2D Semiconductors I

Room A (Ramada Ballroom 1, 2F)       June 3 (Mon.) / 13:00~14:30

13:00~13:30 [Invited] Controlling Strong-field Optical Response of Massless Dirac Fermions in Graphene
Jonghwan Kim\textsuperscript{1,2}\textsuperscript{*}
\textsuperscript{1}Pohang University of Science and Technology, Korea, \textsuperscript{2}Institute for Basic Science, Korea

13:30~14:00 [Invited] Symmetry Engineering and Subband Electronics Using Van Der Waals Assembly of Transition Metal Dichalcogenides
Tomoki Machida\textsuperscript{*}
University of Tokyo, Japan

14:00~14:30 [Invited] Charge Localization Induced by Defects in Two-dimensional Structures
Heesuk Rho\textsuperscript{*}
Jeonbuk National University, Korea

Quantum Materials and Devices I

Room B (Ramada Ballroom 2, 2F)       June 3 (Mon.) / 13:00~14:30

13:00~13:30 [Invited] Surface and Shape Effects in Semiconductor Nanostructures: From Charge Extraction Rates Engineering to Indirect-to-direct Character Manipulation
M. Califano\textsuperscript{*}
University of Leeds, UK

13:30~14:00 [Invited] Ultrafast Photophysics and Lattice Dynamics in Semiconductor Nanomaterials
Richard D. Schaller\textsuperscript{1,2}\textsuperscript{*}
\textsuperscript{1}Argonne National Laboratory, USA, \textsuperscript{2}Northwestern University, USA

14:00~14:30 [Invited] Ultrafast Spin-Exchange Auger Recombination and Carrier Multiplication in Manganese-Doped Colloidal Quantum Dots
Clément Livache\textsuperscript{1,5}, Ho Jin\textsuperscript{1,2}, Whi Dong Kim\textsuperscript{1}, Benjamin T. Diroll\textsuperscript{3}, Richard D. Schaller\textsuperscript{1,4}, and Victor I. Klimov\textsuperscript{1}
\textsuperscript{1}Los Alamos National Laboratory, USA, \textsuperscript{2}University of New Mexico, USA, \textsuperscript{3}Argonne National Laboratory, USA, \textsuperscript{4}Northwestern University, USA, \textsuperscript{5}Institut polytechnique de Paris, CNRS, France
[SS] Recent Trends in Energy & Environmental Materials I

Room C (Ramada Ballroom 3, 2F)  June 3 (Mon.) / 13:00~14:30

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00~13:25</td>
<td>Invited Growing Single Crystals of Covalent Organic Polymers/Frameworks</td>
<td>Qichun Zhang*</td>
<td>City University of Hong Kong, Hong Kong, China</td>
</tr>
<tr>
<td>13:45~14:10</td>
<td>Invited A Path to Sustainable and Scalable Production of High-Performance Thermoelectric Materials and Devices</td>
<td>Maria IBAÑEZ*</td>
<td>Institute of Science and Technology Austria, Austria</td>
</tr>
<tr>
<td>14:10~14:30</td>
<td>Invited Defective Architectures of Inorganic Building Blocks for Remediation of Environmental Sustainability Disruptors</td>
<td>Youngtak Oh*</td>
<td>Korea Institute of Science and Technology, Korea</td>
</tr>
</tbody>
</table>

[SS] Korea-Australia Workshop: Advanced Materials and Devices I

Room D (Ramada Ballroom 4, 2F)  June 3 (Mon.) / 13:00~14:30

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00~13:30</td>
<td>[Invited] Non-contact Manipulation of Liquid Metals</td>
<td>Xiaolin Wang*</td>
<td>University of Wollongong, Australia</td>
</tr>
<tr>
<td>13:30~14:00</td>
<td>[Invited] Novel Transistors Including TFETs and SpinFETs; Extending the Road Beyond CMOS</td>
<td>Sungjae Cho*</td>
<td>Korean Advanced Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>14:00~14:30</td>
<td>[Invited] Engineering Diamond Surfaces for Quantum Diamondtronics</td>
<td>Dongchen Qi*</td>
<td>Queensland University of Technology, Australia</td>
</tr>
</tbody>
</table>
### [SS] Hanyang-Center for Semiconductor Physics and Device I

Room E (Mara Hall, 2F)  
June 3 (Mon.) / 13:00~14:30

<table>
<thead>
<tr>
<th>Time</th>
<th>Invited Title</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00~13:30</td>
<td>Artificial Organic Selector Synthesis for the Next-generation Chemical Sensors</td>
<td>Seon-Jin Choi*</td>
<td>Hanyang University, Korea</td>
</tr>
<tr>
<td>13:50~14:10</td>
<td>Application of Ternary Inverter using 2D Tellurene/IGZO Heterojunction FET</td>
<td>H. J. Park¹, J. Jang¹, H. Kim², J. P. Hong¹, H. Oh²*, and M. S. Jeong¹*</td>
<td>Hanyang University, Korea, Soongsil University, Korea</td>
</tr>
<tr>
<td>14:10~14:30</td>
<td>Transition Metal Dichalcogenides Colloidal Ink and its Applications</td>
<td>Dae Young Park¹, Duc Anh Nguyen², Kang-Nyeoung Lee³, Jiseong Jang¹, Geunchang Choi⁴, Heejun Yang⁵, and Mun Seok Jeong⁴*</td>
<td>Hanyang University, Korea, Dongguk University, Korea, Sungkyunkwan University, Korea, Chung-Ang University, Korea, Korea Advanced Institute of Science and Technology, Korea, Korea</td>
</tr>
</tbody>
</table>

### [SS] Extreme Quantum Matter and Functionality I

Room F (Udo Hall, 2F)  
June 3 (Mon.) / 13:00~14:30

<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>13:00~13:30</td>
<td>Folding of Van Der Waals Materials and the Physical Properties</td>
<td>S. J. Hong*</td>
<td>Kangwon National University, Korea</td>
</tr>
<tr>
<td>13:30~14:00</td>
<td>Exploring Engineered Interacting Quantum Systems in Multilayer Graphene Superlattices</td>
<td>Joonho Jang*</td>
<td>Seoul National University, Korea</td>
</tr>
<tr>
<td>14:00~14:30</td>
<td>Visualizing Correlated Phases in Two-dimensional Twisted Moiré Materials</td>
<td>Myungchul Oh*</td>
<td>Pohang University of Science and Technology, Korea, Korea</td>
</tr>
</tbody>
</table>
### [SS] Korea-Germany Joint Workshop on Integrated Quantum Photonics I

**Room G (Biyang Hall, 2F)**

**June 3 (Mon.) / 13:00~14:40**

<table>
<thead>
<tr>
<th>Time</th>
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</tr>
</thead>
<tbody>
<tr>
<td>13:25~13:50</td>
<td>[Invited] Silicon and Silicon Nitride Integrated Nanophotonics with Advanced Modal Engineering</td>
<td>Sangsik Kim*&lt;br&gt;Korea Advanced Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>14:15~14:40</td>
<td>[Invited] Generation and Control of Quantum Emitters in Atomically Thin Semiconductors</td>
<td>Jae-Pil So*, Soon-Jae Lee², and Hong-Gyu Park³*&lt;br&gt;¹Hanyang University, Korea, ²Dongguk University, Korea, ³Sungkyunkwan University, Korea, ⁴Chung-Ang University, Korea, ⁵Korea Advanced Institute of Science and Technology, Korea</td>
</tr>
</tbody>
</table>

### Energy Materials and Devices I

**Room H (Tamna Hall, 8F)**

**June 3 (Mon.) / 13:00~14:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speakers</th>
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</thead>
<tbody>
<tr>
<td>13:00~13:30</td>
<td>[Invited] Constructing Orderly Crystal Orientation with Bidirectional Coordinator for High Efficiency and Stable Perovskite Solar Cells</td>
<td>Dong Suk Kim*&lt;br&gt;Ulsan National Institute of Science &amp; Technology, Korea</td>
</tr>
<tr>
<td>13:30~14:00</td>
<td>[Invited] Efficient Perovskite Solar Cells via Charge Carrier Modulation and Defect Passivation</td>
<td>Jing Bi You*&lt;br&gt;University of Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td>14:00~14:30</td>
<td>[Invited] Regulating External Strain in α-Phase Formamidinium Lead Iodide Perovskite Solar Cells via Hot-Casting Assisted Carving Method</td>
<td>Chanhyeok Kim, Kihoon Kim, Youngmin Kim, and Hanul Min*&lt;br&gt;Korea University, Korea</td>
</tr>
</tbody>
</table>
**ISPSA 2024**

The 21st International Symposium on the Physics of Semiconductors and Applications  
June 2 - 6, 2024 / Ramada Plaza Jeju Hotel, Jeju, Korea

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### [SS] Next-generation Semiconductor Device International Cooperation workshop I

Room J (Ora Hall, 8F)  
June 3 (Mon.) / 12:40~14:20

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<tr>
<th>Time</th>
<th>Session</th>
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</tr>
</thead>
<tbody>
<tr>
<td>12:40~13:00</td>
<td><strong>[Invited]</strong> Ferroelectrics-integrated 3D Microelectronics</td>
<td><strong>Susan Troler-McKinstry</strong>¹ ²</td>
<td>Pennsylvania State University, USA</td>
</tr>
<tr>
<td>13:00~13:20</td>
<td><strong>[Invited]</strong> Impact of Phase-Change Memory Nonidealities on Analog In-Memory Computing</td>
<td><strong>Ning Li</strong> ¹</td>
<td>Pennsylvania State University, USA</td>
</tr>
<tr>
<td>13:20~13:40</td>
<td><strong>[Invited]</strong> Device-Algorithm Co-optimization for Analog in-Memory Computing</td>
<td><strong>Sangbum Kim</strong> ¹</td>
<td>Seoul National University, Korea</td>
</tr>
<tr>
<td>13:40~14:00</td>
<td><strong>[Invited]</strong> Integration of Functional Complex Oxides on Si</td>
<td><strong>Seung-Hyub Baek</strong> ¹</td>
<td>Jeonbuk National University, Korea</td>
</tr>
<tr>
<td>14:00~14:20</td>
<td><strong>[Invited]</strong> Defect-free TSV Filling by Cu Electrodeposition</td>
<td><strong>Myung Jun Kim</strong> ¹</td>
<td>Sungkyunkwan University, Korea</td>
</tr>
</tbody>
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### Photonics I

Room K (Ara Hall, 8F)  
June 3 (Mon.) / 13:00~14:30

<table>
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<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>13:00~13:30</td>
<td><strong>[Invited]</strong> Local Carrier and Exciton Dynamics in Low-Dimensional Semiconductors Probed by Ultrafast Mid-Infrared Nanoscopy</td>
<td><strong>J. Nishida</strong> ¹ ²</td>
<td>¹National Institutes of Natural Sciences, Japan, ²SOKENDAI, Japan</td>
</tr>
<tr>
<td>13:30~14:00</td>
<td><strong>[Invited]</strong> Imaging of Single-photon Emitters within Nanoscale Strain Profiles in a Monolayer Semiconductor</td>
<td><strong>V. Kravtsov</strong> ¹</td>
<td>ITMO University, Russia</td>
</tr>
<tr>
<td>14:00~14:30</td>
<td><strong>[Invited]</strong> Nonlinear Optical Response of 2-D Materials at Nano-Femto Scale with Ultrafast Pump-Probe Force Nanoscopy</td>
<td><strong>J. Jahng</strong> ¹</td>
<td>Korea Research Institute of Standards and Science, Korea</td>
</tr>
</tbody>
</table>

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2D Semiconductors II

Room A (Ramada Ballroom 1, 2F)  
June 3 (Mon.) / 15:00~16:30

15:00~15:30 [Invited]  
Room Temperature 2D Dilute Magnetic Semiconductors for Spintronics and Quantum Sensing  
Eui-Hyeok Yang*  
Stevens Institute of Technology, USA

15:30~16:00 [Invited]  
Exchange Bias in Singular Two-dimensional van der Waals Magnetic Materials  
Yue Zhao*  
Southern University of Science and Technology, China

16:00~16:30 [Invited]  
First-principles Calculations of Molybdenum Disulfide Films on Substrates  
Young-Gui Yoon*  
Chung-Ang University, Korea

Quantum Materials and Devices II

Room B (Ramada Ballroom 2, 2F)  
June 3 (Mon.) / 15:00~16:30

15:00~15:30 [Invited]  
Observation and Manipulation of Spin Coherence in Semiconductor Quantum Dots  
Kaifeng Wu*  
Chinese Academy of Sciences, China

15:30~16:00 [Invited]  
Semiconductor Quantum Dots for On-demand Single Photon Sources  
Donghan Lee†, Yudong Jang†, Daehyun Ahn§, Hyunju Ahn§, and Jindong Song†  
†Bright Quantum Incorporated, Korea, §National Institute of Standards and Technology, USA, §Penn State University, USA, §Korea Institute of Science and Technology, Korea

16:00~16:30 [Invited]  
Tip-enhanced Nano-spectroscopic Modulator for Single Quantum Dots  
Hyeongwoo Lee, Huitae Joo, Yeonjeong Koo, Jinhuyk Bae, Sujeong Kim, Taeyoung Moon, and Kyoung-Duck Park*  
Pohang University of Science and Technology, Korea
### [SS] Recent Trends in Energy & Environmental Materials II

<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>15:00~15:25</td>
<td>The Journey of Seeking High-Performance SnSe-like Thermoelectrics and Future Directions</td>
<td>Li-Dong Zhao*</td>
<td>Beihang University, China</td>
</tr>
<tr>
<td>15:25~15:45</td>
<td>Remarkable Roles of Interstitials in Thermoelectric Material</td>
<td>Yu Xiao*</td>
<td>University of Electronic Science and Technology of China, China</td>
</tr>
<tr>
<td>15:45~16:10</td>
<td>Atomic-level Crystal Lattice Chemistry for Enhancing Thermoelectric Performance</td>
<td>In Chung *</td>
<td>Seoul National University, Korea</td>
</tr>
<tr>
<td>16:10~16:30</td>
<td>High Thermoelectric Performance in N-Type SnSe Crystals</td>
<td>Cheng Chang*</td>
<td>Beihang University, China</td>
</tr>
</tbody>
</table>

