14B according to thickness of fiber**<br>Su Noh (Korea Institute of Industrial Technology) |
| 17:25-17:40 | [SO8-7] | **Recovery of rubidium carbonate and cesium carbonate from desalination brine through t-BAMBP extraction**<br>Cheng-Han Lee (National Cheng Kung University) |

## August 20(TUE)

| | |
|---|---|
| **Session8-2** | Critical Materials for Energy Aapplications |
| **Chair:** | Gabrielle Gaustad (Alfred University),<br>Kyoung-Tae Park (Korea Institute of Industrial Technology) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO8-8] | **Improving Al Recycling Using Overly-produced Rare Earth Metal Additions [Invited]**<br>Ryan T Ott (Ames Laboratory) |
| 09:00-09:15 | [SO8-9] | **Production of large-scale p-type BiSbTe alloys and enhancing its thermoelectric properties by facile electroless Cu-coating**<br>Sharief Pathan (Kongju National University) |
| 09:15-09:30 | [SO8-10] | **Effect of Ti addition on the plastic deformability of NdFeB alloy**<br>Juyoung Cho (Korea Institute of Industrial Technology) |
| 09:30-09:45 | [SO8-11] | **Lithium-ion battery electrode with critical metals: A new possibility**<br>Taehoon Kim (Korea Institute of Industrial Technology) |
| 09:45-10:00 | [SO8-12] | **The separation and recovery of copper, indium, gallium and selenium from waste thin-film solar panels**<br>Fan-Wei Liu (National Tsing Hua University) |
| 10:00-10:15 | [SO8-13] | **Effect of scrap size in (Nd,Dy)-Fe-B magnet on the extraction behavior of heavy rare earth elements**<br>Sunwoo Nam (Korea Institute of Industrial Technology) |
| 10:15-10:30 | [SO8-14] | **Evolution of Domain Structure in PZT Thin Film by Adding Rare-earth Element**<br>Jongchul Jeon (Korea Institute of Industrial Technology) |

| **Session8-3** | Critical Materials for Energy Aapplications | |
|---|---|---|
| **Chair:** | Dongsoo Kim(Korea Institute of Materials Science),<br>Taek-Soo Kim(Korea Institute of Industrial Technology) | |
| 10:50-11:20 | [SO8-15] | **Integrating criticality in material selection decisions [Invited]**<br>Gabrielle Gaustad(Alfred University) |
| 11:20-11:35 | [SO8-16] | **Integrated recycling process to produce high performance tantalum materials from spent materials**<br>Kyoung-Tae Park (Korea Institute of Industrial Technology) |
| 11:35-11:50 | [SO8-17] | **Durable icephobic coating based on oil-infused PDMS with porous silica aerogel container**<br>Jin Hwan Kim (Korea Electronics Technology Institute) |
| 11:50-12:05 | [SO8-18] | **Microstructure dependent egg type microstructure in Cu-Fe alloys**<br>Sardar Farhat Abbas (Korea Institute of Industrial Technology) |
| 12:05-12:20 | [SO8-19] | **Growth of layered double hydroxide nanostructure and its application to energy conversion devices**<br>IL-KYU PARK (Seoul National University of Science and Technology) |

| **Session8-4** | Critical Materials for Energy Aapplications | |
|---|---|---|
| **Chair:** | Ryan T Ott(Ames Laboratory), Kyoung-Tae Park(Korea Institute of Industrial Technology) | |
| 13:30-14:00 | [SO8-20] | **Synthesis of HoN particles and magnetic entropy change in cryogenic temperature [Invited]**<br>Dongsoo Kim (Korea Institute of Materials Science) |
| 14:00-14:15 | [SO8-21] | **Phase development and growth of CoCrFeNiTi0.5 high entropy alloy powder**<br>Muhammad Aneeq Haq (Korea Institute of Industrial Technology) |
| 14:15-14:30 | [SO8-22] | **Investigation on the microstructure and magnetic properties of NdFeB sintered magnets by SPS using gas atomized powder**<br>Dong-won Shin (Kongju National University) |

## Symposium.9 Advanced Materials for Fuel Cells and High Temperature

# August 19(MON)

| | |
|---|---|
| **Session9-1** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | Yongchai Kwon(Seoultech), Chanho Pak(GIST) |

| | | |
|---|---|---|
| 15:10-15:40 | [SO9-1] | **Recent progress of thin-film-base low-temperature-operating solid oxide fuel cells for better stability and fuel flexibility [Invited]**<br>Ji-Won Son (KIST) |
| 15:40-16:10 | [SO9-2] | **Performance and stability enhancement of thin film solid oxide fuel cells through combination of multiple deposition processes [Invited]**<br>Suk Won Cha (Seoul Nat. Univ.) |
| 16:10-16:40 | [SO9-3] | **Interface engineering with electrohydrodynamic jet printing for solid oxide fuel cells [Invited]**<br>Wonyoung Lee (Sungkyunkwan Univ.) |
| 16:40-17:10 | [SO9-4] | **Functional Oxide Thin Film Fabrication by Flash Light Irradiation for Solid Oxide Fuel Cells [Invited]**<br>Young-Beom Kim (Hanyang Univ.) |
| 17:10-17:40 | [SO9-5] | **Atomic Layer Deposition for Thin Film SOFC Application [Invited]**<br>Jihwan An (Seoultech) |

# August 20(TUE)

| | |
|---|---|
| **Session9-2** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | Dirk Henkensmeier(KIST), Jihwan An(Seoultech) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO9-6] | **The electrocatalytic value of metal nanoparticles [Invited]**<br>WooChul Jung (KAIST) |
| 09:00-09:30 | [SO9-7] | **Correlation of Time-dependent Oxygen Surface Exchange Kinetics with Surface Chemistry of The La0.6Sr0.4Co0.2Fe0.8O3-8Cathode [Invited]**<br>Kang Taek Lee (DGIST) |
| 09:30-10:00 | [SO9-8] | **High-performance nanofibrous perovskite cathodes for solid oxide fuel cells fabricated via an electrochemical route [Invited]**<br>Seungbok Lee (KIER) |

| | | |
|---|---|---|
| 10:00-10:30 | [SO9-9] | **Development of Core Component Materials for Long-life MCFC [Invited]**<br>Sung-Pil Yoon (KIST) |

| | |
|---|---|
| **Session9-3** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | Dirk Henkensmeier(KIST), Jihwan An(Seoultech) |

| | | |
|---|---|---|
| 10:50-11:05 | [SO9-10] | **Electrochemical properties of the Ruddlesden-Popper series, La1.7Ca0.3Cu1-xFexO4+δ, as solid oxide fuel cells cathode**<br>Kuk Jin Hwang (KICET) |
| 11:05-11:35 | [SO9-11] | **Dynamic concentration control algorithms for highly efficient DMFC systems with process integration[Invited]**<br>Youngseung Na (Univ. of Seoul) |
| 11:35-12:05 | [SO9-12] | **Phase Engineered 2D Transition Metal Dichalcogenides for Energy Conversions [Invited]**<br>Wonbong Choi (Univ. of North Texas) |
| 12:05-12:20 | [SO9-13] | **Performance Improvement of Low Temperature Solid Oxide Fuel Cells by Additional Catalytic Current Collecting Layer on Thin Film La0.6Sr0.4Co0.8Fe0.2O3-δ (LSCF) cathode**<br>Sanghoon Lee (Seoul Nat. Univ.) |

| | |
|---|---|
| **Session9-4** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | Youngseung Na(Univ. of Seoul), WooChul Jung(KAIST) |

| | | |
|---|---|---|
| 13:30-13:45 | [SO9-14] | **Anode Surface Treatment by Atomic Layer Deposited CeO2 for Low Temperature Solid Oxide Fuel Cell**<br>Jeong Woo Shin (Seoultech) |
| 13:45-14:00 | [SO9-15] | **Surface Modification of Ce(Mn, Fe)O2 / La(Sr)Fe(Mn)O3 Ceramic Anode for Propane Fueled Solid Oxide Fuel Cells**<br>Min Kyu Kim (KICET) |
| 14:00-14:30 | [SO9-16] | **Nanobiocatalysis for Enzymatic Biofuel Cells [Keynote]**<br>Jungbae Kim (Korea Univ.) |
| 14:30-15:00 | [SO9-17] | **Enzymatic biofuel cells using mediator embedded biocatalysts [Invited ]**<br>Yongchai Kwon (Seoultech) |