### [SS] Korea-Australia Workshop: Advanced Materials and Devices II

<table>
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<tbody>
<tr>
<td>14:50~15:20</td>
<td>Emergent Quantum Phenomena of Noncentrosymmetric Charge-Density Wave in 1T-Transition Metal Dichalcogenides</td>
<td>Gil Young Cho*</td>
<td>Pohang University of Science and Technology, Korea</td>
</tr>
<tr>
<td>15:20~15:50</td>
<td>Artificial Electrostatic Crystals: A New Platform for Electronic Quantum Matter</td>
<td>Daisy Q. Wang¹, Zeb Krix¹, Chong. Chen², David A. Ritchie², Oelg P. Sushkov¹, Alexander R. Hamilton¹, and Oleh Klochan¹*</td>
<td>¹The University of New South Wales, Australia, ²Cavendish Laboratory, UK</td>
</tr>
<tr>
<td>15:50~16:20</td>
<td>Low-dimensional Materials, Heterostructures, and Device Applications</td>
<td>Suk-Ho Choi*</td>
<td>Kyung Hee University, Korea</td>
</tr>
<tr>
<td>16:20~16:50</td>
<td>Inelastic Neutron Scattering and Material Dynamics</td>
<td>D. H. Yu*</td>
<td>Australian Nuclear Science and Technology Organisation, Australia</td>
</tr>
</tbody>
</table>
[SS] Hanyang-Center for Semiconductor Physics and Device II

Room E (Mara Hall, 2F)  
June 3 (Mon.) / 15:00~16:30

15:00~15:30  
[Invited] Structural Investigation of Ferroelectric HfO2-Based Thin Films through Transmission Electron Microscopy  
Seung-Yong Lee*  
Hanyang University, Korea

15:30~15:50  
[Invited] Harnessing Persistent Photocurrent in 2D Semiconductor–Polymer Hybrid Structure: Electron Trapping and Fermi Level Modulation for Optoelectronic Memory  
Seungho Bang1, Wooyoung Kang1, Dohyeong Kim1, Hyeong Chan Suh1, Dong Hyeon Kim1,2, Chan Kwon1, Jieun Jo1, Ji-hong Kim1, Hayoung Ko2, Ki Kang Kim2, Jinho Ahn3*, and Mun Seok Jeong1*  
1Hanyang University, Korea, 2Sungkyunkwan University, Korea

15:50~16:10  
[Invited] Investigating the Contribution of Raman modes to the Degree of Reduction in Graphene Oxide using eXplainable Artificial Intelligence and Density Functional Theory  
Jaekak Yoo1, Youngwoo Cho2, Donghyeon Kim1,3, Seung Mi Lee4*, Jaegul Choo2*, and Mun Seok Jeong1*  
1Hanyang University, Korea, 2Korea Advanced Institute of Science and Technology, Korea, 3Sungkyunkwan University, Korea, 4Korea Research Institute of Standards and Science, Korea

16:10~16:30  
[Invited] Improving the Stability of Perovskite Solar Cells by Inorganic 2D Transition Metal Dichalcogenide Interlayers  
Bora Kim1, Moonhoe Kim2, Hyojung Kim2, Sohee Jeong3*, JungYup Yang2*, and Mun Seok Jeong1*  
1Hanyang University, Korea, 2Kunsan National University, Korea, 3Sungkyunkwan University, Korea

[SS] Extreme Quantum Matter and Functionality II

Room F (Udo Hall, 2F)  
June 3 (Mon.) / 15:00~16:30

15:00~15:30  
[Invited] Topological Moiré Domain Antiferroelectrics in Twisted Bilayer Transition Metal Dichalcogenides  
Hyobin Yoo*  
Sogang University, Korea

15:30~16:00  
[Invited] Propagating Modes in Monolayer MoS2 Film  
Myungjae Lee*  
Seoul National University, Korea

16:00~16:30  
[Invited] Magic Angle of Moire Magnetic Materials  
Moon Jip Park*  
Hanyang University, Korea
[SS] Korea-Germany Joint Workshop on Integrated Quantum Photonics II

Room G (Biyang Hall, 2F)  
June 3 (Mon.) / 15:00~16:30

15:00~15:30  
[Invited] Single Quantum Emitters Integrated with Tailor-made Photonic Structures  
Yong-Hoon Cho*  
Korea Advanced Institute of Science and Technology, Korea

15:30~15:50  
[Invited] Quantum Dot Single-Photon Sources for the Telecom C-Band  
1Hanyang University, Korea, 2Sungkyunkwan University, Korea

15:50~16:10  
[Invited] Droplet Etched InAs Quantum Dots using Ga Droplets  
Jin Dong Song*  
Korea Institute of Science and Technology, Korea

16:10~16:30  
[Invited] Polarized and Non-polarized Emission from Quantum Dots in Bullseye Resonators  
G. Peniakov1, Q. Buchinger1, M. Helal1, S. Betzold1, Y. Reum1, C. Krause1, M. B. Rota2, G. Ronco2, M. Beccaceci2, T. M. Krieger3, S. F. Covre da Silva3, A. Rastelli3, R. Trotta2, A. Pfenning1, S. Höfling1, and T. Huber-Loyola1  
1Hanyang University, Korea, 2Kunsan National University, Korea, 3Sungkyunkwan University, Korea

Energy Materials and Devices II

Room H (Tamna Hall, 8F)  
June 3 (Mon.) / 15:00~16:30

15:00~15:30  
[Invited] High Efficiency Large-Area Perovskite Solar Cells by Vacuum Evaporation  
Chenyi Yi*  
Tsinghua University, China

15:30~16:00  
[Invited] Defect Passivation for Stable Perovskite Crystals  
Taiho Park*  
Pohang University of Science and Technology, Korea

16:00~16:30  
[Invited] Scalable Technology for Highly Efficient and Stable Perovskite Solar Cells  
Jianfeng Lu*  
Wuhan University of Technology, China
## [SS] Next-generation Semiconductor Device International Cooperation workshop II

**Room J (Ora Hall, 8F)**  
**June 3 (Mon.) / 14:40~16:20**

<table>
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<tr>
<th>Time</th>
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<th>Speaker(s)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>14:40~15:00</td>
<td>Brownian Motion and Information Dynamics in the Skyrmion System</td>
<td>Y. Suzuki*, H. Mori¹, K. Emoto¹, R. Ishikawa², S. Miki¹, M. Goto¹, H. Nomura¹, and E. Tamura¹</td>
<td>Osaka University, Japan, ULVAC, Inc, Japan</td>
</tr>
<tr>
<td>15:00~15:20</td>
<td>Implementing in-situ Self-organizing Maps with Memristor Crossbar Arrays for Data Mining and Optimization</td>
<td>Rui Wang¹,³, Tuo Shi¹,³,⁴, Xumeng Zhang², Jinsong Wei¹,⁴, Jian Lu¹,⁴, Jiaxue Zhu¹,³, Zuheng Wu¹,³, Qi Liu¹,²,³, and Ming Liu¹,²,³</td>
<td>Chinese Academy of Sciences, China, Fudan University, China, University of Chinese Academy of Sciences, China, Zhejiang Laboratory, China</td>
</tr>
<tr>
<td>15:20~15:40</td>
<td>Semiconductor MI &amp; Process</td>
<td>Chanyong Hwang*</td>
<td>Korea Research Institute of Standards and Science, Korea, Korea</td>
</tr>
<tr>
<td>15:40~16:00</td>
<td>Hybrid Nanocomposites for Neuromorphic Computing</td>
<td>Deok-kee Kim, Faisal Ghafoor, and Honggyun Kim*</td>
<td>Sejong University, Korea</td>
</tr>
<tr>
<td>16:00~16:20</td>
<td>Signal and Power Integrity Design for Advanced Packages</td>
<td>Youngwoo Kim*</td>
<td>Sejong University, Korea</td>
</tr>
</tbody>
</table>

## Photonics II

**Room K (Ara Hall, 8F)**  
**June 3 (Mon.) / 15:00~16:30**

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<tbody>
<tr>
<td>15:00~15:30</td>
<td>Tunable Optoelectronics Materials through Twisted Van der Waals Heterostructures</td>
<td>Seungjun Lee and Tony Low*</td>
<td>University of Minnesota, USA</td>
</tr>
<tr>
<td>15:30~16:00</td>
<td>Simultaneous Harvesting of Radiative Cooling and Solar Heating for Thermoelectric Generation</td>
<td>S. Ishii¹,²*</td>
<td>National Institute for Materials Science, Japan, University of Tsukuba, Japan</td>
</tr>
<tr>
<td>16:00~16:30</td>
<td>Optical Nanoantennas and Metasurfaces Using Organic Semiconductors</td>
<td>E. S. H. Kang*</td>
<td>Chungbuk National University, Korea</td>
</tr>
</tbody>
</table>
2D Semiconductors III
Room A (Ramada Ballroom 1, 2F)  
June 3 (Mon.) / 17:00~18:30

17:00~17:30  [Invited]  Mechanics of Two-dimensional Materials in the Three-dimensional Space  
Jaehyung Yu*  
Chung-Ang University, Korea

17:30~18:00  [Invited]  New Excited States in Semiconductor Moiré Superlattices  
Xiaoqin Li*  
University of Texas at Austin, USA

18:00~18:30  [Invited]  Passivation of Trap Sites in 2D Layered Devices Using H-TFSI  
Byungwook Ahn and Seong Chu Lim*  
Sungkyunkwan University, Korea

Quantum Materials and Devices III
Room B (Ramada Ballroom 2, 2F)  
June 3 (Mon.) / 17:00~18:30

17:00~17:30  [Invited]  Silver-Gold Sulfide Quantum Dots for Optoelectronic Devices  
Sungjee Kim*  
Pohang University of Science and Technology, Korea

17:30~18:00  [Invited]  I-III-VI Quantum Dots: Optimizing Sunlight Utilization and Beyond  
Matt Bergren*  
UbiQD, USA

18:00~18:30  [Invited]  What Can We Do with Anisotropic Luminescent Nanocrystals?  
Lilian Magermans, Zijun Wang, Qilin Zou, Marcello Benetti, Jeongmo Kim, Khalid Lahlil, Thierry Gacoin, and Jongwook Kim*  
Institut Polytechnique de Paris, France
[SS] Recent Trends in Energy & Environmental Materials III

Room C (Ramada Ballroom 3, 2F)  June 3 (Mon.) / 17:00~18:30

17:00~17:30  Invited  Interface- and Defect-engineered 2D Nanosheets and Their Nanohybrids
Seong-Ju Hwang*
Yonsei University, Korea

17:30~17:50  Invited  Mixed-anion Semiconducting High-entropy Chalcogenides
Pierre F. P. Poudeu*
University of Michigan, USA

17:50~18:10  Invited  Achieving Superior Thermoelectric Performance in Ge₄Se₃Te via Symmetry Manipulation with I–V–VI₂ Alloying
Zhong-Zhen Luo*, Mingjie Guo¹, and Zhigang Zou¹²
¹Fuzhou University, China, ²Nanjing University, China

[SS] Korea-Australia Workshop: Advanced Materials and Devices III

Room D (Ramada Ballroom 4, 2F)  June 3 (Mon.) / 17:10~18:40

17:10~17:40  [Invited]  Transparent Photovoltaics and Photo-thermo Hybrid Power Generation
Malkeshkumar Patel¹, Hyeong-Ho Park², and Joondong Kim¹*
¹Incheon National University, Korea, ²Korea Advanced Nanofab Center, Korea

17:40~18:10  [Invited]  Quantum Material Research Capabilities at the Australian Synchrotron
Anton Tadich*
Australian Nuclear Science and Technology Organisation, Australia

18:10~18:40  [Invited]  Polar Domain Dynamics in 2D Sliding Ferroelectrics
Hyobin Yoo*
Sogang University, Korea
Emerging Researcher Session I

**Room E (Mara Hall, 2F)**

June 3 (Mon.) / 17:00~18:30

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:00~17:10</td>
<td>Future Metrology and Inspection for Semiconducting Devices</td>
<td>Un Jeong Kim*</td>
<td>Dongguk University, Korea</td>
</tr>
<tr>
<td>17:10~17:20</td>
<td>Innovations at the Interdisciplinary Interface: Focusing on Plasmonic Hot Carriers and Optoelectronic Devices</td>
<td>Moonsang Lee*</td>
<td>Inha University, Korea</td>
</tr>
<tr>
<td>17:20~17:30</td>
<td>Exploring Quantum Materials Interfaces and Nano Devices Laboratory</td>
<td>Hoon Hahn Yoon*</td>
<td>Gwangju Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>17:30~17:40</td>
<td>Novel Superconducting Quantum Devices</td>
<td>Eunjong Kim*</td>
<td>Seoul National University, Korea</td>
</tr>
<tr>
<td>17:40~17:50</td>
<td>Truly Form-factor–free Industrially Scalable System Integration for Electronic Textile Architectures with Multifunctional Fiber Devices</td>
<td>Sanghyo Lee*</td>
<td>Kumoh National Institute of Technology, Korea</td>
</tr>
<tr>
<td>17:50~18:00</td>
<td>High Q Optical Cavities for Quantum Applications</td>
<td>Jinuk Kim*</td>
<td>Korean Research Institute of Standards and Science, Korea</td>
</tr>
<tr>
<td>18:00~18:10</td>
<td>Electronic Structure Calculations for Low-dimensional Quantum Materials</td>
<td>Kyung-Hwan Jin*</td>
<td>Jeonbuk National University, Korea</td>
</tr>
<tr>
<td>18:10~18:20</td>
<td>Ultrafast Optical and THz Spectroscopy of Van Der Waals Heterostructures</td>
<td>Yoseob Yoon*</td>
<td>Northeastern University, USA</td>
</tr>
<tr>
<td>18:20~18:30</td>
<td>Non-equilibrium Quantum Phenomena and Ultrafast Photoemission Spectroscopy</td>
<td>Woojoo Lee*</td>
<td>Korea Research Institute of Standards and Science, Korea</td>
</tr>
</tbody>
</table>
## Emerging Researcher Session II

**Room F (Udo Hall, 2F)**

**June 3 (Mon.) / 17:00~18:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:00~17:10</td>
<td><strong>Convergence Researches in Neuromorphic Devices</strong></td>
<td>Joon Young Kwak*</td>
<td>Ewha Womans University, Korea</td>
</tr>
<tr>
<td>17:10~17:20</td>
<td><strong>Emerging Exciton Physics in Van Der Waals Heterostructures</strong></td>
<td>Junho Choi*</td>
<td>Kyung Hee University, Korea</td>
</tr>
<tr>
<td>17:20~17:30</td>
<td><strong>Multistate and Dual Color Photoluminescence Modulation of Quantum Dots</strong></td>
<td>Yunmo Sung¹, Sukyung Choi², Taeyong Ha¹, Ho Jin³*, and Sunghee Kim¹*</td>
<td>Pohang University of Science and Technology, Korea, Electronics and Telecommunications Research Institute, Korea, Ulsan National Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>17:30~17:40</td>
<td><strong>Progress in Colloidal Quantum Dot Lasing</strong></td>
<td>Namyoung Ahn*</td>
<td>Yonsei University, Korea</td>
</tr>
<tr>
<td>17:40~17:50</td>
<td><strong>Nano-Scale Patterning of Polymer Functional Materials and Their Applications</strong></td>
<td>Young Tea Chun*</td>
<td>Korea Maritime and Ocean University, Korea</td>
</tr>
<tr>
<td>17:50~18:00</td>
<td><strong>A Tunable Electronic Mach-Zehnder Interferometer in Quantum Hall Graphene</strong></td>
<td>Myunglae Jo*</td>
<td>Kyungpook National University, Korea</td>
</tr>
<tr>
<td>18:00~18:10</td>
<td><strong>Anisotropy in Nanomagnets for Sensors and Actuators in Soft Robotic Applications</strong></td>
<td>Minjeong Ha*</td>
<td>Gwangju Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>18:10~18:20</td>
<td><strong>Research on the Optical Properties of Topological Insulators</strong></td>
<td>Kwangsik Jeong¹*, Dajung Kim¹, Hyeongmun Kim², Chul Kang³, and Mann-Ho Cho¹*</td>
<td>Yonsei University, Korea, Chonnam National University, Korea, Gwangju Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>18:20~18:30</td>
<td><strong>Research on Degradation and Phase Transition of Semiconducting Nanomaterials in Optoelectronic Devices</strong></td>
<td>Hanleem Lee*</td>
<td>Myongji University, Korea</td>
</tr>
</tbody>
</table>
Emerging Researcher Session III

Room G (Biyang Hall, 2F)  
June 3 (Mon.) / 17:00~18:30

17:00~17:10  [Invited]  
Targeted Epitaxial Growth of Two-dimensional Lateral Heterostructured and Alloyed Monolayers  
Juwon Lee*  
Sungkyunkwan University, Korea

17:10~17:20  [Invited]  
Hyeon-Jin Shin*  
Gwangju Institute of Science and Technology, Korea

17:20~17:30  [Invited]  
Hamiltonian Engineering for Fixed-frequency Superconducting Qubits  
Yosep Kim*  
Korea University, Korea

17:30~17:40  [Invited]  
Protonic Neuromorphic Memory with Rare-earth Perovskite Nicelates  
Tae Joon Park*  
Kookmin University, Korea

17:40~17:50  [Invited]  
Low Dimensional Semiconductor Optoelectronic Devices  
Hyun-Soo Ra*  
Kyungpook National University, Korea

17:50~18:00  [Invited]  
High-density Vertical Organic Electrochemical Transistor Arrays and Complementary Circuits  
Jaehyun Kim*  
Dongguk University, Korea

18:00~18:10  [Invited]  
Development of Ultrafast Solid-state Lasers with Low-dimensional Carbon Nanomaterial  
Won Bae Cho*  
Korea Maritime and Ocean University, Korea

18:10~18:20  [Invited]  
Designing Colloidal Quantum Dot Heterostructures for Light-Emitting Applications  
Byeong Guk Jeong*  
Pusan National University, Korea

18:20~18:30  [Invited]  
Manipulation of Lasing Modes on Topological Photonics  
Min-Soo Hwang*  
Hanyang University, Korea
# Energy Materials and Devices III

**Room H (Tamna Hall, 8F)**  
June 3 (Mon.) / 17:00~18:30

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:00~17:30</td>
<td>TBA</td>
<td>Jun Hong Noh*</td>
<td>Korea University, Korea</td>
</tr>
<tr>
<td>17:30~18:00</td>
<td>Design of Photoelectrodes for Efficient Solar Water Splitting</td>
<td>S. Lee*</td>
<td>Gwangju Institute of Science and Technology, Korea</td>
</tr>
<tr>
<td>18:00~18:30</td>
<td>Single-atom Catalysts and High-entropy Nanomaterials for Water Splitting</td>
<td>Ho Won Jang*</td>
<td>Seoul National University, Korea</td>
</tr>
</tbody>
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# [SS] Next-generation Semiconductor Device International Cooperation workshop III

**Room J (Ora Hall, 8F)**  
June 3 (Mon.) / 16:40~18:00

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:40~17:00</td>
<td>Quantum-confined Modulated Nanostructure for Optoelectronic Devices</td>
<td>S. Vichi*, S. Bietti¹, A. Tuktamyshhev¹, A. Fedorov², and S. Sanguinetti*</td>
<td>University of Milano-Bicocca, Italy, ²L-NESS and CNR-IFN, Italy</td>
</tr>
<tr>
<td>17:00~17:20</td>
<td>SiC-based IoT Sensors for Remote Health Monitoring Systems</td>
<td>Soaram Kim*</td>
<td>Texas A&amp;M University, USA</td>
</tr>
<tr>
<td>17:20~17:40</td>
<td>Growth and Properties of III-V Compound Semiconductors for Infrared Sensor Development</td>
<td>Byong Sun Chun*</td>
<td>Korea Research Institute of Standards and Science, Korea</td>
</tr>
<tr>
<td>17:40~18:00</td>
<td>CMOS Imaging Technology for Compound Semiconductor-based Photodetectors</td>
<td>Hyeon-June Kim*</td>
<td>Seoul National University of Science and Technology, Korea</td>
</tr>
</tbody>
</table>
Photonics III

Room K (Ara Hall, 8F)       June 3 (Mon.) / 17:00~18:30

17:00~17:30  [Invited]  Probing Deep-ultraviolet Optoelectronic Processes in Hexagonal Boron Nitride
Jonghwan Kim¹,²*
¹Pohang University of Science and Technology, Korea, ²Institute for Basic Science, Korea

17:30~18:00  [Invited]  Creation of Carbon-related Defects in Hexagonal Boron Nitrides
Hyowon Moon¹,²*, Young Duck Kim³, Chaun Jang⁴, and Sofiya Karankova¹,²
¹Korea Institute of Science and Technology, Korea, ²Korea National University of Science and Technology, Korea, ³Kyung Hee University, Korea, ⁴Korea Institute of Science and Technology, Korea

18:00~18:30  [Invited]  Moiré Excitons in 2D Transition Metal Dichalcogenide Heterostructures
Hyeonjun Baek*
Sogang University, Korea
2D Semiconductors IV

Room A (Ramada Ballroom 1, 2F) | June 4 (Tue.) / 09:00~10:30

09:00~09:30 [Invited] Quantum Anomalous Hall Effects in Twisted 2D Semiconductors
Wang Yao*
The University of Hong Kong, Hong Kong

09:30~10:00 [Invited] Optoelectronic Manifestation of Orbital Angular Momentum Driven by Chiral Hopping in Trigonal Se Chains
Jeongwoo Kim*
Incheon National University, Korea

10:00~10:30 [Invited] Controlling Valley and Exciton Properties of Van Der Waals Heterostructures
Y. Galvão Gobato*
Federal University of São Carlos, Brazil

Quantum Materials and Devices IV

Room B (Ramada Ballroom 2, 2F) | June 4 (Tue.) / 09:00~10:30

09:00~09:30 [Invited] Engineering Single-Particle and Collective Light Emission from Lead Halide Perovskite Nanocrystals
Maksym V. Kovalenko1,2*
1ETH Zürich, Switzerland, 2Empa-Swiss Federal Laboratories for Materials Science and Technology, Switzerland

09:30~10:00 [Invited] Perovskite Nanocrystals for Efficient Light-Emitting Diodes
Andrey L. Rogach*
City University of Hong Kong, China

10:00~10:30 [Invited] Ultrafast Carrier Dynamics in Quantum Dot Solids Revealed by fs-Microscopy
Jooyoung Sung*
Daegu Gyeongbuk Institute of Science & Technology, Korea
Advanced Semiconductors I

Room C (Ramada Ballroom 3, 2F)  
June 4 (Tue.) / 09:00~10:30

09:00~09:30  [Invited]  
Hybrid Low-Dimensional Perovskite and Transition-Metal Halides: Emerging Optoelectronic Materials  
Lingling Mao*  
Southern University of Science and Technology, China

09:30~10:00  [Invited]  
Halide Perovskites: Modular Materials for Optoelectronics  
Constantinos C. Stoumpos1,2*  
1University of Crete, Greece, 2Saint Petersburg State University, Russia

10:00~10:30  [Invited]  
Understanding and Interpreting the Complex Electronic Properties of Metal Halide Perovskite Interface  
Dongguen Shin*  
Chonnam National University, Korea

Sensor and Flexible Electronics I

Room D (Ramada Ballroom 4, 2F)  
June 4 (Tue.) / 09:00~10:30

09:00~09:30  [Invited]  
Organic Electronics for Disease Diagnostics  
Sahika Inal*  
King Abdullah University of Science and Technology, Saudi Arabia

09:30~10:00  [Invited]  
Tissue-Interfaced Organic Bioelectronics  
Sungjune Jung*  
Pohang University of Science and Technology, Korea

10:00~10:30  [Invited]  
A Bioresorbable Pacemaker with Transient Closed-loop Systems  
Yoonsik Choi*  
Yonsei University, Korea
**Carbon Nanostructures and Standardization I**

Room F (Udo Hall, 2F)  
June 4 (Tue.) / 09:00~10:30

- **09:00~09:30**  
  [Invited]  
  2D Materials Beyond the Limit of 3D Bulk Semiconductors  
  Hyesung Park*  
  *Korea University, Korea

- **09:30~10:00**  
  [Invited]  
  Chemistry of Ionic Endohedral Fullerenes: Synthesis, Properties, and Applications  
  H. Ueno*  
  *Tohoku University, Japan

- **10:00~10:30**  
  [Invited]  
  Critical Properties of Fullerene Derivatives for Rechargeable Battery Applications  
  C. Lee¹,², Y. Lee², Y. Seo², J.-S. Nam², H. Okada³, H. Ueno³, and I. Jeon²*  
  ¹Tokyo University of Science, Japan, ²Sungkyunkwan University, Korea, ³Tohoku University, Japan

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**Industry I**

Room G (Biyang Hall, 2F)  
June 4 (Tue.) / 09:00~10:30

- **09:00~09:30**  
  [Invited]  
  Industrial Applications and Activities of Pohang Light Source-II  
  Hyungju Ahn*  
  *Pohang Accelerator Laboratory, Korea

- **09:30~10:00**  
  [Invited]  
  Development of High-κ Materials for dielectric layer in Capacitor  
  Kyung Sik Lee*  
  *Hansol Chemical Co., Ltd., Korea

- **10:00~10:30**  
  [Invited]  
  The Future of Atomic Layer Deposition Process Technologies  
  Joosung Kim*  
  *Jusung Engineering, Korea
Energy Materials and Devices IV

Room H (Tamna Hall, 8F)       June 4 (Tue.) / 09:00~10:30

09:00~09:30 [Invited] Unlocking the Potential of Perovskite Solar Cells: From Single-Junction to Tandem
Yi Hou*
National University of Singapore, Singapore

09:30~10:00 [Invited] Highly Efficient and Stable All-perovskite Tandem Solar Cells
Jinhui Tong*
Wuhan University of Technology, China

10:00~10:30 [Invited] Atmospheric Humidity Underlies Irreproducibility of Formamidinium Lead Iodide Perovskite Solar Cells
Jin-Wook Lee*
Sungkyunkwan University, Korea

[SS] Korea-Taiwan Joint Workshop I

Room J (Ora Hall, 8F)       June 4 (Tue.) / 09:00~10:30

11:00~11:30 [Invited] Single Crystal Growth of Quantum and Functional Materials in Taiwan
Chin Shan Lue1,2* and Chia Nung Kuo1,2*
1National Cheng Kung University, Taiwan, 2National Science and Technology Council, Taiwan

11:30~12:00 [Invited] ZnO Nanostructures on Graphene Films for Flexible Electronics, Bio Sensors, and Neuromorphic Devices
Hongseok Oh1*, Asad Ali2, Hyerin Jo1, and Gyu-Chul Yi2
1Soongsil University, Korea, 2Seoul National University, Korea

12:00~12:30 [Invited] Control of 2D Carrier Density in Atomically-thin Oxide Semiconductors
Der-Hsien Lien*
National Yang Ming Chiao Tung University, Taiwan
09:00~09:30  [Invited]  Semiconductor-based Topological Waveguides: Potential and Challenges  
Satoshi Iwamoto*  
The University of Tokyo, Japan  

09:30~10:00  [Invited]  III-V/Si Light Source Integration from on-demand to Threedimensions  
You-Shin No*  
Konkuk University, Korea  

10:00~10:30  [Invited]  Enhancing Information Capacity in Metasurfaces for Advanced Holographic Applications  
Sunaee So*  
Korea University, Korea
[SS] Korea-Taiwan Joint Workshop II
Room J (Ora Hall, 8F)  
June 4 (Tue.) / 11:00~12:30

11:00~11:30  [Invited]  Sub-nm Resolution 4D-STEM Crystallographic Mapping of Polycrystalline Doped Hafnium Oxide Thin Films with Deep Learning
Young-Min Kim*
Sungkyunkwan University, Korea

11:30~12:00  [Invited]  Wafer-Scale Single-Crystal Growth of 2D Semiconductors for Practical Applications
Wen-Hao Chang¹,²*
¹Academia Sinica, Taiwan, ²National Yang Ming Chiao Tung University, Taiwan

12:00~12:30  [Invited]  Anomalous Behavior in Dark-bright Splitting Impacts the Biexciton Binding Energy in (BA)₂(MA)₃₋₁Pb₃Br₃n+₁ (n = 1~3)
Joon Ik Jang*
Sogang University, Korea

[SS] Korea-Taiwan Joint Workshop III
Room J (Ora Hall, 8F)  
June 4 (Tue.) / 13:30~15:00

13:30~14:00  [Invited]  Near-sensor Image Recognition and Classification via Bioinspired Optic-neural Synapses
Yung-Chi Yao, Chia-Jung Lee, Yong-Jun Chen, Jun-Zhi Feng, and Ya-Ju Lee*
National Cheng Kung University, Taiwan

14:00~14:30  [Invited]  Passivation Strategies for Mitigating Defect Challenges in Halide Perovskite Light-Emitting Diodes
Bo Ram Lee*
Sungkyunkwan University, Korea

14:30~15:00  [Invited]  Revealing the Local Band Evolution of WS2/MoS2 Heterojunction and Alloy by Near-Field Optical Imaging
Po-Wen Tang¹, He-Chun Chou¹, Shiue-Yuan Shiu¹, Xin-Quan Zhang², Yi-Hsien Lee³, and Chi Chen¹*
¹Academia Sinica, Taiwan, ²National Center for Theoretical Sciences, Taiwan, ³National Tsing-Hua University, Taiwan
2D Semiconductors V

Room A (Ramada Ballroom 1, 2F)  June 4 (Tue.) / 15:00~16:30

15:00~15:30  [Invited]  Realizing Scalable 2D TMDs Synaptic Devices for Neuromorphic Computing
Wonbong Choi*
University of North Texas, USA