| | | |
|---|---|---|
| 15:00-15:30 | [SO9-18] | **Molecular Engineering of Aromatic Polymers for Alkaline Anion Exchange Membrane Fuel Cells [Keynote]**<br>Chulsung Bae (RPI) |

| | |
|---|---|
| **Session9-5** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | Youngseung Na(Univ. of Seoul), WooChul Jung(KAIST) |

| | | |
|---|---|---|
| 15:50-16:05 | [SO9-19] | **Application of advanced ceramics materials as a cheap alternative to Nafion in yeast-based microbial fuel cells**<br>Domenico Frattini (Seoultech) |
| 16:05-16:35 | [SO9-20] | **Synthesis of Poly(arylene ether)s for Fuel Cell Membranes [Invited]**<br>Jae-Suk Lee (GIST) |
| 16:35-17:05 | [SO9-21] | **Chemically and Mechanically Stable Polymer Electrolyte Membranes for Fuel Cell Applications [Invited]**<br>Dongwon Shin (KIER) |
| 17:05-17:35 | [SO9-22] | **Organic-Inorganic composite membrane with low cost silane precursor [Invited]**<br>Ho-Young Jung (Chonnam Nat. Univ.) |
| 17:35-18:05 | [SO9-23] | **Membranes for HT PEM Fuel Cells [Invited]**<br>Dirk Henkensmeier (KIST) |
| 18:05-18:35 | [SO9-24] | **Optimization of Gas Diffusion Electrode for High-Temperature Polymer Electrolyte Membrane Fuel Cells [Invited]**<br>Chanho Pak (GIST) |

## August 21(WED)

| | |
|---|---|
| **Session9-6** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | Sang Hoon Joo(UNIST), Heetak Kim(KAIST) |

| | | |
|---|---|---|
| 10:10-10:40 | [SO9-25] | **A Eutectic Mixture of Biphenyl and Diphenylmethane as a Liquid Organic Hydrogen Carrier [Invited]**<br>Chang Won Yoon (KIST) |
| 10:40-11:10 | [SO9-26] | **The preparation of ultra-low-Pt catalysts for PEMFC by magnetron sputtering technology [Invited]**<br>Wei Guo (Wuhan Univ. of Tech.) |

| | | |
|---|---|---|
| 11:10-11:40 | [SO9-27] | **Mass production of core-shell structure electrocatalyst for PEM fuel cells [Invited]**<br>Hansung Kim (Yonsei Univ.) |
| 11:40-12:10 | [SO9-28] | **Electrocatalysts for Oxygen Reduction Reaction in PEM Fuel Cell [Invited]**<br>EunAe Cho (KAIST) |

| | |
|---|---|
| **Session9-7** | Advanced Materials for Fuel Cells and High Temperature Electrolysis |
| **Chair:** | EunAe Cho (KAIST). Chang Won Yoon(KIST) |

| | | |
|---|---|---|
| 13:30-14:00 | [SO9-29] | **Development of Fuel Cell Catalyst Using Electron Beam Process [Invited]**<br>Geun-Seok Chai (RTX Ltd.) |
| 14:00-14:30 | [SO9-30] | **Promoting Oxygen and Hydrogen Electrode Reactions with Atomically Dispersed M–Nx/C Catalysts [Invited]**<br>Sang Hoon Joo (UNIST) |
| 14:30-15:00 | [SO9-31] | **Molecular-Scale Tuning of Ionomer Distribution for Advanced Catalyst Layers of PEMFCs [Invited]**<br>Hee-Tak Kim (KAIST) |
| 15:00-15:30 | [SO9-32] | **Cathode Catalyst Layers with Dual-Layer Structure for PEM Fuel Cells [Invited]**<br>Sung-Dae Yim (KIER) |
| 15:30-16:00 | [SO9-33] | **An ultrathin catalyst layer with ultralow platinum loading for polymer electrolyte fuel cell applications [Invited]**<br>Chiyoung Jung (KIER) |
| 16:00-16:15 | [SO9-34] | **Support-orientation-dependent metal-support interaction between Pt and two-dimensional Ti3C2 (MXene) for ORR electrocatalysis**<br>JangHyuk Ahn (UNIST) |
| 16:15-16:45 | [SO9-35] | **Korea's Policies and Strategies Toward Hydrogen Economy [Invited]**<br>Jonghee Han (KIST) |

## Symposium.10 Symposium on Advanced Materials and Nanodevices for Sustainable and Eco-Friendly Applications

# August 21(WED)

| | | |
|---|---|---|
| **Session10-1** | Symposium on Advanced Materials and Nanodevices for Sustainable and Eco-Friendly Applications | |
| **Chair:** | Taewook Kang(Sogang University), Jung Kyu Kim(Sungkyunkwan University ) | |
| 10:10-10:40 | [SO10-1] | **Mass production of CNT fibers : A Chemical Engineer's view [Kyenote]**<br>Kun-Hong Lee(Pohang University of Science and Technology (POSTECH)) |
| 10:40-11:10 | [SO10-2] | **Micro-Solid Bubble Assembly for Ultralight, Strong, and Superelastic Materials [Invited]**<br>Pil Jin Yoo(Sungkyunkwan University (SKKU) |
| 11:10-11:40 | [SO10-3] | **Advances in Supported Ru Catalysts towards Fast Hydrogen Storage of Liquid Organic Hydrogen Carriers [Invited]**<br>Young-Woong Suh (Hanyang University) |
| 11:40-12:10 | [SO10-4] | **Photoelectrochemical and Electrochemical Water Splitting by using Nano-catalysts [Invited]**<br>Kayo Koike (RIKEN) |
| **Session10-2** | Symposium on Advanced Materials and Nanodevices for Sustainable and Eco-Friendly Applications | |
| **Chair:** | Hyunjung Lee(BioNano Health Guard Research Center),<br>Yoshitake Masuda (National Institute of Advanced Industrial Science and Technology) | |
| 13:30-14:00 | [SO10-5] | **Stretchable sensor system with integrated energy storage devices [Keynote]**<br>Jeong Sook Ha (Korea University) |
| 14:00-14:30 | [SO10-6] | **Materials Challenges in Metal Oxide Nanomaterials for Sensors -SnO2, TiO2, ZnO-[Invited]**<br>Yoshitake Masuda<br>(National Institute of Advanced Industrial Science and Technology) |
| 14:30-15:00 | [SO10-7] | **Nanogap impedimetric sensor for direct DNA assay [Invited]**<br>Hyunjung Lee(BioNano Health Guard Research Center) |

| | | |
|---|---|---|
| 15:00-15:30 | [SO10-8] | **Semiconductor nanowire device as chemical and biological sensor platform [Invited]**<br>Yeon Ho Im(Chonbuk National University) |
| 15:30-16:00 | [SO10-9] | **Interfacial Engineering of Plasmonic Nanoparticles and Its Application to Biological Energy Conversion [Invited]**<br>Taewook Kang(Sogang University) |
| 16:00-16:30 | [SO10-10] | **Rational Design of Metal Oxide Nanostructures for Enhancing Light Harvesting Energy Conversion [Invited]**<br>Jung Kyu Kim(Sungkyunkwan University (SKKU)) |
| 16:30-16:45 | [SO10-11] | **2-D ultra thin NiO nanosheets for high performance hydrogen gas sensing**<br>Umesh Tukaram Nakate(Chonbuk National University) |
| 16:45-17:00 | [SO10-12] | **ZnO/conducting polymer bilayer film fabricated by sequential spincoating process for enhanced UV sensing performance**<br>Taehyun Park (Gachon University) |
| 17:00-17:15 | [SO10-13] | **Mesoporous Mg-doped Hydroxyapatite Nanorods Obtained via Polyvinylpyrrolidone Enabled Microwave-Assisted Synthesis Using Bio-Waste Seashells for Implant Applications**<br>Eun-Bum Cho (Seoul National University of Science and Technology) |

## August 22(THU)

| | |
|---|---|
| **Session10-3** | Symposium on Advanced Materials and Nanodevices for Sustainable and Eco-Friendly Applications |
| **Chair:** | Seoung-Ki Lee(Korea Institute of Science and Technology),<br>Ji-Won Choi (Korea Institute of Science and Technology) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO10-14] | **Design of moving chemical systems with semblance of life [Invited]**<br>Akihisa Shioi (Doshisha universi) |
| 09:00-09:30 | [SO10-15] | **Solution based Self-assembled Growth of Transition Metal Dichalcogenide Ribbon and Their Application [Invited]**<br>Seoung-Ki Lee (Korea Institute of Science and Technology) |
| 09:30-10:00 | [SO10-16] | **Multi-Functional Nanocomposites from Naturally Derived Materials for Eco-Electronics [Invited]**<br>Bong Sup Shim (Inha University) |

| | | |
|---|---|---|
| 10:00-10:30 | [SO10-17] | **Solution-processable High-k 2D dielectric nanosheets thin films [Invited]**<br>Ji-Won Choi (Korea Institute of Science and Technology) |

## August 23(FRI)

| | |
|---|---|
| **Session10-4** | Symposium on Advanced Materials and Nanodevices for Sustainable and Eco-Friendly Applications |
| **Chair:** | Dahl-Young Kang (Yonsei University), Yeon Ho Im(Chonbuk National University) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO10-18] | **2D Single-Crystalline Metallic Nanoplates: Synthesis, Dimension control and Applications [Keynote]**<br>Tae-Wook Kim (Korea Institute of Science and Technology) |
| 09:00-09:30 | [SO10-19] | **Stretchable, bifacial Si-PEDOT:PSS hybrid solar cells [Invited]**<br>Dahl-Young Khang (Yonsei University) |
| 09:30-10:00 | [SO10-20] | **Functional carbon and inorganic nanomaterials for electronic and optoelectronic applications [Invited]**<br>Sang Hyun Lee (CHONNAM NATIONAL UNIVERSITY) |
| 10:00-10:15 | [SO10-21] | **Demonstration of Nano-Layered Beta-Gallium Oxide-Based Solar-Blind Photodetectors**<br>Suhyun Kim (Korea University) |
| 10:15-10:30 | [SO10-22] | **Topography simulation of nanoscale device fabrication process**<br>Haesung You (Chonbuk National University) |

| | |
|---|---|
| **Session10-5** | Symposium on Advanced Materials and Nanodevices for Sustainable and Eco-Friendly Applications |
| **Chair:** | SangHyun Lee(CHONNAM NATIONAL UNIVERSITY) ,<br>Tae-Wook Kim (Korea Institute of Science and Technology) |

| | | |
|---|---|---|
| 10:50-11:20 | [SO10-23] | **Plasmonic Photodetection of Zinc Tin Oxide (ZTO) Thin Film Transistor with Au Nanoparticles [Invited]**<br>Jen-Sue Chen (National Cheng Kung University) |
| 11:20-11:50 | [SO10-24] | **Heterojunction C3N4/MoO3 microcomposite for highly efficient photocatalytic oxidation of rhodamine B [Invited]**<br>Do-heyoung Kim (CHONNAM NATIONAL UNIVERSITY) |

| | | |
|---|---|---|
| 11:50-12:05 | [SO10-25] | **Morphological, structural, and catalytic correlation of MOFs under electrochemical environment: A case study using ZIF-67**<br>MENGJIE LIU (The Hong Kong Polytechnic University) |
| 12:05-12:20 | [SO10-26] | **The individual atomic role of a hetero-metal catalyst for a water oxidation reaction**<br>Chanseok Kim (UNIST) |
| 12:20-12:35 | [SO10-27] | **Ni/Ni3S2 Nanoparticles Encapsulated by S-doped Carbon Nanosheet Arrays as a Highly Efficient Electrocatalyst for Hydrogen Evolution**<br>Yong Li (The Hong Kong Polytechnic University) |
| 12:35-12:50 | [SO10-28] | **Enhanced methane production on isolated Cu nanoparticles in electrochemical CO2 reduction via metal-organic framework template**<br>Mun Kyoung Kim (Kangwon National University) |

## Symposium.11 Young Scientists Forum on Future Energy Materials and Devices

## August 20(TUE)

| | |
|---|---|
| **Session11-1** | Young Scientists Forum on Future Energy Materials and Devices |
| **Chair:** | Woo-Jae Kim(Ewha Womans University), Han-Ik Joh(Konkuk University) |

| | | |
|---|---|---|
| 15:50-16:20 | [SO11-1] | **Tunable Colossal Piezoelectric Properties realized in Bi-based lead-free piezoceramics through Polarization Engineering [Invited]**<br>Wook Jo (Ulsan National Institute of Science and Technology) |
| 16:20-16:50 | [SO11-2] | **Engineering Atomically Thin Graphene/Metal Nanocrystal Interface for High Performance Solid-State Hydrogen Storage [Keynote]**<br>Eun Seon Cho (KAIST) |
| 16:50-17:20 | [SO11-3] | **Thermal conductivity of polymer-derived carbon nanosheets using an optothermal Raman technique**<br>Han-Ik Joh (Konkuk University) |
| 17:20-17:50 | [SO11-4] | **Investigation for effects of temperature and potential on the gas evolution within commercial 18650 cylindrical lithium ion batteries using in-situ Raman spectroscopy analysis [Invited]**<br>Songhun Yoon (Chung-Ang University) |

# August 21(WED)

| | | |
|---|---|---|
| **Session11-2** | Young Scientists Forum on Future Energy Materials and Devices | |
| **Chair:** | Hyon Bin Na (Myongji University), Taekyung Yu (Kyung Hee University) | |
| 10:10-10:40 | [SO11-5] | **Catalytic alkaline thermal treatment for high-purity hydrogen production from biomass with carbon capture and storage [Keynote]**<br>Woo-Jae Kim (Ewha Womans University) |
| 10:40-11:10 | [SO11-6] | **Design and synthesis of magnetic iron oxide nanoparticle complexes [Invited]**<br>Hyon Bin Na (Myongji University) |
| 11:10-11:40 | [SO11-7] | **Chemical Transformation and Assembly of Nanocrystals for Electrochemical Energy Application [Invited]**<br>Don-Hyung Ha (Chung-Ang University) |
| 11:40-12:10 | [SO11-8] | **Facile aqueous phase synthesis of bimetallic alloy and core@shell nanoparticles and their enhanced catalytic properties [Invited]**<br>Taekyung Yu (Kyung Hee University) |

| | | |
|---|---|---|
| **Session11-3** | Young Scientists Forum on Future Energy Materials and Devices | |
| **Chair:** | Jae Sung Son (Ulsan National Institute of Science and Technology),<br>Jaeyoung Jang (Hanyang University) | |
| 13:30-14:00 | [SO11-9] | **Electrochemical Reduction of Proton and Dinitrogen for Hydrogen Production and Storage [Invited]**<br>Hyun Seo Park (Korea Institute of Science and Technology) |
| 14:00-14:30 | [SO11-10] | **Ink processing for thermoelectric materials and devices [Invited]**<br>Jae Sung Son (Ulsan National Institute of Science and Technology) |
| 14:30-15:00 | [SO11-11] | **Nanostructured materials for the applications towards energy and electronic devices [Invited]**<br>Hiesang Sohn (Kwangwoon Univesity) |
| 15:00-15:30 | [SO11-12] | **Electrochemical reduction-induced nanostructuring of metal oxide nanoparticles for energy storage and conversion [Invited]**<br>Hyung Mo Jeong (Kangwon National University) |
| 15:30-16:00 | [SO11-13] | **Polymer-Based Composite Materials for Thermoelectric Applications [Invited]**<br>Jaeyoung Jang (Hanyang University) |

| | | |
|---|---|---|
| 16:00-16:30 | [SO11-14] | **Solution-Processed Fabrication of Functional Nanostructures Using Colloidal Nanocrystals [Invited]**<br>Taejong Paik (Chung-Ang University) |