15:30~16:00  [Invited]  Two-dimensional Exciton-Floquet Composites
J.D. Lee*
Daegu Gyeongbuk Institute of Science & Technology, Korea

16:00~16:30  [Invited]  Controlled Adhesion of Ice – Towards Ultraclean 2D Materials
Thuc Hue Ly*
City University of Hong Kong, China

Quantum Materials and Devices V

Room B (Ramada Ballroom 2, 2F)  June 4 (Tue.) / 15:00~16:30

15:00~15:30  [Invited]  Inkjet-printed Colloidal Quantum Dots Active Lighting and Sensing: From Ink Formulation to the Interface Physics
Bo Hou*
Cardiff University, UK

15:30~16:00  [Invited]  Heteroepitaxial Chemistry on Colloidal Quantum Dots Toward Defect-Free Core/Shell Heterostructures
Jaehoon Lim*
Sungkyunkwan University, Korea

16:00~16:30  [Invited]  Direct and Indirect Photopatterning of Quantum Dots
Moon Sung Kang*
Sogang University, Korea
Advanced Semiconductors II

Room C (Ramada Ballroom 3, 2F)  June 4 (Tue.) / 15:00~16:30

15:00~15:30  [Invited]  Toward Metal Halide Perovskite Laser Diodes  
Lianfeng Zhao*  
*Clemson University, USA

15:30~16:00  [Invited]  Strain Engineering for Halide Perovskite Layer  
Hui-Seon Kim*  
*Inha University, Korea

16:00~16:30  [Invited]  Super-tetragonal Sr4Al2O7: A Versatile Sacrificial Layer for High-integrity Freestanding Oxide Membranes  
Lingfei Wang*  
*University of Science and Technology of China, China

Sensor and Flexible Electronics II

Room D (Ramada Ballroom 4, 2F)  June 4 (Tue.) / 15:00~16:30

15:00~15:30  [Invited]  Recent Progress in Oxide Thin-Film Transistor Technology  
K. Nomura*  
*University of California, USA

15:30~16:00  [Invited]  Semiconductor/Insulating Polymer Blends for Diverse Thin-Film Transistors and Sensors  
Binghao Wang*  
*Southeast University, China

16:00~16:30  [Invited]  Tailoring the Current Path in Vertical Photosynaptic Transistors for Applications in Artificial Neural Networks  
Hea-Lim Park*  
*Seoul National University of Science and Technology, Korea
## Carbon Nanostructures and Standardization II

**Room F (Udo Hall, 2F)**  
**June 4 (Tue.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
<th>Affiliation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00~15:30</td>
<td><strong>[Invited]</strong> Distinctive One-dimensional Exciton Light Emission of Individuals and Assemblies of Hot Carbon Nanotubes</td>
<td>T. Nishihara*</td>
<td>Kyoto University, Japan</td>
</tr>
<tr>
<td>15:30~16:00</td>
<td><strong>[Invited]</strong> Aerosol-synthesized Surfactant-free Single-Walled Carbon Nanotube-based NO2 Sensors: Unprecedentedly High Sensitivity and Fast Recovery</td>
<td>Il Jeon* and Siheok Kim</td>
<td>Sungkyunkwan University, Korea</td>
</tr>
<tr>
<td>16:00~16:30</td>
<td><strong>[Invited]</strong> Nondestructive Single-atom-thick Crystallographic Scanner for 2D Materials</td>
<td>Ji-Yun Moon¹ and Jae-Hyun Lee²*</td>
<td>¹Washington University, USA, ²Ajou University, Korea</td>
</tr>
</tbody>
</table>

## Industry II

**Room G (Biyang Hall, 2F)**  
**June 4 (Tue.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
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</tr>
</thead>
<tbody>
<tr>
<td>15:00~15:30</td>
<td><strong>[Invited]</strong> 0.33NA HVM Manufacturing and Beyond</td>
<td>MyoungKuy Lee¹, Peter Klomp², and Jara Garcia Santaclara³*</td>
<td>¹ASML, Korea, ²ASML, Netherlands</td>
</tr>
<tr>
<td>15:30~16:00</td>
<td><strong>[Invited]</strong> AI and Semiconductor Industry - Opportunities and Recent Advances from the Perspectives of Google</td>
<td>Jincheol B. Kim*</td>
<td>Google, Korea</td>
</tr>
<tr>
<td>16:00~16:30</td>
<td><strong>[Invited]</strong> Oxide Semiconductor Transistors for Disruptive Semiconductor Technology</td>
<td>Sangwook Kim*</td>
<td>Samsung Advanced Institute of Technology, Korea</td>
</tr>
</tbody>
</table>
Energy Materials and Devices V

Room H (Tamna Hall, 8F)  
June 4 (Tue.) / 15:00~16:30

15:00~15:30  [Invited]  
Interface Materials for Efficient Perovskite Solar Cells
A. Wakamiya*, M. A. Truong, N. Ohashi, T. Nakamura, C.-Y. Chen, and R. Murdey
Kyoto University, Japan

15:30~16:00  [Invited]  
Bulk and Interface Engineering to Maximize the Efficiency of α-FAPbI3 Perovskite Solar Cells
Jaeki Jeong*
Sungkyunkwan University, Korea

16:00~16:30  [Invited]  
Strategies for Intrinsically Stretchable Solar Cells
Jung-Yong Lee*
Korea Advanced Institute of Science and Technology, Korea

Quantum Information and Technology I

Room I (Halla Hall, 8F)  
June 4 (Tue.) / 15:00~16:30

15:00~15:30  [Invited]  
Graphene Quantum Devices
Jonas D. Gerber1, A. O. Denisov1, M. Masseroni1, M. Niese1, L. Ostertag1, C. Tong1, C. Adam1, H. Duprez1, M. J. Ruckriegel1, W. W. Huang1, K. Watanabe2, T. Taniguchi2, T. Ihn1, and K. Ensslin1
1ETH Zurich, Switzerland, 2National Institute for Materials Science, Japan

15:30~16:00  [Invited]  
Electronic Structure and Coherent States of Spin Defects in Molecules and Solids from First Principles Calculations
Giulia Galli1,2*
1University of Chicago, USA, 2Argonne National Laboratory, USA

16:00~16:30  [Invited]  
Diamond NV Center Technologies for Quantum Memory Network
Korea Institute for Science and Technology, Korea
**[SS] Korea-Taiwan Joint Workshop IV**

**Room J (Ora Hall, 8F)**  
**June 4 (Tue.) / 15:30~17:00**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30~16:00</td>
<td>Strategic Electrical Doping for Metal-Halide Perovskites</td>
<td>Keehoon Kang* Seoul National University, Korea</td>
</tr>
<tr>
<td>16:00~16:30</td>
<td>Realizing Unique 2D Materials Through Confined Reactions</td>
<td>Ya-Ping Hsieh* Academia Sinica, Taiwan</td>
</tr>
<tr>
<td>16:30~17:00</td>
<td>Revolutionizing Wafer-Scale Performance based on h-BN</td>
<td>Soo Min Kim* Sookmyung Women’s University, Korea</td>
</tr>
<tr>
<td>17:00~17:30</td>
<td>Advancing Semiconductor Research Through Tr-ARPES: Insights into Electronic Structure and Dynamics of Materials</td>
<td>Ping-Hui Lin*, Chih-Wei Luo², Ming-Chang Chen³, and Cheng-Maw Cheng¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>¹National Synchrotron Radiation Research Center, Taiwan, ²National Yang Ming Chiao Tung University, Taiwan, ³National Tsing Hua University, Taiwan</td>
</tr>
</tbody>
</table>

**Photonics V**

**Room K (Ara Hall, 8F)**  
**June 4 (Tue.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00~15:30</td>
<td>Materials Informatics Design of Thermal Metamaterials for Thermal Radiation Control</td>
<td>Run Hu* Huazhong University of Science and Technology, China</td>
</tr>
<tr>
<td>15:30~16:00</td>
<td>MEMS-Driven Photonic Integrated Circuits</td>
<td>Sangyoon Han* Daegu Gyeongbuk Institute of Science &amp; Technology, Korea</td>
</tr>
<tr>
<td>16:00~16:30</td>
<td>Scalable Plasmonic Molecules and Superstructures</td>
<td>Juhwan Kim, Jang-Hwan Han, Gyurin Kim, Hyun Min Kim, and Hyeon-Ho Jeong*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gwangju Institute of Science and Technology, Korea</td>
</tr>
</tbody>
</table>
2D Semiconductors VI

Room A (Ramada Ballroom 1, 2F)       June 5 (Wed.) / 09:00~10:30

09:00~09:30  [Invited]  Bottom-up Synthesis of 2D Materials for Future Electronics
Seok Joon Yun*
University of Ulsan, Korea

09:30~10:00  [Invited]  2D Copper Sulfide Electrodes for Electronics and Optoelectronics Application
Sangyeon Pak*
Hongik University, Korea

10:00~10:30  [Invited]  Graphene based Nano-electromechanical Systems; Physics and Application to Biomolecule Detection
Sang Wook Lee*
Ewha Womans University, Korea

Quantum Materials and Devices VI

Room B (Ramada Ballroom 2, 2F)       June 5 (Wed.) / 09:00~10:30

09:00~09:30  [Invited]  Indium Phosphide Quantum Dots: Novel Precursors, Surface Chemistry and Optical Properties
B.F.P. McVey¹, R.A. Swain¹, F. Ferrari¹, I.-T. Moraru², R. Poteau¹, C. Nayral¹, and F. Delpech¹*
¹University of Toulouse, France, ²Universitatea Babes-Bolyai, Romania

09:30~10:00  [Invited]  Tailored Synthetic Strategies for Colloidal Pnictide Nanocrystals: From n-type InAs to p-type Zn3As2
Nuri Oh*
Hanyang University, Korea

10:00~10:30  [Invited]  Chemistry of Underdeveloped Metal Phosphide Quantum Dots such as Cd3P2 and Zn3P2 Nanocrystals
L. Ouyang, R.A. Swain, B.F.P. McVey, F. Delpech, and C. Nayral*
University of Toulouse, France
Advanced Semiconductors III

Room C (Ramada Ballroom 3, 2F)  
June 5 (Wed.) / 09:00~10:30

09:00~09:30  [Invited]  Magnon Spin Transport in Multiferroic Materials  
Tianxiang Nan*  
Tsinghua University, China

Hiroyuki Yoshida*  
Chiba University, Japan

10:00~10:30  [Invited]  Non-planar ALD-NbOx Neuromorphic Devices  
Jaehyun Moon1,2, Ju-Hun Lee1,2, Kitae Kim3, Junho Kim3, Soohyung Park4,5, Yeonjin Yi3, and Seung-Youl Kang1  
1Electronics and Telecommunication Research Institute, Korea, 2University of Science and Technology, Korea, 3Yonsei University, Korea, 4Korea Institute of Science and Technology, Korea, 5KIST School, University of Science and Technology, Korea

Sensor and Flexible Electronics III

Room D (Ramada Ballroom 4, 2F)  
June 5 (Wed.) / 09:00~10:30

09:00~09:30  [Invited]  Automated 2D Materials Fabrication and Application  
Suji Park*, Houk Jang, Kevin G. Yager, Gregory S. Doerk, Aaron Stein, Jerzy T. Sadoski, and Charles T. Black  
Brookhaven National Laboratory, USA

09:30~10:00  [Invited]  Soft Bio-integrated Electronics for Unconventional Brain-machine Interfaces  
Ki Jun Yu*  
Yonsei University, Korea

10:00~10:30  [Invited]  Conformable Electronics for Bio-compatibility  
Wonryung Lee*  
Korea Institute of Science and Technology, Korea
## Carbon Nanostructures and Standardization III

**Room F (Udo Hall, 2F)**  
**June 5 (Wed.) / 09:00~10:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Details</th>
</tr>
</thead>
</table>
| 09:00~09:30 | [Invited] Making Pellicle Using Graphene  
Yong Duck Kwon*  
Graphene Lab, Korea |
| 09:30~10:00 | [Invited] Ambient Energy Harvesting for Self-powered Electronics and Health Monitoring  
Yuljae Cho*  
Shanghai Jiao Tong University, China |
| 10:00~10:30 | [Invited] Functionalization of Group IV Semiconductor Nanowires for Novel Transistor Channels  
Naoki Fukata1,2* and Wipakorn Jevasuwan1  
1National Institute for Materials Science, Korea, 2University of Tsukuba, Korea |

## Industry III

**Room G (Biyang Hall, 2F)**  
**June 5 (Wed.) / 09:00~10:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Details</th>
</tr>
</thead>
</table>
| 09:00~09:30 | [Invited] Metaverse, Global XR Tech. Trend to Watch  
Do Kyoon Kim*  
Samsung Medical Center, Korea |
| 09:30~10:00 | [Invited] X-ray Metrology Solutions for Semiconductor Technology  
Sejeong Park1*, Jeff McCarty1, Mike Noonan1, Markus Kuhn1, and Kiyoshi Ogata2  
1Rigaku Americas, USA, 2Rigaku Corporation, Japan |
Energy Materials and Devices VI

09:00~09:30 [Invited] Tandem Photoelectrochemical Devices for Unassisted Solar Fuel Generation
Byungha Shin*
University of Oxford, UK

09:30~10:00 [Invited] Development of Solution-processed Bi/Sb Solar Cells Using Automated Experiments
Akinori Saeki*
Osaka University, Japan

10:00~10:30 [Invited] High-Temperature (140 degree C) Stable Carbon-Based Perovskite Solar Cells for Commercialization
S. Ito*
University of Hyogo, Japan

Quantum Information and Technology II

09:00~09:30 [Invited] Towards Chip-scale Quantum Memories for a Million Qubits
Jason Smith*
University of Oxford, UK

09:30~10:00 [Invited] Quantum Sensing with Spin Defects in 2D and 1D Materials
Tongcang Li*
Purdue University, USA

10:00~10:30 [Invited] The Impact of Paramagnetic Defects on the Performance of Quantum Devices in Diamond
Hosung Seo1,2*
1Ajou University, Korea, 2Korea Institute of Science and Technology, Korea
# Artificial Intelligence Materials and Devices I

**Room J (Ora Hall, 8F)**  
**June 5 (Wed.) / 09:00~10:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker/Title</th>
</tr>
</thead>
</table>
| 09:00~09:30 | [Invited] Analog Computing with High Precision Enabled by Memristors  
*J. Joshua Yang*  
*University of Southern California, USA* |
| 09:30~10:00 | [Invited] Artificial Synapse Devices with Analog Resistance Change in Metal Oxides for Neuromorphic Computing  
*Tae-Sik Yoon*  
*Ulsan National Institute of Science and Technology, Korea* |
| 10:00~10:30 | [Invited] Artificial Neuron Devices Fully Compatible with CMOS Technology for Neural Processing and Sensing in Neuromorphic Hardware  
*Joon-Kyu Han* |