## August 22(THU)

| | |
|---|---|
| **Session11-4** | Young Scientists Forum on Future Energy Materials and Devices |
| **Chair:** | Kyungmin Choi (Sookmyung Women's University),<br>Kyungsu Na (Chonnam National University) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO11-15] | **Design of Metal-Organi Frameworks for Photocatalysis [Invited]**<br>Kyungmin Choi (Sookmyung Women's University) |
| 09:00-09:30 | [SO11-16] | **Nanocrystalline Zeolites with Controlled Sizes for Selective and Rapid Capture of Radioactive Ions from Sea Water [Invited]**<br>Kyungsu Na (Chonnam National University) |
| 09:30-10:00 | [SO11-17] | **Fabrication of Thermoelectric Nanocomposites by Uniform Mixing with Colloidal Nanoparticles [Invited]**<br>JIEUN LEE (Korea Electrotechnology Research Institute) |
| 10:00-10:30 | [SO11-18] | **A computational study of Size Fractionation of Graphene Oxide via Solvent-Mediated Consecutive Charge Manipulation**<br>Hyemi Yang (UNIST) |

## Symposium.12 Frontiers of Theoretical and Experimental Insights in Energy Harvesting Materials

## August 23(FRI)

| | |
|---|---|
| **Session12-1** | Frontiers of Theoretical and Experimental Insights in Energy Harvesting Materials |
| **Chair:** | So-Hye Cho(Korea Institute of Science and Technology),<br>Heechae Choi(University of Cologne) |

| | | |
|---|---|---|
| 08:30-09:00 | [SO12-1] | **3D nanoarchitectures for energy technologies and bio-medical sensing - enhancing functionality through correlative microscopy [Invited]**<br>Silke Christiansen (Max-Planck-Institut) |

| | | |
|---|---|---|
| 09:00-09:30 | [SO12-2] | **Advantageous Crystalline-Amorphous Phase Boundary in Metal-Metalloid for Electrochemical Water Oxidation [Invited]**<br>HyukSu Han(Hongik University) |
| 09:30-09:45 | [SO12-3] | **Optimizing photoelectrochemical water splitting reactivity of carbon-based material: Density functional theory calculations and experimental verifications**<br>Minyeong Je(University of Cologne) |
| 09:45-10:00 | [SO12-4] | **Parallelization of multi-step catalytic reactions: DFT-thermodynamics and Experiments**<br>Heechae Choi(University of Cologne) |
| 10:00-10:15 | [SO12-5] | **A comparative DFT study of cathode reaction mechanism for pristine and defective vanadium disulfide as effective carbon-free cathode for lithium-air batteries**<br>Jungwook Woo(Hanyang University) |

| | |
|---|---|
| **Session12-2** | Frontiers of Theoretical and Experimental Insights in Energy Harvesting Materials |
| **Chair:** | HyukSu Han(Hongik University), Minyeong Je(University of Cologne) |

| | | |
|---|---|---|
| 10:50-11:20 | [SO12-6] | **Theoretical Prediction and Experimental Realization of Efficient Photocatalysts for Hyrogen Generation via Water Splitting [Invited]**<br>So-Hye Cho(Korea Institute of Science and Technology) |
| 11:20-11:50 | [SO12-7] | **Designing molecular precursors for inorganic nanomaterials [Invited]**<br>Shashank Mishra (University of Lyon1) |
| 11:50-12:05 | [SO12-8] | **Silver and Copper Bismuth iodides as Alternative Absorbers in Lead-free Perovskite type Solar cells**<br>Feray Ünlü (University of Cologne) |
| 12:05-12:20 | [SO12-9] | **Simple method to screen the suitable novel hole transport materials with porphyrin-based organic small molecules for perovskite solar cells application by first-principles**<br>Eunhwan Jung (University of Cologne) |

# Poster Presentation

## Symposium. 1

## August 21(WED)

**17:00-18:30**

SP1-1 **Synthesis and Characterization of p-type Nickel Ferrite thin films through Atomic Layer Deposition for Photoelectrochemical Water Splitting**
Seenivasan Selvaraj (CHONNAM NATIONAL UNIVERSITY)

SP1-2 **Solar-driven H2 Evolution by Reforming of Lignocellulose with Surface-modified Colloidal Quantum Dots**
Nianfang Wang (KAIST)

SP1-3 **Core Position Control of CdSe/CdS Dot-in-Rod Heterostructure for Efficient Photocatalytic Reaction**
Gui Min Kim(KAIST)

SP1-4 **Interdependent enhancement of photoelectrochemical performance promoting charge transfer and carrier density: through doping treatment of ZnO:N and BiVO4:Mo nanorod heterojunction**
Donghyung Kim (POSTECH)

SP1-5 **Ni(OH)2-WP Nanorods for Highly Efficient and Durable Hydrogen Evolution Reactions in alkaline Media**
Dokyoung Kim (POSTECH)

SP1-6 **3D ordered macroporous BiVO4 / ZnO photoelectrodes for high efficiency solar water splitting**
Minjae Jeong (Sogang University)

SP1-7 **Formation of BiVO4 nanoparticles by growing in confined geometry and thereby improving solar water splitting efficiency**
Seong Kyung Nam (Sogang University)

SP1-8 **Development of electrochemical/photoelectrochemical cell for practical solar hydrogen production**
DHARMESH HANSORA (UNIST)

SP1-9

**In-situ Deposition of Graphene Oxide Catalyst using Atmospheric Plasma for Efficient Photoelectrochemical Water Splitting**

Yelyn Sim (Chonnam National University)

SP1-10

**Self-activation of catalyst during electrochemical CO2 reduction using metal impurity**

Chanyeon Kim (KIST)

SP1-11

**Surface modified photocatalysts by polydopamine for efficient hydrogen production**

Yeonho Kim (Korea Basic Science Institute)

## Symposium. 2

## August 21(WED)

**17:00-18:30**

SP2-1

**High Energy Density Battery: Using Advanced Carbon to Provide Sufficient Electrolyte Pathways and Increase the SeS2 Content**

Jiyeon Lee (GIST)

SP2-2

**Facile preparation of Ni-Co bimetallic oxide/activated carbon composites using liquid phase plasma process for supercapacitor applications**

Heon Lee(Sunchon National University)

SP2-3

**Novel preparation method of SiO2/Carbon nanocomposite anode material by spray pyrolysis combined with dry ball milling process**

Anara Molkenova(Nazarbayev University)

SP2-4

**Low-Temperature Phase Synthesis of V1-xTixO2 Oxide Systems Using Pt Impregnation**

Sung Hun Woo (Hanbat National University)

SP2-5

**Phase-dependent performance of lotus-root shaped TiO2 for lithium ion batteries (LIBs) by thermal treatment**

Sungil Choi (Pukyong National University)

SP2-6

**Highly Enhanced Pseudocapacitive Performance of Vanadium-doped MXenes in Neutral Electrolytes**

Lawrence Yoon Suk Lee(The Hong Kong Polytechnic University)

| | |
|---|---|
| SP2-7 | **Interface modification of lithium micro-batteries by 2D dielectric nanosheets**<br>HAENA YIM(KIST) |
| SP2-8 | **Silicon-Carbon Composite Agglomerate as an Anode Material for Lithium-Ion Batteries**<br>Hiesang Sohn(Kwangwoon Univesity) |
| SP2-9 | **Enhanced Li-S battery performance through the porous carbon-polymer-sulfur composite with physical and chemical sorption ability**<br>Hiesang Sohn(Kwangwoon Univesity) |
| SP2-10 | **Fabrication of Nickel Doped Ceramics Thin Films with Multiferroics Properties Using CCS-sputtering**<br>Ahrom Ryu (Korea Institute of Science and Technology) |
| SP2-11 | **MWCNT-polyimide core-shell nanowire as high-capacity and cycling-stable anode material for aqueous rechargeable sodium-ion battery**<br>Hana Lim (KITECH) |
| SP2-12 | **Composites of Nanocrystalline Cellulose with metal oxide as lightweight substrates for High-Performance Lithium-ion Battery**<br>Quang Nhat Tran (Gachon University ) |
| SP2-13 | **Surface Engineering of Silicon through Nitrogen-doped Carbon and its Electrochemical Investigation as an Anode for Li-ion Batteries**<br>Jaewoo Park (Kyunghee University) |
| SP2-14 | **A study of commercial activated carbons as electrode materials for 3D printing based micro-supercapacitors**<br>Jaehyun Jun (Korea Institute of Energy Research ) |
| SP2-15 | **The Effect of Electrolyte on the Solid Electrolyte Interface on Hematite Anodes for Lithium-Ion Electrodes**<br>Saravana Karthikeyan SKS (Kyung Hee University) |
| SP2-16 | **Oxygen-substituted Li2S-P2S5-LiX (X=Br, I) glass-ceramic solid electrolytes with high air-stability for all-solid-state batteries**<br>You-Jin Lee(Korea Electrotechnology Research Institute (KERI)) |
| SP2-17 | **Nitrogen-doped Carbon Coated Li2ZnTi3O8 as an Anode Material for Lithium-ion Batteries**<br>Gyusang Sim (Kyung Hee University) |

SP2-18

**Tin Diselenide/ N-doped Carbon Composite as a Conversion and Alloying Type Anode for Sodium Ion Batteries**

NITHEESHA SHAJI (Kyung Hee University)

SP2-19

**Self-Standing 3D-Printed Electrodes for Li-ion Batteries**

Praveen Sekar (kyung HeeUniversity )

SP2-20

**An Encapsulation of Nitrogen and Sulphur Dual-doped Carbon @ Li[Ni0.8Co0.1Mn0.1]O2 for lithium Ion Battery Applications**

NANTHAGOPAL MURUGAN (kyung HeeUniversity )

SP2-21

**Electrochemical Characteristics of Mg/V2O5 High-Capacity Hybrid Batteries with Mg-Li Dual Salt Electrolytes**

Haebeen Kim (Korea Polytechnic University)

SP2-22

**Surface Modification of Ni-rich Li[Ni0.8Co0.1Mn0.1]O2 through LaFeO3 as High Voltage Cathode Material for Lithium-ion Batteries**

Hongki Kim (Kyunghee University)

SP2-23

**CNT-Decorated Mesoporous Carbon for Rechargeable Lithium–Oxygen Batteries**

Jong-Won Lee (Chosun University )

SP2-24

**Binder-free copper tungsten sulfide anchored on Ni-foam: An advanced negative electrode for high-performance asymmetric supercapacitor**

PARTHIBAN PAZHAMALAI (Jeju National University)

SP2-25

**High performance supercapacitor using ionic liquid electrolyte sandwiched between two-dimensional graphene electrodes**

Surjit Sahoo (Jeju National University)

SP2-26

**Microwave irradiated binder free copper antimony sulfide as high performances asymmetric supercapacitor**

VIMAL KUMAR MARIAPPAN (Jeju National University )

SP2-27

**A study in improving of Tin Oxide-Barium Titanate-Carbon (SnO2-BaTiO3-C) composite as an anode for lithium-ion battery**

Hiesang Sohn (Kwangwoon Univesity )

SP2-28

**Core-shell structured iron oxide-carbon composite-based anode for the high-performance lithium-ion battery**

Hiesang Sohn (Kwangwoon Univesity )

| | |
|---|---|
| SP2-29 | **Biomass-Derived Ultrathin Corrugated Graphene Nanosheets as High-Performance Supercapacitor Electrode and Hydrogen Evolution Reaction Electrocatalyst**<br>Sankar Sekar (Dongguk University ) |
| SP2-30 | **High Capacity Composite Sheets for Energy Storage Devices**<br>Ateeq ur Rehman (University of Agriculture, Faisalabad) |
| SP2-31 | **Neem Leaves-Derived Carbon-Anchored WO3 Nanoflakes for Enhanced Water Splitting**<br>Sankar Sekar (Dongguk University ) |
| SP2-32 | **Additive Dependency on Formation of Solid Electrolyte Interphase on the Surface of Hard Carbon Anode for Sodium Ion Batteries**<br>Hyoung-Joon Jin (Inha University) |
| SP2-33 | **Adsorbed natural gas (ANG) storage using Mongolian anthracite-based activated carbon monoliths**<br>Hee Moon (Chonnam National University) |

## Symposium. 3

## August 22(THU)

**10:50-12:20**

| | |
|---|---|
| SP3-1 | **Plasmon-Mediated Photochemical Reactions**<br>Hsin-Yi Lee (National Synchrotron Radiation Research Center) |
| SP3-2 | **A sustainable synthesis of thermoelectric Bi2Te3 films using end-of-life thermoelectric modules**<br>Jiwon Kim (Institute for advanced engineering) |
| SP3-3 | **Thermoelectric performance of Mg2Si doped with an isoelectric impurity**<br>Daishi Shiojiri (Tokyo University of Science ) |
| SP3-4 | **Effects of microstructure on the thermal properties of the metal–insulator transition in metal-dispersed Ti2O3**<br>Daishi Shiojiri (Tokyo University of Science ) |

SP3-5 **Oxidation behavior and protective coatings for skutterudite-based thermoelectric materials**
Changho Yeon (Korea Institute of Energy Research )

SP3-6 **Surface chemistry induced controls of the electrical properties of polyaniline**
Jaehwan Shin (chungang university )

SP3-7 **Photo-thermoelectric properties of Graphene Oxide-Polyaniline Composites**
Jongwan Choi (Sahmyook University)

SP3-8 **Thermoelectric transport properties of Pb doped SnSe alloys (PbxSn1-xSe) : DFT-BTE simulations**
Hyoseok Kim (Seoul National University)

## Symposium. 4

## August 21(WED)

**17:00-18:30**

SP4-1 **Stability Enhancement in Perovskite Solar Cells with Perovskite/Silver-Graphene Composites in Active Layer**
Tahmineh Mahmoodi(Chonbuk National University )

SP4-2 **Layer-by-Layer Self-Assembled 2D-Nanosheet Thin Films for Solar Cell Applications**
Madeshwaran Sekkarapatti Ramasamy (Ewha Womans University)

SP4-3 **Impact of Charge Carrier Transport by CdSeS and CdSeS@ZnS Quantum-Dot Monolayer on Performance of Inverted Polymer Solar Cells**
Guh-Hwan Lim (KIST)

SP4-4 **Low-Temperature Solution Processed Nickel Oxide Quantum Dots for n-i-p Hybrid Perovskite Solar Cells**
Ashique Kotta (Chonbuk National University)

SP4-5 **Two-stage deposition method processed SnO2-based electron transport layer at low temperature for efficient perovskite solar cells(PSCs)**
Maro Kim (gachon University )

SP4-6 **Highly Efficient Inverted Polymer Solar Cells by Incorporating Dual Plasmonic Nanostructures**
Adi Prasetio (Korea Institute of Materials Science )

SP4-7 **Fully-ambient-air and Antisolvent-free-processed Stable and Hysteresis-free Perovskite Solar Cells with Perovskite Composites and Interfacial Engineering**
Yousheng Wang (Chonbuk National University)

SP4-8 **Effect of Selenization Temperature on the Properties of Antimony Selenide Thin Films for Solar Cells**
Sreedevi Gedi (Yeungnam University )

SP4-9 **Highly Stable Perovskite Solar Cells Encapsulated with Atomic Layer Deposited Al2O3 and Chemical Vapor Deposited Flowable Oxide Layers**
Jiho Jang (Sungkyunkwan University )

SP4-10 **A lead-free Bismuth Manganese halides (BiMnX) X = Cl, Br, I based perovskite for energy applications**
arumugasamy shivakumar (gachon university )

SP4-11 **Color-implemented Cu(In,Ga)(S,Se)2 solar cells by integrating color filters with narrow-bandwidth stopband**
Byungwoo Kim(KIST)