# Photonics VI

**Room K (Ara Hall, 8F)**  
**June 5 (Wed.) / 09:00~10:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker/Title</th>
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</thead>
</table>
| 09:00~09:30 | [Invited] Exploring Shortwave Infrared Surface Plasmons in Two-Dimensional Mxenes  
*Myung-Ki Kim*  
*Korea University, Korea* |
| 09:30~10:00 | [Invited] Exploring New Optical Resonances with Atomic-size Phase Patterns in Single-layer Transition Metal Dichalcogenides  
John M. Woods¹, Saroj B. Chand¹, Enrique Mejia¹, Ashok Adhikari¹, Takashi Taniguchi², Kenji Watanabe², Johannes Flick¹,³,⁴, and Gabriele Grosso¹*  
¹City University of New York, USA, ²National Institute for Materials Science, Japan, ³Flatiron Institute, USA, ⁴City College of New York, USA |
| 10:00~10:30 | [Invited] Bimetallic Alloy Nanoparticles Decorated Nano-porous ZnO Electrode for H₂ Sensing  
Gaurav Malik and Heedae Kim*  
*Jeonbuk National University, Korea* |
### 2D Semiconductors VII

**Room A (Ramada Ballroom 1, 2F)**

**June 5 (Wed.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
</table>
| 15:00~15:30   | Manipulate Exciton and Polariton Quantum Fluids of Light in TMD Materials | Qihua Xiong*  
Tsinghua University, China                                                                 |
| 15:30~16:00   | Hetero-Exciton Dynamics and Devices for Various Donor-Acceptor Heterostructures | Jinsoo Joo*, Take Joon Kim¹, Sang-hun Lee¹, and Jeongyong Kim²  
¹Korea University, Korea, ²Sungkyunkwan University, Korea                                                                 |
| 16:00~16:30   | In Situ Transmission Electron Microscopy on Two-dimensional Ferroic Chalcogenides | Jiong Zhao*  
The Hong Kong Polytechnic University, Hong Kong, China                                                                 |

### [SS] Continuously Tailored Artificial Atoms with Covalent Nature

**Room B (Ramada Ballroom 2, 2F)**

**June 5 (Wed.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
</table>
| 15:00~15:15   | Enhancing Hole Injection Efficiency at NiMgO – QD Junction in All-Inorganic Quantum Dot Light-Emitting Diodes | Woon Ho Jung¹, Tae Hwan Park², Hyeonjun Lee³, Mahnmin Choi¹, Sohee Jeong¹, Gyu Weon Hwang², and Jaehoon Lim¹  
¹Sungkyunkwan University, Korea, ²Korea Institute of Science and Technology, Korea, ³Korea Advanced Institute of Science and Technology, Korea                                                                 |
| 15:15~15:30   | NIR-SWIR Tetrahedral InAs Quantum Dots: Synthesis and Optical Properties Relative to Spherical Counterparts | Meeree Kim¹, Junho Lee², Jaegwan Jung², Daekwon Shin¹, Eunhye Cho¹, Jugyoung Kim¹, Yaalong Xing³, Hyeonjun Jeong¹, Seongmin Park¹, Sang Ho Oh³, Yong-Hyun Kim²*, and Sohee Jeong¹*  
¹Sungkyunkwan University, Korea, ²Korea Advanced Institute of Science and Technology, Korea, ³Korea Institute of Energy Technology, Korea                                                                 |
| 15:30~15:45   | Probing Surface-originated Quantum Confinement in III-V Colloidal Quantum Dots: First-principles Perspective | Junho Lee¹, Jaegwan Jung¹, Meeree Kim², Sohee Jeong³, and Yong-Hyun Kim¹*  
¹Korea Advanced Institute of Science and Technology, Korea, ²Sungkyunkwan University, Korea                                                                 |
| 15:45~16:00   | Enhancing Image Recognition Rate through Preprocessing Enabled by Dual-Modulating Synaptic Devices | Dong Gue Roe, Sung Joon Cheon, Saechan Yi, and Jeong Ho Cho*  
Yonsei University, Korea                                                                 |
Advanced Semiconductors IV

Room C (Ramada Ballroom 3, 2F) 

June 5 (Wed.) / 15:00~16:30

16:00~16:15 [Invited]  
Quantum Plasmon Resonance of Self-doped Ag2Se Nanocrystals in Mid-infrared Region  
Haemin Song, Jin Hyeok Lee, So Young Eom, Dongsun Choi, and Kwang Seob Jeong*  
Korea University, Korea

16:15~16:30 [Invited]  
Understanding Inorganic Semiconductor Clusters with ab Initio Calculations and Machine Learning  
Byeoksong Lee*, Hyunwook Ha, Doeun Shim, and Joongoo Kang  
Daegu Gyeongbuk Institute of Science & Technology, Korea

15:00~15:30 [Invited]  
Surface Management of Halide Perovskite for Optoelectronic Devices  
Tae-Hee Han*  
Hanyang University, Korea

15:30~16:00 [Invited]  
Charge, Spin, and Phonon in Organic Semiconductors  
S. Watanabe*  
The University of Tokyo, Japan

16:00~16:30 [Invited]  
Single-ion Conducting Borate Network Polymer Electrolytes for Lithium Metal Battery Applications  
Dong-Myeong Shin*  
The University of Hong Kong, China
Sensor and Flexible Electronics IV

Room D (Ramada Ballroom 4, 2F)  June 5 (Wed.) / 15:00~16:30

15:00~15:30
[Invited] High-Mobility P-type 2D Semiconductor Materials
Xiang Chen*
*Nanjing University of Science and Technology, China

15:30~16:00
[Invited] Optical Synaptic Photosensors based on Oxide Semiconductors
Seong Jun Kang*
*Kyung Hee University, Korea

16:00~16:30
[Invited] Direct-Printing More Components onto Large-Area and 3D Electronics
Jimin Kwon*
*Ulsan National Institute of Science & Technology, Korea

[SS] Quantum & Bio Nanophotonics I

Room E (Mara Hall, 2F)  June 5 (Wed.) / 15:00~16:30

15:00~15:30
[Invited] Exciton-polaritons in Perovskite Optical Micro-cavities
Chang-Hee Cho*
*Daegu Gyeongbuk Institute of Science & Technology, Korea

15:30~16:00
[Invited] Quantitative Comparison of EGFR Expression Levels of Optically Trapped Individual Cells Using a Capacitance Biosensor
Tae Young Kang, Soojung Kim, Yoon-Hwae Hwang, and Kyujung Kim*
*Pusan National University, Korea

16:00~16:30
[Invited] High-sensitive Extraordinary Transmission Biosensor with Plasmonic Nanostructures
Seunghun Lee, Soojung Kim, and Kyujung Kim*
*Pusan National University, Korea
Carbon Nanostructures and Standardization IV

Room F (Udo Hall, 2F)  
June 5 (Wed.) / 15:00~16:30

**15:00~15:30 [Invited]**  
China’s Activity in Carbon Nanomaterial Standardization  
Guanglu Ge*  
Chinese Academy of Sciences, China

**15:30~16:00 [Invited]**  
Metallic Contact at the 2D Semiconductor Interfaces  
Won Jong Yoo*  
Sungkyunkwan University, Korea

**16:00~16:30 [Invited]**  
International Standardization Research and Trends of Carbon-Related Materials & Their Applications  
J. Hong*  
Kookmin University, Korea

Industry IV

Room G (Biyang Hall, 2F)  
June 5 (Wed.) / 15:00~16:30

**15:00~15:30 [Invited]**  
Graphene in Next Generation Electronics Devices  
Tom Wilson and Simon Thomas*  
Paragraf, UK

**15:30~16:00 [Invited]**  
Digital Transformation of Sensory Evaluation for Personal Care Products  
Jeong Yu Lee*  
Amorepacific, Korea

**16:00~16:30 [Invited]**  
Atomic Layer Deposition for the Advanced Technology  
Sungjun Jeong*  
Issac Research, Korea
[SS] The 4th Kyoto-SKKU Perovskite International Research Collaboration Center (PIRCC) Workshop

Room H (Tamna Hall, 8F)       June 5 (Wed.) / 15:00~17:00

15:10~15:25
Invited
Dual Strategies with Defect Suppression and Hole Transporting Bilayer for Inverted Perovskite Solar Cell (PCE ~24%)  
Hyoungmin Park, Hyeon Jun Jeong, Yongjae In, Urasawadee Amornkitbamrung, Canjie Wang, and Hyunjung Shin*
Sungkyunkwan University, Korea

15:25~15:40
Invited
Saddle-like Cyclooctatetraene-based Tetrapodal Hole-Collecting Monolayer Materials for Inverted Perovskite Solar Cells  
Minh Anh Truong*, Lucas Ueberricke, Tsukasa Funasaki, Yuta Adachi, Shota Hira, Tomoya Nakamura, Richard Murdey, and Atsushi Wakamiya*
Kyoto University, Japan

15:40~15:55
Invited
Carrier Behavior of Preferred Oriented Alpha-phase FAPbI3 Films  
Hyeon Jun Jeong¹, Soeun Shin¹, Nohyoon Park², Wookjin Chung², Canjie Wang¹, Hyoungmin Park¹, Jooyoung Sung², and Hyunjung Shin**
¹Sungkyunkwan University, Korea, ²Daegu Gyeongbuk Institute of Science and Technology, Korea

15:55~16:10
Invited
Development of Solution-processed Bi/Sb Solar Cells Using Automated Experiments  
Akinori Saeki*
Osaka University, Japan

16:20~16:35
Invited
Surface Properties Modulation for Efficient CsPbX3 Quantum Dot Solar Cells  
Yinyan Xu and Hyunjung Shin*
Sungkyunkwan University, Korea

16:35~16:50
Invited
Bis(pyrrolidino)fullerenes as Electron Transport Materials for Tin Halide Perovskite Solar Cells  
Tomoya Nakamura¹, Takabumi Nagai²m Yuki Miyake¹, Takumi Yamada¹, Yoshihiko Kanemitsu¹, Minh Anh Truong¹, Richard Murdey¹, and Atsushi Wakamiya¹*
¹Kyoto University, Japan, ²HARVES Co., Ltd., Japan
### Quantum Information and Technology III

**Room I (Halla Hall, 8F)**  
**June 5 (Wed.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00~15:30</td>
<td>Coherent Hole Quantum Dot - Photon Interface in Planar Germanium</td>
<td>Won Jin Jang*</td>
<td>École polytechnique fédérale de Lausanne, Switzerland</td>
</tr>
<tr>
<td>15:30~16:00</td>
<td>Quantum Acoustics: Single Electron-deterministic Single Photon Conversion</td>
<td>Seok-Kyun Son*</td>
<td>Kyung Hee University, Korea</td>
</tr>
</tbody>
</table>
| 16:00~16:30   | Partitioning Statistics of a Multi-electron State Driven by a Surface Acoustic Wave | Hermann Sellier1*, J. Shaju1, J. Wang1, H. Edlbauer1, A. Richard1, S. Ota2,3, T. Koderam2, N.-H. Kaneko3, A. Ludwig5, A. D. Wieck5, X. Waintal6, E. Pavlovska7, V. Kashcheyevs7, S. Takada3,4, and C. Bäuerle1 | Université Grenoble Alpes, France,  
Tokyo Institute of Technology, Japan,  
National Institute of Advanced Industrial Science and Technology, Japan,  
Osaka University, Japan,  
Ruhr-Universität Bochum, Germany,  
CEA, INAC-Pheliks, France,  
University of Latvia, Latvia |

### Artificial Intelligence Materials and Devices II

**Room J (Ora Hall, 8F)**  
**June 5 (Wed.) / 15:00~16:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00~15:30</td>
<td>ECRAM Switching Mechanism and Cross-point Array Implementation for AI Computation</td>
<td>Seyoung Kim*</td>
<td>Pohang University of Science and Technology, Korea</td>
</tr>
<tr>
<td>15:30~16:00</td>
<td>Ferroelectric Tunnel Junctions for Memory and Neuromorphic Device Applications</td>
<td>A. Sawa*</td>
<td>National Institute of Advanced Industrial Science and Technology, Japan</td>
</tr>
<tr>
<td>16:00~16:30</td>
<td>Temporal Data Process Using Oxide Electronic Devices for Neuromorphic Computing Application</td>
<td>Jen-Sue Chen*, Fang-Jui Chu, Ching-Hsiang Yang, Yu-Chieh Chen, Ya-Chi Huang, Li-Chung Shih, Kaun-Ting Chen, and Shuai-Ming Chen</td>
<td>National Cheng Kung University, Taiwan</td>
</tr>
</tbody>
</table>
15:00~15:30  Topological Edge Modes in Symmetric Photonic Crystal Slabs
Afshan Begum\textsuperscript{1*}, Yuanzhao Yao\textsuperscript{2}, Takashi Kuroda\textsuperscript{1}, Naoki Ikeda\textsuperscript{1}, Yoshimasa Sugimoto\textsuperscript{1}, Yoshihiro Takeda\textsuperscript{1,2}, Takaaki Mano\textsuperscript{1}, and Kazuaki Sakoda\textsuperscript{1}
\textsuperscript{1}National Institute for Materials Science, Japan, \textsuperscript{2}University of Tsukuba, Japan

15:30~16:00  Topological Leaky-mode-resonance Engineering
Jae Woong Yoon\textsuperscript{*}, Ki Young Lee, Yu Sung Choi, Chan Young Park, and Joong Hyun Pyo
Hanyang University, Korea

16:00~16:30  Current Status of Photonics-based Terahertz Technologies for Industrial Applications
Kyung Hyun Park\textsuperscript{*}, Mugeon Kim, Eui Su Lee, Dong Woo Park, Jungsok Kim, Sungwoo Jo, Da-Hye Choi, Dong Hun Lee, and Il-Min Lee
Electronics and Telecommunications Research Institute, Korea
## 2D Semiconductors VIII

**Room A (Ramada Ballroom 1, 2F) June 6 (Thu.) / 09:00~10:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 09:00~09:30 | [Invited] Visualizing Non-equilibrium Electronic Band Structures of 2D Semiconductors Using Timeresolved ARPES  
Woojoo Lee*  
*Korea Research Institute of Standards and Science, Korea |
| 09:30~10:00 | [Invited] Lithography-free 1D-like Semiconductor Oxides as a Platform for Phonon Polaritons from THz to Mid-IR  
I. D. Barcelos*  
*Brazilian Center for Research in Energy and Materials, Brazil |
| 10:00~10:30 | [Invited] Flattening Conduction and Valence Bands for Interlayer Excitons in Twisted Van Der Waals Bilayers  
A. Chaves1, S. Conti2, M. V. Milosevic2, L. Covaci2, T. Pandey2, F. M. Peeters1,2, and D. Neilson2  
1*Universidade Federal do Ceará, Brazil, 2University of Antwerp, Belgium |