## Symposium. 5

## August 21(WED)

**17:00-18:30**

SP5-1 **Cobalt Phosphide-anchored Hollow MoS2/Carbon Nanospheres as an Efficient Electrocatalyst for Hydrogen Evolution Reaction**
Jeongyeon Lee (The Hongkong Polytechnic University )

SP5-2 **TiO2 Supported Pt Catalysts toward High Electrocatalytic Performance of Oxygen Reduction Reaction**
Young Wook LEE (Korea Institute of Ceramic Engineering and Technology)

SP5-3 **Solution based graphene quantum dots-ZnO nanoflowers heterostructures and its application for optoelectronic devices**
Youngjae Park (KIST)

SP5-4 **High quality various Periodic doped lanthanum-modified bismuth-titanate thin films grown by RF sputtering**
Rui Tang (Gachon University )

## Symposium. 6

## August 22(THU)

**10:50-12:20**

SP6-1 **Output power density enhancement of triboelectric nanogenerators via polarized ferroelectric polymers and bulk MoS2 composites**
Minje Kim (Chungnam National University)

SP6-2 **Triboelectric output current enhancement via indium zinc oxide interfacial layer**
Daehoon Park (Chungnam National University)

SP6-3 **Vertically grown BaTiO3 nanotube arrays for piezoelectric energy harvester**
Dong Yeol Hyeon (Kyungpook National University)

SP6-4 **Hybrid Flexible Nanocomposite made of Perovskite Nanostructures and Piezopolymer for Energy Harvesting Applications**
Seong Su Ham (Kyungpook National University)

SP6-5 **Patterning of Liquid Metal Electrode based on Gallium Alloys by Transfer Printing and Its Application**
Taewhan Park (Gachon University)

SP6-6 **Highly Efficient Self-Healable and Dual Responsive Hydrogel-Based Deformable Triboelectric Nanogenerators**
Yina Liu (Xi An Jiaotong Liverpool University )

SP6-7 **Ion wind generator parameter design to be driven by triboelectric nanogenerators**
Jiyoung Yoon (Korea Institute of Industrial Technology)

SP6-8 **Behavior of Rigid Cubes in Soft Mediums in Agitation or under Compression**
Naohisa Takesue (Fukuoka University)

SP6-9 **Synthesis and Integration of Barium Titanate Nanoparticles**
Kazumasa Kiba (Fukuoka University)

SP6-10 **Synthesis and Solid Solutionaization of Nanoparticles of Barium Titanate with Barium Zirconate**
Junki Kudo (Fukuoka University)

SP6-11 **Synthesis and Solid Solutionaization of Nanoparticle of Barium Titanate with Barium Zirconate and Calcium Titanate**
Naoki Matsuo (Fukuoka university)

SP6-12 **High performance Fully-packed Biodegradable Triboelectric Nanogenerator**
Gaurav Khandelwal (Jeju national university)

SP6-13 **Bismuth Vanadate based Lead-free Piezoelectric Energy Harvester**
Nirmal Prashanth Maria Joseph Raj (Jeju national university)

SP6-14 **A Flexible Piezoelectric Nanogenerators based on Lead-free K0.5Na0.5NbO3-BaTiO3 Nanoparticles for Self-powered Sensors**
Vivekananthan Venkateswaran (Department of Mechatronics Engineering)

SP6-15 **Synthesis of ultrathin ZnO 2D nanosheets via solvethermal method**
Dong Jin Lee (Dongguk University)

## Symposium. 7

## August 21(WED)

**17:00-18:30**

SP7-1 **Physical Mixture of Pt-BaO/CeO2 and Cu/CeO2 Catalysts for Low-Temperature Lean NOx Trap**
Beom-Sik Kim ( KAIST )

SP7-2 **Backstepping method integrated with model predictive control for two-cell selective catalytic reduction systems**
Sanha Lim (Seoul National University)

SP7-3 **Size Control of Pd Nanoparticle Loaded on Co3O4 by Calcination Temperature to Enhance the Catalytic Activity of CO Oxidation**
Rui Huang (POSTECH)

| | |
|---|---|
| SP7-4 | **Optimization of calcination temperature for improving the NOx adsorption performance of hydrotalcite-based adsorbents**<br>Yeji Choi (Korea University) |
| SP7-5 | **Design of High Performance Ceria Catalysts for CO Oxidation by Co-doping Rare-Earth and Transition Metals**<br>Hyung Jun Kim (POSTECH) |
| SP7-6 | **Ag incorporated CuO(x)-CeO2 catalyst for PM combustion**<br>Jae Hwan LEE (Korea University) |
| SP7-7 | **Metal oxide loaded CHA zeolite catalyst for NOx abatement during cold start**<br>Soon hee Park (Korea University) |
| SP7-8 | **Density functional theory study of the preferential CO oxidation on CeO2(111) under rich H2 environment**<br>Dongjae Shin (POSTEH) |
| SP7-9 | **Controlling Support Reducibility in Pd-Loaded Ceria for Enhanced Catalytic Activity**<br>Myeong Gon Jang (POSTEH) |
| SP7-10 | **Improved PM oxidation by silver and lanthanum incorporation in CeO2**<br>Jae Sung Lee (Korea University) |
| SP7-11 | **NOx-assisted soot oxidation on thermally aged Ag/MnOx-CeO2 catalyst**<br>Eun Jun Lee (Korea University) |
| SP7-12 | **Improving the CO and HC oxidation activity by introducing Ag on Pd/CeO2 catalyst**<br>Yaeun Seo (Korea University) |
| SP7-13 | **Effect of mesoporous MFI zeolite catalyst on methanol to hydrocarbons reactions**<br>Layoung Choi (Korea University) |
| SP7-14 | **Thermal durability improved core-shell catalyst for diesel oxidation catalyst**<br>Hyunjae Kim (Korea University) |
| SP7-15 | **Improvement of DeNOx Performance of Integrated Diesel Aftertreatment System Using Model Predictive Control**<br>Byung Jun Lee (Seoul National University) |

SP7-16 **Mono-dispersed DDR zeolite particles through seeded-growth method and their adsorption properties toward CO2, N2, and H2O**
Eunhee Jang (Korea University)

SP7-17 **Rare Earth Metals-Modulated Catalytic Nature of Bimetallic CeVO4 Phases for Selective NOX Reduction and NH3 Oxidation**
Dong Ho Kim (KIST)

## Symposium. 8

## August 21(WED)

**17:00-18:30**

SP8-1 **Preparation of CNT particle for heat transfer enhancement in fluidized bed heat exchanger**
SungWon Kim (Korea National University of Transportation)

SP8-2 **Microwave sintering of aluminum doped LLZO powder fabricated by modified sol-gel process**
SungGue Heo (Korean Institute of Industrial Technology/Korea University)

SP8-3 **Optimization of SnS2 buffer layer for thin film Cu(In,Ga)Se2 solar cell**
Salh Alhammadi (Yeungnam university)

SP8-4 **Surface treatment technique using In2S3 as pin hole filling agent of Cu(InGa)Se2 photovoltaic absorber**
DooHyung Moon (Yeungnam University)

SP8-5 **Recycling of scrap tantalum from semiconductor (industry) and valorization of the tantalum**
Jieun Lee (Institute for Advanced Engineering)

SP8-6 **Precipitation behavior of M23C6 carbides and its effect on tensile properties of Ni-based alloy 690**
Tae-Hyuk Lee (Korea Institute of Geoscience and Mineral Resources)

SP8-7 **Effect of electromagnetic stirring on microstructure and mechanical properties of Ti-6Al-4V alloy**
Tae-Hyuk Lee (Korea Institute of Geoscience and Mineral Resources)

SP8-8

**Highly porous cobalt oxide decorated carbon nanofibers fabricated from starch as free-standing electrodes for supercapacitors**

Dongju Lee (Chungbuk National University)

SP8-9

**Low temperature synthesis of photoactive N-doped carbon dots and their composites with S-gC3N4 for enhanced visible light photocatalysis of dye**

Md Moniruzzaman (Gachon University)