## Advanced Semiconductors V

**Room C (Ramada Ballroom 3, 2F) June 6 (Thu.) / 09:00~10:30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 09:00~09:30 | [Invited] Tuning Spin-Wave Dispersion via Interfacial Interaction  
Ambrose Seo*  
*University of Kentucky, USA |
| 09:30~10:00 | [Invited] Functional Perovskite Oxides with Atomic Gradients  
Daesu Lee*  
*Pohang University of Science and Technology, Korea |
| 10:00~10:30 | [Invited] Role of Defects in the Insulator-Metal Transition Characteristics of Vanadium Dioxide Film  
Dooyong Lee*  
*Kyungpook National University, Korea |
Sensor and Flexible Electronics V

Room D (Ramada Ballroom 4, 2F)  
June 6 (Thu.) / 09:00~10:00

09:00~09:30  [Invited]  
Skin-conformable Sensors and Displays Using Stretchable Polymer Electronic Materials  
Naoji Matsuhisa*  
The University of Tokyo, Japan

09:30~10:00  [Invited]  
Ultrasoft Nanomesh Devices Toward Next-generation Wearable Electronics  
Sunghoon Lee*  
RIKEN, Japan

[SS] Quantum & Bio Nanophotonics II

Room E (Mara Hall, 2F)  
June 6 (Thu.) / 09:00~10:30

09:00~09:30  [Invited]  
Nanomaterial-based X-ray Characterization and Imaging Applications  
Sangeun Cho, Samkyu Noh, Hyunsang Kim, and Hyunsik Im*  
Sookmyung Women’s University, Korea

09:30~10:00  [Invited]  
Polarization and Time-resolved Spectroscopy of Localized States in GaAs Quantum Ring  
Minju Kim, Inhong Kim and Kwangseuk Kyhm*  
Pusan National University, Korea

10:00~10:30  [Invited]  
Triboelectric Nanogenerator for Sensing Applications  
Siju Mishra and Young Dahl Jho*  
Gwangju Institute of Science and Technology, Korea
Carbon Nanostructures and Standardization V

Room F (Udo Hall, 2F)  June 6 (Thu.) / 09:00~10:30

09:00~09:30  [Invited]  Carbon Nanotube-Based Transistors and Circuits for Enhanced Data Density
Bongjun Kim*
Sookmyung Women’s University, Korea

09:30~10:00  [Invited]  Flexible Micro-supercapacitors based on Laser-scribed 3D Graphene Electrodes
Sangyeon Pak*
Hongik University, Korea

10:00~10:30  [Invited]  Chemical Sensor Applications based on Functionalized Graphene
A-Rang Jang*
Kongju National University, Korea

Quantum Information and Technology IV

Room I (Halla Hall, 8F)  June 6 (Thu.) / 09:00~10:30

09:00~09:30  [Invited]  Helium Ion-Implanted Single Spin Defects for Scalable Fabrication in 4H-SiC
Jin-Shi Xu*
University of Science and Technology of China, China

09:30~10:00  [Invited]  Fiber-integrated Quantum Lights and Quantum Sensors
Jehyung Kim*
Ulsan National Institute of Science & Technology, Korea

10:00~10:30  [Invited]  Proposal to Probe neV to μeV Dynamic Spin Interactions in a Semiconductor with Spin-Polarized DC Scanning Tunneling Spectroscopy
Michael E. Flatté*
University of Iowa, USA
Artificial Intelligence Materials and Devices III

09:00~09:30 [Invited] Ferroelectric Retinomorphic Hardware for In-sensor Computing
Ngoc Thanh Duong¹,² and Kah-Wee Ang¹*
¹National University of Singapore, Singapore, ²Sungkyunkwan University, Korea

09:30~10:00 [Invited] Revolutionizing Visual Processing: Harnessing Synaptic Ferroelectric Thin-film Transistors for Neuromorphic In-memory Vision Transformer Systems
E. Park and D. Kwon*
Hanyang University, Korea

10:00~10:30 [Invited] Heterogeneous Integration for Intelligent Sensing
Kyusang Lee*
University of Virginia, USA
2D Semiconductors IX

Room A (Ramada Ballroom 1, 2F) June 6 (Thu.) / 11:00~12:30

11:00~11:30 [Invited] Perovskite Lead Free Thin Film Materials for Electro-Optic Modulation
E. Dogheche*
Université Polytechnique Hauts de France, France

11:30~12:00 [Invited] Engineering Flat Bands in 1T-TaS2
Kyung-Hwan Jin*
Jeonbuk National University, Korea

12:00~12:30 [Invited] Charge Order Phase Control via Uniaxial Strain and Ultrafast Optical Pumping in TbTe3
Soyeun Kim*
Daegu Gyeongbuk Institute of Science & Technology, Korea

Sensor and Flexible Electronics VI

Room D (Ramada Ballroom 4, 2F) June 6 (Thu.) / 11:00~12:00

11:00~11:30 [Invited] Research on Molecular Assembly Enabled Electronic Sensors of Organic Semiconductors
Fengjiao Zhang*
University of Chinese Academy of Sciences, China

11:30~12:00 [Invited] Flexible Transducers for Ultrasound Neuromodulation
Hyunjoo Jenny Lee*
Korea Advanced Institute of Science and Technology, Korea
# Quantum Information and Technology V

**Room I (Halla Hall, 8F)**

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<thead>
<tr>
<th>Time</th>
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<td>11:00~11:30</td>
<td>Hybrid Acoustic Devices based on Compound Semiconductors</td>
<td>H. Yamaguchi*, R. Ohta, D. Hatanaka, and H. Okamoto</td>
<td>NTT Corporation, Japan</td>
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<tr>
<td>11:30~12:00</td>
<td>Hybridizing Quantum Devices for Quantum Technologies</td>
<td>Jinwoong Cha*</td>
<td>Korea Research Institute of Standards and Science, Korea</td>
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<tr>
<td>12:00~12:30</td>
<td>Recent Advances on Light Sources for Quantum Photonics</td>
<td>Jean-Michel Gérard*</td>
<td>Université Grenoble Alpes, France</td>
</tr>
</tbody>
</table>
Artificial Intelligence Materials and Devices IV

Room J (Ora Hall, 8F)  June 6 (Thu.) / 11:00~12:30

11:00~11:30  Lessons from Animal Vision: Towards Diversity of Robot Cameras
[Invited]
Young Min Song*
Gwangju Institute of Science and Technology, Korea

11:30~12:00  Skyrnion-based Spintronic Devices for Neuromorphic Computing
[Invited]
Seungmo Yang*, Kyoung-Woong Moon, and Chanyong Hwang
Korea Research Institute of Standards and Science, Korea

12:00~12:30  Research Trends in Next-Generation Memory Devices for Energy-Efficient Intelligent Semiconductor System
[Invited]
Min-Hwi Kim*
Chung-Ang University, Korea
[P1] Poster Session I

Lobby (2F)  
June 4 (Tue.) / 17:00-18:30

Advanced Semiconductors (AS)

[P1_AS_0009] Impact of T-gate Head Size on the Device Performance and Radiation Tolerance in LG = 0.15 μm GaN-based HEMTs
S.-J. Chang*, D.-S. Kim², H.-W. Jung¹, D. Kim¹, I.-G. Choi¹, Y.-S. Noh¹, S.-H. Lee¹, S.-I. Kim¹, H.-K. Ahn¹, J.-W. Lim¹, and D.-M. Kang¹
¹Electronics and Telecommunications Research Institute, Korea, ²Korea Atomic Energy Research Institute, Korea

[P1_AS_0024] Fast and Lower Power Consumption Characteristics of In-Sb-Te Phase Change Random Access Memory
Yong Tae Kim* and Jinho Ahn
Hanyang University, Korea

Yong Tae Kim* and Jinho Ahn
Hanyang University, Korea

[P1_AS_0036] Exploring Composition-Dependent Characteristics in B-rich B-Te Ovonic Threshold Switching Materials and Devices
Hoedon Kwon, Kwangsik Jeong, Yeonwoo Seong, and Mann-Ho Cho*
Yonsei University, Korea

[P1_AS_0053] Electrical Characterization of Flash Memory-based Synaptic Single Devices Using Liganded Quantum Dots
Jaemin Kim, Soyeon Jung, Taehwan Koo, Hyeongjin Chae, and Moongyu Jang*
Hallym University, Korea

[P1_AS_0054] Fabrication of Synaptic Transistors with a Mesh Island-based Platinum Floating Gate to Improve Yield
Soyeon Jung, Jaemin Kim, Hyeongjin Chae, Taehwan Koo, and Moongyu Jang*
Hallym University, Korea

[P1_AS_0061] Transient Ordering in Ovonic Threshold Switch Materials
Yeonwoo Seong¹, Changwoo Lee¹, Hoedon Kwon¹, Hyeonwook Lim¹, Dogeon Yang¹, Ho jun Lee*, Kwangsik Jeong², and Mann-Ho Cho¹*
¹Yonsei University, Korea, ²Dongguk University, Korea

[P1_AS_0084] Vertical Organic Permeable base Transistors with the O₂ Plasma Oxidation in Permeable base Electrode
In-Hye Lee and Kyung-Geun Lim*
Korea Research Institution of Standards Science, Korea
[P1_AS_0104] Vertical 3-terminal Photonic Detectors based on Organic Permeable Base Transistor

Su-Hyeon Lee1,2 and Kyung-Geun Lim*
1Korea Research Institute of Standards and Science, Korea, 2Hanyang University, Korea

[P1_AS_0105] Vertical Organic Transistor with Nanoscale Channels for Nonvolatile Memory

Hyeonsam Goh1,2 and Kyung-Geun Lim*
1Yonsei University, Korea, 2Korea Research Institute of Standards and Science, Korea

[P1_AS_0125] In-situ Investigation of Reversible Phase Transition in Temperature/Humidity for Short Organic Spacer-based 2D Perovskites

Aelim Ha1, Kitae Kim1,2, Seunghwan Kim1, and Soohyung Park*
1Korea Institute of Science and Technology, Korea, 2Yonsei University, Korea


Sooyeon Pak1, Seungyoon Yoo1, Kitae Kim1,2, Wonsik Kim1, Namhee Kwon1, Seunghwan Kim1,
Donggeun Shin2, and Soohyung Park*
1Korea Institute of Science and Technology, Korea, 2Yonsei University, Korea

[P1_AS_0129] Study of Defect-Induced Changes in CoNb2O6 Using Raman and IR Spectroscopy with Two-Dimensional Correlation Spectroscopy

Joohee Park1, Sojeong Ko1, Qiu Jin1, Hanseul Cho1, Songhee Lee1, Seungmin Bae2, Myunghwa Kim1,
and Seokhyun Yoon1*
1Ewha Womans University, Korea, 2Tohoku University, Japan

[P1_AS_0135] Doping-Induced Defect Passivation in Two-Dimensional Ruddlesden–Popper Perovskites for Enhanced Optoelectronic Device Design

Eunki Yoon1, Kitae Kim1,2, and Soohyung Park*
1Korea Institute of Science and Technology, Korea, 2Yonsei University, Korea

[P1_AS_0148] Damage-Free Laser Etching of Single Layer TMD

Subin Choi and Hye Min Oh*
Kunsan National University, Korea

[P1_AS_0182] Study the Defects in GaSb Material System by Optical Energy Modulation Method

Shubham S Pawar1, Jong Su Kim1,*, Behnam Zeinalvand Farzin1, and Sang Jun Lee2
1Yeungnam University, Korea, 2Korea Research Institute of standards and science, Korea

[P1_AS_0191] Investigation of the Correlation Between Defects and Photoreflectance Spectroscopy Properties in InAsxP1-x Metamorphic Buffer Structure

Gyoung Du Park1, Geun Hyeong Kim1, Tae In Kang1, Jong Su Kim1,*, and Sang Jun Lee2
1Yeungnam University, Korea, 2Korea Research Institute of Standards and Science, Korea

[P1_AS_0192] Investigation of Quantum Dot Size Dependent Strain Effects in InAs/GaAs Quantum Dots Through Interface Electric Field

Hwijun Kim, Gyoung Du Park, Jung Su Kim1, and Taein Gang
Yeungnam University, Korea
[P1_AS_0193] Investigation of the Optical Properties of InAs/InAsPSb Multi-quantum Well Structure
Jong Du Kim1, Gyoung Du Park1, Tae In Kang1, Jong Su Kim1*, Sang Jun Lee2, and Phuc Dinh Nguyen2
1Yeungnam University, Korea, 2Korea Research Institute of Standards and Science, Korea

[P1_AS_0195] Dark Current Analysis According to the Doping Concentration of the Barrier in the nBn Detector
Jong Hun Lee1, Geun Hyeong Kim1, Ji Seong Go1, Gyeung Du Park1, Jong Su Kim1*, Sang Jun Lee2, and Dong Wan Kim2
1Yeungnam University, Korea, 2Korea Research Institute of Standards and Science, Korea

[P1_AS_0197] A Study on the Optical Characteristics of InGaAsSb Infrared Light-emitting Diodes (IR LEDs) with Respect to the Thickness of Multiple Quantum Wells (MQWs)
Chang Hyung Sung1, Tae In Kang1, Ji Seong Go1, Gyoung Du Park1, Jong Won Cha1, Jong Su Kim1*, and Sang Jun Lee2
1Yeungnam University, Korea, 2Korea Research Institute of Standards and Science, Korea

[P1_AS_0202] Investigation of MQW LED Sample Interface Quality Through Electrical and Optical Measurements
Jiseong Go1, Taein Kang1, Geun Hyeong Kim1, Jonghun Lee1, Jong Su Kim1*, Sang Jun Lee2, and Dongwan Kim2
1Yeungnam University, Korea, 2Korea Research Institute of Standards and Science, Korea

[P1_AS_0206] Atomic-scale Interface Modification for Strong Random Telegraph Noise at Room Temperature in Complex Oxides
Doyeop Kim and Hyungwoo Lee*
Ajou University, Korea

[P1_AS_0207] Charge Localization Dynamics Induced by Oxygen Vacancies Surface of LaAlO3 Thin Films
Sungjun Choi1 and Hyungwoo Lee1,2*
Ajou University, Korea

[P1_AS_0211] Probing Local Electronic Structure of Amorphous MgO Thin Films by Angle Dependent Soft X-ray Absorption Spectroscopy: Impact of Heavy Ions
Jitendra Pal Singh1, Manish Kumar2, Weon Cheol Lim3, Sanjeev Gautam4, K. Asokan5,6, Sangsul Lee2, and Keun Hwa Chae3*
1Manav Rachna University, India, 2Pohang University of Science and Technology, Korea, 3Korea Institute of Science and Technology, Korea, 4Panjab University, India, 5Inter-University Accelerator Center, India, 6University of Petroleum and Energy Studies De

[P1_AS_0217] Characterization of the Low-Temperature Dielectric Function of SnSe Using Spectroscopic Ellipsometry
X. A. Nguyen1, T. J. Kim1*, V. L. Le2, J. Choi1, and Y. D. Kim1
1Kyung Hee University, Korea, 2Vietnam Academy of Science and Technology, Vietnam

Yewon Lee1, SunHwa Gu1, Jaemin Kim1, Damun Heo1, Jaewon Choi1, Chuntae Kim2, Won-Geun Kim3, and Jongmin Lee1*
1Hallym University, Korea, 2Pusan National University, Korea, 3Kumoh National Institute of Technology, Korea
Solution Evaporation-based 3D Printing Technology for the Fabrication and Liquid Crystallinity Evaluation of Sunset Yellow-Integrated Nanostructures

Damun Heo, SunHwa Gu, Yewon Lee, Jaemin Kim, Hyeonseok Seo, Jaewon Choi, Silalahi Vanna Christmas, Sung-yoon Joe, and Jongmin Lee*
Hallym University, Korea

3D Nano-printing for Fabrication of Quantum Dot-based Microstructures

SunHwa Gu, Yewon Lee, Damun Heo, Sung-yoon Joe, Vanna Christmas Silalahi, Hyeonseok Seo, and Jongmin Lee*
Hallym University, Korea

Near-Infrared Photodetection in Complex Oxide Heterostructures by Interfacial Band Alignments

Sanghyeok Ryoo and Hyungwoo Lee*
Ajou University, Korea

Ambipolar Transistors and Logic Circuits through Backbone Alignment of Conjugated Polymer Semiconductors

Nak Hee Kang, Jin Seok Yoon, Sang Hwa Song, U Seong Jin, Min Jung Kim, Hyung Soo Ahn, Won Bae Cho, and Young Tea Chun*
National Korea Maritime and Ocean University, Korea

Characterization of Optical Gain and Loss of Halide Perovskite Films for Optimal Cavity Design

Hyeonji Lee and Kwangdong Roh*
Ewha Womans University, Korea

Advancements in Meniscus-Guided 3D Printing for the Construction of Gold Nanoparticle-Based Architectures

Hyeonseok Seo, Damun Heo, SunHwa Gu, Yewon Lee, Jaewon Choi, and Jongmin Lee*
Hallym University, Korea

Selective-area Growth of GaN on Graphene for Exfoliable Micro-pyramidal GaN Structures

Jeongho Kim, Baul Kim, and Yong-Hoon Cho*
Korea Advanced Institute of Science & Technology, Korea

Highly Efficient Hybrid Light-Emitting Transistors Introducing Lithium and Copper(II) Poly(Styrene Sulfonate) as the Hole Injection Layers

Yu Jung Park, Jin Hee Lee, Aeran Song, Kwun-Bum Chung, Bright Walker, and Jung Hwa Seo*
University of Seoul, Korea

Impact of Fluorination in the Organic Spacer on Excitonic Properties of (A)₂PbI₄ (A = PEA = C₆H₁₂N, FPEA = C₆H₁₁NF)

Sihyung Kang¹, Donggyu Kim¹, Donggyu Lee², Eunji Lee³, Jeongyong Kim³, Yeonjin Yi², and Joon Ik Jang¹*
¹Sogang University, Korea, ²Yonsei University, Korea, ³Sungkyunkwan University, Korea
**Anomalous Behaviors of Temperature-dependent Second Harmonic Generation Response and Photoluminescence in BA\textsubscript{2}Ge\textsubscript{4}Kyeong-Hyeon Lee\textsuperscript{1}, Jeong Bin Cho\textsuperscript{1}, Zhu Guo\textsuperscript{2}, Lingling Mao\textsuperscript{2}, Constantinos C. Stoumpos\textsuperscript{3}, and Joon I. Jang*\textsuperscript{1}\
\textsuperscript{1}Sogang University, Korea, \textsuperscript{2}Southern University of Science and Technology, China, \textsuperscript{3}University of Crete, Greece**

**Characterization of Polarization States in Sliding Ferroelectric Materials via Piezoelectric Force Microscopy and Kelvin Probe Force Microscopy**
Saea Kim, June Hee Shin, Tae Hyun Jung, Siwon Jeong, Hyobin Yoo, and Sang Mo Yang*
Sogang University, Korea

**Elucidating Hole Depletion Effect at NiO\textsubscript{x}/Perovskite Interface of Inverted Perovskite Solar Cells**
Hanseul Lee\textsuperscript{1,2}, Hye Ri Jung\textsuperscript{1}, Namhee Kwon\textsuperscript{1}, Sooyeon Pak\textsuperscript{1}, Soohyung Park\textsuperscript{1}, Sang Hoon Kim\textsuperscript{1}, and Gee Yeong Kim*\textsuperscript{1}\textsuperscript{1}Korea Institute of Science and Technology, Korea, \textsuperscript{2}Korea University, Korea

**Polarization Control of Photocurrents in KNiF\textsubscript{3}/BaTiO\textsubscript{3} Composite Ceramics**
Gwangbo Sim, Chang Won Ahn, Ill Won Kim*, and Tae Heon Kim*
University of Ulsan, Korea

**New Material for Hole Transport Layer in Next-generation Solar Cells**
Sujin Jang, Seunhyun Cho, Jinhyeong Byeon, and Yongjei Lee*
Kunsan National University, Korea

**Properties of SiO\textsubscript{2} Thin Films Deposited by Atomic Layer Deposition on Depending on Growth Temperature**
Jin Hyung Byun, Seung Hyun Cho, Yong Jei Lee*, and Jung Yup Yang*
Kunsan National University, Korea
[P1_QI_0037] The Impact of Paramagnetic Defects on the Decoherence Dynamics of Nitrogen-vacancy Center in Diamond
Huijin Park¹,², Hyeonsu Kim¹, Ha-young Jeong³, Junghyun Lee⁴, Sangwon Oh⁴, Giulia Galli²,⁵, and Hosung Seo¹,³*
¹Ajou University, Korea, ²University of Chicago, USA, ³Korea Institute of Science and Technology, Korea, ⁴Korea Research Institute of Standards and Science, Korea, ⁵Argonne National Laboratory, USA

[P1_QI_0127] Time-Domain Coherent Control of Magnon Interference in a Photon-Magnon Hybrid System
Moojune Song¹,²*, Tomas Polakovic¹, Jinho Lim³, Thomas W. Cecil¹, John E. Pearson¹, Ralu Divan¹, Wai-Kwong Kwok¹, Ulrich Welp¹, Axel Hoffmann³, Kab-Jin Kim², Valentine Novosad¹, and Yi Li¹
¹Argonne National Laboratory, USA, ²Korea Advanced Institute of Science and Technology, Korea, ³University of Illinois Urbana-Champaign, USA

[P1_QI_0389] Piezoelectric Platform for Phonon-magnon Quantum Hybrid
Minwoo Yu and Junho Suh*
Pohang University of Science and Technology, Korea

[P1_QI_0396] Nonreciprocal Multimode Phonon Transport in Microwave Optomechanical System at Room Temperature
Mungyeong Jeong and Junho Suh*
Pohang University of Science and Technology, Korea

[P1_QI_0398] Complex Oxide Membrane for Microwave Optomechanics
Kiryang Park and Junho Suh*
Pohang University of Science and Technology, Korea

[P1_QI_0411] Exploring Quantum Bulk Acoustic Wave Resonator with Millimeter Waves
Changjoo Lee and Junho Suh*
Pohang University of Science and Technology, Korea

[P1_QI_0461] Eshyana: The Quantum Computer Simulator Exploring the Inner Workings of Quantum Computer
Habibur Rahman*, Omar Faroque², and Jaeho Kim¹
¹Gyeongsang National University, Korea, ²University of Texas at Austin, USA

[P1_QI_0492] Perovskite Single Photon Emitter with Cavity Coupled and Site Controlled Using Nanoscale-Focused Pinspot Technique
Junhui Lee¹, Seongmoon Jun¹, Jinu Park², Hyemin Kim¹, Byungsu Kim¹, Baul Kim¹, Byungha Shin², and Yong-Hoon Cho¹*
Korea Advanced Institute of Science & Technology, Korea

[P1_QI_0519] Mitigating Detuning Error of Single Qubit Gate via Pulse-shaped Microwave
Hyein Lee, Hyunsoo Kim, Hyerin Kim, Jieun Yoo, and Taeyoung Choi*
Ewha Womans University, Korea
2D Semiconductors (2D)

[P1_2D_0008] Gate-Tunable Photodetection Performance of In-situ Core/Shell Perovskite/MoS₂ Heterostructure Phototransistor
Jinwoo Sim¹, Sunggyu Ryoo¹, Joo Sung Kim¹, Juntae Jang¹, Tae-Woo Lee¹, Kyungjune Cho², Keehoong Kang¹, and Takhee Lee*¹
¹Seoul National University, Korea, ²Korea Institute of Science and Technology, Korea

[P1_2D_0013] Fabrication of Thin Film Device Using Mxene Quantum Dots
Trang Thu Tran, Anir S. Sharbirin, M. Annas S. M. Ariffin, and Jeongyong Kim*
Sungkyunkwan University, Korea

Anir S. Sharbirin, Afrizal Lathiful Fadli, and Jeongyong Kim*
Sungkyunkwan University, Korea

[P1_2D_0019] Wide-range and Multi-bit Optoelectronic Memory Utilizing a Tellurene Floating-gate in a 2D vdW Heterostructure
Thi Phuong Anh Bach, Duc Anh Nguyen, Hyungsang Kim, and Hyundai Im*
Dongguk University, Korea

[P1_2D_0033] Titanium Carbonitride (Ti3CN) Mxene Quantum Dots for Fluorometric Sensing of Heavy Metal Ions
M. Annas S. M. Ariffin, Anir S. Sharbirin, Afrizal Lathiful Fadli, and Jeongyong Kim*
Sungkyunkwan University, Korea

[P1_2D_0041] Inactivation of the One-dimensional Defect in Wse₂ by Regio-selective Reaction of Large Organic Ligand
Taehoon Kim¹, Jae Young Park¹, Byeong Geun Jeong³, Dohyeon Lee¹, Deogkyu Choi¹, Bora Kim¹, Dong Hyeon Kim³, Jundeun Song², Hayoung Ko², Ki Kang Kim³, Jooyoung Sung⁴*, Dong-Wook Kim²*, and Mun Seok Jeong¹*¹
¹Hanyang University, Korea, ²Ewha Womans University, Korea, ³Sungkyunkwan University, Korea, ⁴DGIST, Korea

[P1_2D_0042] Photocurrent Reduction in Localized Charge Accumulation Region of Metal-MoS₂ Junction
Deogkyu Choi¹, Seungho Bang¹, Juchan Lee¹, Chaewon Lee¹, Jieun Jo¹, Chan Kwon¹, Hayoung Ko², Ki Kang Kim², Jinho Ahn¹, Eun Kyu Kim¹, and Mun Seok Jeong¹*
¹Hanyang University, Korea, ²Sungkyunkwan University, Korea

[P1_2D_0045] Passivation of Metal Monochalcogenide Using PMMA/BV Composite for Air Stability
Jieun Jo, Chan Kwon, Hyeon Jung Park, Dae Young Park*, and Mun Seok Jeong*
Hanyang University, Korea

[P1_2D_0046] Unlocking the Potential of 2D Tellurium for p-Type FETs through Amorphization
Chaewon Lee¹, Seungho Bang¹, Dae Young Park¹, In Cheol Choi², and Mun Seok Jeong¹*
¹Hanyang University, Korea, ²Sungkyunkwan University, Korea
**Switching Dynamics in CIPS-Based Ferroelectric Field-Effect Transistors**

Young Joo Yu, Seungho Bang, Dohyeong Kim, Chaewon Lee, and Mun Seok Jeong*

*Hanyang University, Korea

**Persistent Photocurrent effect by Charge Trapping in 2D Semiconductor-Organic Hybrid System**

Dohyeong Kim¹, Wooyoung Kang¹, Chan Kwon¹, Hayoung Ko², Kikang Kim², Seungho Bang¹, and Mun Seok Jeong¹*

¹Hanyang University, Korea, ²Sungkyunkwan University, Korea

**Transition Metal Dichalcogenides/Gold Nanoparticle Plasmonic Structure Through Reversible Phase Transition**

Dohyeon Lee, Taehoon Kim, Hyeong Chan Suh, Dae Young Park, and Mun Seok Jeong*

*Hanyang University, Korea

**Tuning the In-Plane Resistive Switching of CuInP2S6 for Non-Volatile Memory**

Wooyoung Kang, Seungho Bang, and Mun Seok Jeong*

*Hanyang University, Korea

**Strain-Modulated Changes in Orientation States of Ferroelastic 1T’ MoTe2**

Woochan Koh, Hyeon-Sik Kim, Gihyeon Kwon, Kwangskik Jeong, Hyunjun Park, and Mann-Ho Cho*

*Yonsei University, Korea

**Exploring Electrical Properties of Two-dimensional Semiconductor Field Effect Transistors with Topological Insulator Bismuth-antimony Alloy Contacts**

Hyunjun Park, Gihyeon Kwon, Woochan Koh, and Mann-Ho Cho*

*Yonsei University, Korea

**Remote Polarization Modulation of Metal Monochalcogenide**

Chan Kwon, Hyeon Jung Park, Dae Young Park, Jieun Jo, and Mun Seok Jeong*

*Hanyang University, Korea

**Influences of Plasmonic Nanowires on Optical and Electrical Properties of MoS2 Monolayers**

Jungeun Song, Jungyoon Cho, Anh Thi Nguyen, Nahyun Kim, and Dong-Wook Kim*

*Ewha Womans University, Korea

**Low–temperature Raman Measurement of TiTe2 for Identification of CDW Phase**

Shamima Afroz, Anir S. Sharbirin, and Jeongyong Kim*

*Sungkyunkwan University, Korea

**Observation of Charge Transfer Excitons in 2D Tellurium with PVP as Capping Ligand**

In Cheol Choi¹,², Dae Young Park², Kang-Nyeoung Lee³, Dong Hyeon Kim²,³, Chae Won Lee², Hyung Mo Jeong¹,², and Mun Seok Jeong²*

¹Sungkyunkwan University, Korea, ²Hanyang University, Korea
Determining the Twisted Angle of Moiré 2-D Material via Polarized Raman Spectroscopy