SP8-10

**Solid oxide membrane (SOM) electrolysis performance of thin YSZ film on porous supported cermet for critical metal reduction**

Kuk-Jin Hwang (Korea Institute of Ceramic Engineering & Technology)

SP8-11

**Effects on the microstructure and mechanical properties of magnesium alloys with additional elements**

Dong-won Shin (Kongju National University )

SP8-12

**Electrorefining of Indium Metal from Indium-Tin Alloy in Alkali Chloride and Alkali Fluoride**

Sang Hoon Choi (Korea Institute of Industrial Technology)

SP8-13

**Synthesis of hierarchically nanostructured bismuth vanadate and its characterizations on dye degradation and detection of hexavalent chromium**

Yen-Pei Fu (National Dong Hwa University)

SP8-14

**ALD-Sputter hybridization of advanced transparent conductive electrodes with flexible encapsulation capabilities simultaneous lamination structure for transparent conductive and flexible encapsulation film**

Boram Kim (KETI (Korea Electronics Technology Institute))

SP8-15

**Investigation of effect on metal electrode for highly efficient and stable perovskite solar cells (PSCs)**

Sangmo Kim (Gachon University)

SP8-16

**Characteristics of flexible photovoltaic devices with AZO electrode prepared by using facing targets sputtering**

Yu Jin Kim (Gachon University)

SP8-17

**AgNWs/Al2O3 Hybrid Transparent Electrode with Fast-ALD Process**

Kyuhyun Lee (Korea Electronics Technology Institute)

SP8-18

**Preliminary Study on the Fused Deposition Modeling with Oxide Dispersion Strengthened Steel**

Sanghoon Noh (Korea Atomic Energy Research Institute)

SP8-19 **A study of oil release of microcapsule-based icephobic paint**
Young Seok Kim (Korea Electronics Technology Institute)

SP8-20 **Metal oxides nanoparticle incorporated in activated carbon for hydrogen evolution reaction**
Sivalingam gopi (Gachon Univesity)

SP8-21 **Efficient precious-metal free bifunctional electrocatalyst for water splitting on Co-Mn-O nanostructures**
Kyoung Ryeol Park
(Korea Institute of Industrial Technology / Hanyang University)

SP8-22 **Crack Engineering of Silver Films for Field Emission Enhancement**
Kyoung-Hwan Kim (Ajou University)

SP8-23 **Optimization of FeNi/SWCNT composites by a simple co-arc discharge process with significant microwave absorption performance**
Rambabu Kuchi
Korea Institute of Materials Science, Korea Institute of Geoscience and Mineral Resources )

SP8-24 **Power enhancement of bifacial PV modules equipped with highly-reflective artificial grass**
Younggyun Yoo (Yeungnam University)

## Symposium. 9

## August 22(THU)

**10:50-12:20**

SP9-1 **Effects of Ru Positioned In and Out at Sr1-xYxTiO3+/-δ Perovskite Catalysts for Methane Dry Reforming**
Jeong Woo Yun (Chonnam National University)

SP9-2 **Ordered Iron- and Nitrogen-Doped Carbon Framework as a Carbon Monoxide-Tolerant Alkaline Anion-Exchange Membrane Fuel Cell Catalyst**
Liuli Zeng (Wuhan University of Techonolgy)

SP9-3 **Electrochemical properties of layered perovskite substituted with heterogeneous lanthanides for IT-SOFC cathodes**
Sung Hun Woo (Hanbat National University)

| | |
|---|---|
| SP9-4 | **Electrocatalytic active and bifunctional ruddlesden-popper structure catalysts for AEMFC cathode**<br>Jun-Young Park (Sejong University ) |
| SP9-5 | **High electrocatalytic performance of Bimetal alloy on Ceramic support for oxygen reduction reaction**<br>Hanseul Kim (Korean Institute of Ceramic Engineering and Technology) |
| SP9-6 | **Using gelatin for enzymatic biofuel cell preventing leaching of the enzyme and mediator**<br>Kyuhwan Hyun (Seoul National University of Science and Technology) |
| SP9-7 | **Porous Bimetallic Alloy Mesocrystals within Carbon Framework as High-Performance Catalyst**<br>Hiesang Sohn (Kwangwoon Univesity) |
| SP9-8 | **Effects of Carbon Nanotube Current Collecting Layer on Nano-porous Template based Low Temperature Solid Oxide Fuel Cells**<br>Gu Young Cho (Dankook University ) |
| SP9-9 | **Enzyme Adsorption, Precipitation and Crosslinking (EAPC) on Intact Carbon Nanotubes for Biofuel Cell Application**<br>Youngho Wee (Korea University ) |
| SP9-10 | **Influence of Polymer Binders on the Activity and Stability of Pt-based Alloy Cathode Catalysts for High-temperature Proton Exchange Membrane Fuel Cells**<br>Hyanjoo Park (Chung-Ang University) |
| SP9-11 | **Influence of Doping Concentration of Atomic Layer Deposited Yttria Doped Ceria Thin-film Coated on Cathodes for Low Temperature Solid Oxide Fuel Cells**<br>Sungje Lee ( Seoul National University of Science and Technology) |
| SP9-12 | **Electrochemical Behavior of MEA with Low Pt Loaded PEMFC Electrode Prepared by Ultrasonic Spray Coating Process**<br>Seonho Lee (University of science & Technology) |
| SP9-13 | **Physico-electrochemical properties of carbon coated LiFePO4 nanoparticles prepared by different preparation method**<br>Sang Mun Jeong (Chungbuk National University) |

SP9-14 **Fabrication of a During Ni-YSZ Hydrogen Electrode of High Temperature Solid Electrolyzer Cell (SOEC)**
Min Jin Lee (Inha University )

SP9-15 **Application of Oxide Capping Agent for Porous Metal Thin-Film Cathode of Low-Temperature Solid Oxide Fuel Cells by Atomic Layer Deposition**
Sanghoon Ji (Korea Institute of Civil Engineering and Building Technology)

SP9-16 **Fabrication of bioanode using gold nanoparticle-glucose oxidase cluster for enzymatic biofuel cell**
Hyewon Jeon (Korea National University of Transportation)

SP9-17 **Nitrogen-doped hollow core with highly graphtizied mesoporous shell carbon catalysts for oxygen reduction reaction**
Min Young Song (Korea basic Science Institute)

## Symposium. 10

## August 22(THU)

**10:50-12:20**

SP10-1 **Porous MIL-88-NH2(Fe) MOF for Catalytic Conversion of CO2**
Daewon Park (Pusan National University)

SP10-2 **PDMS/Graphene Composite Sensors Functionalized with Cyclic Oligosaccharides for Detection of Toxic Chemicals**
Joonwon Bae (Dongduk Womens University)

SP10-3 **Calcium ion Full-cell Batteries based on Prussian Blue and Ni, V-type metal-organic frameworks**
Thuan Ngoc Vo (Gachon University )

SP10-4 **Reversible Formation of g-C3N4 3D Hydrogels through Ionic Liquid Activation: Gelation Behavior and Room-Temperature Gas-Sensing Properties**
Jia Yan (The Hong Kong Polytechnic University)

SP10-5 **Crystal Structure Engineering of Tungsten Oxide Nanoplates for Enabling Photocatalytic Hydrogen Evolution from Water**
Xiandi Zhang (The Hong Kong Polytechnic University)

| | |
|---|---|
| SP10-6 | **Microwave-Assisted Preparation of CuxO/TiO2 and CuS/TiO2 Composite Particles for Photocatalytic Applications**<br>Jun-Hyeok Lee (Seoul National University of Science and Technology) |
| SP10-7 | **Enhanced Fluorescence Of Graphene Quantum Dot In Polypyrrole For Catecholamine Neurotransmitter Detection**<br>Thi Hoa Le (Gachon University ) |
| SP10-8 | **Phosphorus-doped carbon dots (P-CDs) from dextrose for low-concentration ferric ions sensing in water**<br>Timur Sh. Atabaev (Nazarbayev University) |
| SP10-9 | **Effect of Hole Injection on InP Quantum Dot-Based Light-Emitting Diodes**<br>Taemin Lee (Korea Advanced Institute of Science and Technology (KAIST) ) |
| SP10-10 | **The use of hexafluoroisopropanol as an alternative to perfluoro compounds for plasma etching of SiO2**<br>Jin-Su Park (Ajou University) |
| SP10-11 | **Detection of resorcinol chemical through unique ZnO nanostructure modified electrode**<br>Eun-Bi Kim (Chonbuk National University ) |
| SP10-12 | **Shape controlled synthesis of β-In2S3 nanoflakes and solar-driven water splitting properties**<br>Mohan Kumar G (Dongguk University) |
| SP10-13 | **CAPTURE OF MERCURY BY VIRGIN AND IMPREGNATED ACTIVATED CARBON IN COAL-FIRED POWER PLANT**<br>Ha-Na Jang (Yonsei Unversity) |
| SP10-14 | **High-temperature Corrosion of CrAlSiN Films in Ar/1%SO2 Gas**<br>Xiao Xiao (Sungkyunkwan University) |
| SP10-15 | **The preparation of N-doped ZnO nanoparticle via microwave process for enhanced photocatalytic activity**<br>Dayoung Kwon (Gachon University) |
| SP10-16 | **Synthesis and Property Control of Bead-Shaped Porous Silica Adsorbents for Adsorption of Organic Dye**<br>JI YULL KIM (Konkuk university) |

SP10-17 **Preparation of Bead-Shaped Mesoporous Alumina Adsorbents for Adsorption of Ammonia Gas.**
JI YULL KIM (Konkuk university)

SP10-18 **Structure- or Surface-Modified Electrodes for Sustainable Power Generation by Reverse Electro-Dialysis Stack**
Jisoo Jeong (Kangwon National University)

SP10-19 **Rare earth GdZn1-XInxO3 perovskite nanostructures for bi-functional electrocatalytic oxygen/hydrogen evolution functions**
Mohan Kumar Ganesan (Dongguk University)

SP10-20 **Hybrid of Ag Nanowires and doped graphene for the transparent conductor with enhanced conductivity**
Hiesang Sohn (Kwangwoon Univesity )

SP10-21 **Contact Resistance Improvement and Measurement of Carbon Interconnect between graphene-carbon nanotube for Carbon semiconductor device**
SUNGGYU PYO (Chung Ang University)

SP10-22 **Control of osteogenic differentiation of mesenchymal stem cells by electrical stimulation and roughness**
Seungho Baek (Chung-ang university)

SP10-23 **Extended Release of Antibiotics from PCL-gelatin dual Scaffolds**
Heekyung Park (Chung-ang university)

SP10-24 **Catalytic Co-Pyrolysis of Waste Biomass and Waste Oil over Mesoporous Zeolites**
Young-Kwon Park (University of Seoul)

SP10-25 **Effect of oxygen flow rate on etching of SiO2 and Amorphous carbon layer patterned-wafer with Ar, Kr, Xe/O2/C4F6/CH2F2 gas mixture in capacitively coupled plasmas**
HeeJung Yeom (Korea Research Institute of Standards and Science)

SP10-26 **Highly stretchable, water-proof and thermally-healable electroluminescent device**
Yoo Bin Shin (Chonbuk National University)

| | |
|---|---|
| SP10-27 | **Fabrication and characterization of stretchable and self-healable capacitive photodetector based on ZnS:Cu particles/silicone elastomer containing reversible crosslinkers**<br>Su Bin Choi (Chonbuk national university) |
| SP10-28 | **Fabrication of transparent and stretchable strain/pressure-sensitive capacitor comprising 2 layers of Ag nanowires and silicone elastomers**<br>Sun Ok Kim (Chonbuk National University) |
| SP10-29 | **Water-responsive pressure sensitive adhesive for fabrication of stretchable devices**<br>Yun Hee Ju (Chonbuk National University) |
| SP10-30 | **Study on effective functionalization of nanowire FET Sensor for harmful gas**<br>JeongSu Kim (Chonbuk national University) |
| SP10-31 | **Effect of surface morphology for highly sensitive ion-sensitive semiconductor nanowire sensors**<br>Yunsung Cho (Chonbuk National University) |
| SP10-32 | **Computer-aided design of solid-state hydrogen storage system with the compressed complex hydride**<br>GeonGu Ji (Chonbuk National University) |
| SP10-33 | **High-performance ultraviolet light sensor based on zinc oxide nanoparticles/carbon nanotubes hybrid film**<br>Myung-Soo Choi (Gachon University) |
| SP10-34 | **Plasma-assisted generation of carbon nano-whisker and nano-tip by plasma environment control**<br>Daehan Choi (KRISS) |
| SP10-35 | **Solvothermal synthesis of calcium phosphate nanostructures with calcium inositol hexakisphosphate precursor in water/ethanol mixed solutions**<br>Ji-hoon Han (Pusan national university) |
| SP10-36 | **Characteristics of MXenes-based BTX Gas Sensor Operating at Room Temperature**<br>Da-Woon Jeong (KIST) |
| SP10-37 | **Diagnosis of additive gas into fluorocarbon-based etchant gases on the plasma etching process**<br>JaeHyeong Park (Chonbuk National University) |

SP10-38 **Effect of Solvent in Preparing Electrode for Biomass Valorization**
Kyungan Kim (Korea Reserch Institute of Chemical Technology)

SP10-39 **Synthesis and Characterization of TPD-based Organic Semiconducting Polymers for Study on the Effects of their Aggregation types on Organic Thin-Film Transistors**
Dae-Hee Lim (Gwangju Institute of Science and Technology (GIST)

SP10-40 **Eco-friendly cellulose-derived transparent carbon nanosheet electrodes**
Su-Young Son (Konkuk University)

SP10-41 **LiDAR-detectable dark-tone pearl pigment based on spectrally controlling multilayer**
Jin Hwan Kim (Korea Electronics Technology Institute)

SP10-42 **Comprehensive analysis of adsorption process of hexavalent chromium ions on chemically functionalized amorphous and mesoporous silica nanoparticles for heavy metal removal applications**
Eunhye Jang (Pusan national university)

SP10-43 **COST-EFFECTIVE SILVER INK FOR PRINTABLE AND FLEXIBLE ELECTRONICS WITH ROBUST MECHANICAL PERFORMANCE**
Kiesar Sideeq Bhat (Chonbuk National University )

SP10-44 **Catalytic Conversion of VOCs with Ozone over Metal Loaded Zeolites**
Young-Kwon Park (University of Seoul)

SP10-45 **Influence of supports on catalytic performance of Pd catalysts in D-glucose hydrogenation**
Mi Yeon Byun (KITECH)

SP10-46 **The Effect of Nitrogen Doping in Graphene Quantum Dot Trifunctional Catalysts for Full Water Splitting and Zn-Air Batteries**
Yelyn Sim (Chonnam National University )

SP10-47 **Effect of Surface Activated Bonding on Adhesion Strength between metal (Cu, Al) and Ceramic (ZrO2)**
Kyu Bong Jang (KITECH / INHA University )

SP10-48 **VOCs elimination using carbon coated Cu/Ni NPs on TiO2 NTs for trace contaminant control system in spacecraft**
Hyun Kim (Kumoh National Institute of Technology)

# Symposium. 11

## August 22(THU)

**10:50-12:20**

| | |
|---|---|
| SP11-1 | **Simultaneous Separation of High-Purity Semiconducting and Metallic Carbon Nanotubes by Surfactant Concentration-Controlled Gel Chromatography**<br>Woo-Jae Kim (Ewha Womans University) |
| SP11-2 | **3D printing of shape-conformable thermoelectric materials using all-inorganic Bi2Te3-based inks**<br>Fredrick Kim (Ulsan National Institute of Science and Technology) |
| SP11-3 | **Synthesis of the inorganic-organic two-dimensional CdSe slab-diamine quantum nets**<br>Hyeongwoo Ban (Ulsan National Institute of Science and Technology (UNIST) |
| SP11-4 | **Anisotropic carbon nanotube-polymer hybrid multi-functional materials**<br>Ho Jung An (Ewha Womans University) |