Ji Hong Kim¹, Hyeong Chan Suh¹, Dong Hyeon Kim², Dohyeon Lee¹, Da Yong Le¹, and Mun Seok Jeong∗

¹Hanyang University, Korea, ²Sungkyunkwan University, Korea

Enhancement of Interlayer Exchange Coupling via Intercalation in 2D Magnetic Bilayers: Towards High Curie Temperature

Suman Mishra¹, In Kee Park¹, Saqib Javaid¹, Saqib Javaid¹, Seung Hwan Shin³, and Geunsik Lee∗

¹Ulsan National Institute of Science and Technology, Korea, ²PINSTECH, Pakistan, ³Korea University, Korea

The Study of Terahertz Conductivity of Ruddlesden-Popper Perovskites

Junho Ryeom¹, Dae Young Park¹, Young-Mi Bahk², Geunchang Choi³*, and Mun Seok Jeong∗

¹Hanyang University, Korea, ²Incheon National University, Korea, ³Chung-Ang University, Korea

Mitigating Substrate Effects of the Van Der Waals Semiconductors Using Perfluoropolyether Self-assembled Monolayers

Hyeong Chan Suh¹, Dae Young Park¹, Ju Chan Lee², Jaekak Yoo²,³, Seo Ho Choi², Ki Kang Kim², Seung Mi Lee³, Seong Chu Lim², and Mun Seok Jeong∗

¹Hanyang University, Korea, ²Sungkyunkwan University, Korea, ³Korea Research Institute of Standards and Science, Korea

Mxene-Based Flexible Electrodes: A Promising Alternative to Metal Electrodes

Jiseong Jang¹,², Hyeon Jung Park², Hyunsoo Kim³, Gabriel Jang², Jinpyo Hong², Hongseok Oh³, and Mun Seok Jeong∗

¹Sungkyunkwan University, Korea, ²Hanyang University, Korea, ³Soongsil University, Korea

Highly Sensitive Nano Thermometry based on Dual Emission of Nitride Mxene (Ti₂N) Quantum Dots

Afrizal Lathiful Fadli, Anir S. Sharbirin, Muhammad Annas Syukhri, and Jeongyong Kim*

Sungkyunkwan University, Korea

2D MoS₂ Field Effect Transistor with Asymmetric Contact

Jinhyeok Pyo and Sangyeon Pak*

Hongik University, Korea

Observation of Moiré Superlattice Domains on Twisted Transition Metal Dichalcogenides using Scanning Electron Microscope

Taehyung Kim¹, Kwanghee Han¹, Mengqi Fang², Euihyeok Yang², Kenji Watanabe³, Takashi Taniguchi³, and Young Duck Kim∗

¹Kyung Hee University, Korea, ²Stevens Institute of Technology, USA, ³National Institute for Materials Science, Japan

Sub-1V Operation of Memristor Devices via Vacancy Controlled MoS2

Sohyeon Park, Seonyou Park, and Sangyeon Pak*

Hongik University, Korea
[P1_2D_0124] Electrode Metal Dependence of h-BN Encapsulated Wse₂ Field-effect Transistors
SungHa Kim, SeongYeon Lee, and KiJu Yee*
Chungnam National University, Korea

[P1_2D_0138] Nanoscopic Characterizations of MoS₂/Au-Nanostructures Fabricated by Metal-Assisted Exfoliation and Transfer Techniques
Jungyoon Cho, Anh Thi Nguyen, Nahyun Kim, Jungeun Song, and Dong-Wook Kim*
Ewha Womans University, Korea

[P1_2D_0179] Activating Basal Plane of MoS₂ Crystal by Creating High Density and Highly Strained Wrinkle
Jaesik Eom, Jungmoon Lim, Jaeseok Kim, and SeungNam Cha*
Sungkyunkwan University, Korea

[P1_2D_0189] Local Defect-Engineering in Monolayer MoS₂ Through Sulfur Vacancies Controlling With Dip-Pen Nanolithography
Jinho Lee, Jeong-Sik Jo, Do Wan Kim, and Jae-Won Jang*
Dongguk University, Korea

[P1_2D_0216] Effects of Contact Resistance on Vertical Carrier Density Profile and Surface Defect Density of Wse₂ multilayers
Dahyun Choi, Hyejin Kim, and Min-Kyu Joo*
Sookmyung Women’s University, Korea

[P1_2D_0441] Photodetector Based on Wse₂/MoS₂ van der Waals Heterostructures Using Laser Driven Light Source for Broadband Wavelength Measurements
Jae Joon Kim and Soobong Choi*
Incheon National University, Korea

[P1_2D_0446] Manipulating Rashba Excitons in Ferroelectric Two-Dimensional Perovskites
Taejin Lee, Hyeon-Seo Choi, Hyeonjong Jeong, Young-Jun Lee, Jin-Woo Jung, and Chang-Hee Cho*
Daegu Gyeongbuk Institute of Science and Technology, Korea

[P1_2D_0447] Guided Exciton Polaritons in hBN-encapsulated WS₂ Multilayers
Ho Seung Lee, Junghyun Sung, Dong-jin Shin, and Su-Hyun Gong*
Korea University, Korea

[P1_2D_0452] Rabi Oscillations of Exciton-polariton in Phase-changing Perovskite Microcavities
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[P1_2D_0459] Surface Lattice Resonance Enhanced Photoluminescence of a MoSe₂ Monolayer and its Long-range Propagation
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¹Pohang University of Science and Technology, Korea, ²ITMO University, Russia
[P1_2D_0495] Control of Valley Splitting by Proximity Effect with Heterostructure of TMDs on Ferrite Thin Film
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Sungkyunkwan University, Korea

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1Sungkyunkwan University, Korea, 2Institute for Basic Science, Korea, 3UlSAN National Institute of Science and Technology, Korea, 4Sookmyung Women's University, Korea, 5UlSAN National Institute of Science and Technology, Korea, 6Chinese Academy of Science

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1Korea Advanced Institute of Science and Technology, Korea, 2Seoul National University, Korea

[P1_2D_0616] Vapor-Confined Chemical Vapor Deposition: A Novel Approach for the Fabrication of Large-Area 2D Non-layered Materials
Jiha Kim1, Eunbin Son1, and Hyesung Park2*
1Ulsan National Institute of Science and Technology, Korea, 2Korea University, Korea

[P1_2D_0677] Raman Spectroscopy of Twisted Bilayer ReS2
Daekwon Lee1, Taegon Lee1, Krishna P Dhakal2, Trang Thu Tran2, Jeongyong Kim2, and Heesuk Rho1*
1Jeonbuk National University, Korea, 2Sungkyunkwan University, Korea

[P1_2D_0687] Enhanced Subthreshold Slope in Black Phosphorus-Tin Diselenide Heterostructure Tunneling Field-Effect Transistors
Seunghyun Oh, Hyeonseo Lee, and Junhong Na*
Kangwon National University, Korea
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1University of Ulsan, Korea, 2Korea Institute of Energy Technology, Korea

Self-rectifying Memristors of Halide-Perovskite Artificial Synapses with Synaptic Weight Modulation for Neuromorphic Computing
Young Ran Park* and Gunuk Wang
Korea University, Korea

Improvement of SNN Pattern Recognition Using Complementary Images
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Sejong University, Korea

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Eojin Lee, Inhwa Lee, Deuk Young Kim, Youngmin Lee, and Sejoon Lee*
Dongguk University, Korea

Synapse Characteristics of Au/LiNbO₃/Pt Memristors Based on Schottky-Nordheim Junction
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Dongguk University, Korea

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Juho Yun, Seung Min Yang, Deuk Young Kim, Youngmin Lee, and Sejoon Lee*
Dongguk University, Korea

High-Performance Memristive Synapses Based on Au/ZnVO/Pt Ferroelectric Schottky Junction
Jiwoon Jung, Jin Hyeok Pak, Deuk Young Kim, Youngmin Lee, and Sejoon Lee*
Dongguk University, Korea

Bayesian Optimization for High Quality SiNx Film in Low Temperature by PECVD
Seong Min Park1, 2, Da Yeon Yang1, 2, Min Mo Goo1, Chan Young Ju1*, and Tae Hoon Seo1*
1Korea Institute of Industrial Technology, Korea, 2Chonnam National University, Korea

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Yeon Seo An1, Mingyu Kim1, Dowon Kim2, Byunggeun Lee2, and Gunuk Wang1*
1Korea University, Korea, 2Gwangju Institute of Science and Technology, Korea
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H. Shin¹, H. Cho¹, D. H. Kim², T. W. Kim³, and G. Wang¹,²*

¹Korea University, Korea, ²Korea Institute of Science and Technology, Korea, ³Jeonbuk National University, Korea

[P1_Al_0680] High-Reliability and Self-Rectifying Alkali Ion Memristor through Bottom Electrode Design

Byeong Min Lim and Hong Sub Lee*

Kyung Hee University, Korea

[P1_Al_0751] Ultra-flexible Metal-oxide Memristive Reservoir for Real-time E-skin Data Processing

Haein Cho, Hyojin Shin, and Gunuk Wang*

Korea University, Korea
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[P1_PH_0112] Enhanced Stability of Lead-free Halide Nanocrystals by Capping with Polymer for X-ray Scintillator
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[P1_PH_0168] Measurement Method of Effective Internal Optical Power and Internal Quantum Efficiency for Semiconductor Photonic Devices
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[P1_PH_0213] CsPbBr$_3$ Perovskite Polariton Devices Fabricated by Transfer Method
Jung-Gyu Park¹, Hyeon-Seo Choi², Chang-Hee Cho², and Jang-Won Kang¹*
¹Mokpo National University, Korea, ²Daegu Gyeongbuk Institute of Science & Technology, Korea

[P1_PH_0234] Optoelectronic Memory Device Applications based on Electric Fieldinduced Metal-insulator Transition in Single-crystalline VO$_2$ Films
Ki Hoon Shin¹, Eunmin Kim¹, Sumin Jeong¹, Woong-Ki Hong²*, and Jung Inn Sohn¹*
¹Dongguk University, Korea, ²Korea Basic Science Institute, Korea

[P1_PH_0242] Broadband Critical Coupling Ring-resonator System Enabled by Potential Modulated Topological Waveguide
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[P1_PH_0257] Efficiency Enhancement of Perovskite Light-Emitting Diodes through Defect Passivation
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[P1_PH_0261] Color Temperature Tunable White Light-Emitting Cs$_3$Cu$_2$(Cl$_x$I$_{1-x}$)$_5$ Nanoparticles
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[P1_PH_0262] Surface Passivation for Highly Luminescent Blue Light Emitting CsPbBr$_3$ Perovskite Quantum Dots
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Seoul National University of Science and Technology, Korea
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$^1$Korea University, Korea, $^2$Sungkyunkwan University, Korea

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Hanyang University, Korea

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$^1$Ulsan National Institute of Science and Technology, Korea, $^2$Hanyang University, Korea, $^3$Korea University, Korea

Exceptional Transition-Based Bio-Molecules Detection Using Non-Hermitian Metasurfaces
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$^1$University of Ulsan, Korea, $^2$Korea Advanced Institute of Science and Technology, Korea

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$^1$Pohang University of Science and Technology, Korea, $^2$California Institute of Technology, USA, $^3$Samsung Advanced Institute of Technology, Korea, $^4$Korea Institute of Science and Technology, Korea, $^5$Jeonbuk National University, Korea, $^6$Institute for Basic S
Jin Yong Jeong and Soobong Choi*
Incheon National University, Korea

[P1_PH_0477] Broadband Terahertz Beam Splitting Using Copper Sulfide (CuS) Nanosheet Film
Jae Yeong Lee¹, Sungsan Kang², Hyeongi Park¹, Su Jeong Park¹, Sangyeon Pak², and Teun-Teun Kim*
¹University of Ulsan, Korea, ²Hongik University, Korea

[P1_PH_0744] Development of Water-Resistant, Highly Dispersed, and Highly Emissive Perovskite Composite for Advanced Display Technologies
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Kookmin University, Korea

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Jeong In Jeon1, Dong Il Kim2, Jin Pyo Hong2*, and John Hong1*
1Kookmin University, Korea, 2Hanyang University, Korea

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Hyeong Seop Jeong1, Min Kyeong Kim2, Jin Pyo Hong2*, and John Hong1*
1Kookmin University, Korea, 2Hanyang University, Korea

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Dongguk University, Korea

[P1_EN_0121] Enhancing CuCo2S4 Electrocatalyst for Ampere-Level Water Electrolysis through Surface-State Engineering
Abu Talha Aqueel Ahmed1, A. Jana1, Abhishek Meena1, Sangeun Cho1, Vijaya Gopalan Sree1, Youngsin Park2, Hyungsang Kim1*, and Hyunsik Im1*
1Dongguk University, Korea, 2Ulsan National Institute of Science and Technology, Korea

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1Tokyo Institute of Technology, Japan, 2Ewha Womans University, Korea

[P1_EN_0155] Efficient Inverted Perovskite Solar Cells with Solution-Processed Metal Ion Polyelectrolytes as Hole Transport Layers
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1University of Seoul, Korea, 2Kyung Hee University, Korea

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[P1_EN_0173] High-photoresponse and Broadband LaVO3/Porous Si Heterostructure Photodetectors
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¹Yeungnam University, Korea, ²Korea Research Institute of standards and science, Korea

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¹Yeungnam University, Korea, ²Korea Research Institute of standards and science, Korea

[P1_EN_0236] Single Step Reinforcement of SiOx/C Enabling High Energy Density Fast Charging Anodes for Li-Ion Batteries
Raaju Sundhar Arul Saravanan, Alphonse Raj Ruby, and Sang-Jae Kim*
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[P1_EN_0272] Hexagonal-BN as Polymer Support for High Transference Number Dendritefree All-solid-state Lithium Metal Batteries
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¹Jeju National University, Korea, ²CSIR-Advanced Materials and Processes Research Institute, India

[P1_EN_0305] Hybrid Halide Perovskites for Low-Temperature Solid State Refrigerants
G. Park¹², I.-H. Oh², and K.-Y. Kim²*
¹Chungnam National University, Korea, ²Korea Atomic Energy Research Institute, Korea
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$^1$Kangwon National University, Korea, $^2$Gwangju Institute of Science and Technology, Korea, $^3$Incheon National University, Korea

Temperature-Dependent Optical Bandgap of MAPbCl$_x$Br$_{3-x}$ Single Crystals
Dae Young Park$^1$ and Yongmin Kim$^2$
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Photovoltaic Devices based on Hot Carriers Generated by Quantum Dotsurface Plasmon Coupling
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Enhancing Indoor Photovoltaic Performance Using FAPbI$_3$ Perovskite Modules
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$^1$Kyoto University, Japan, $^2$HARVES Co., Ltd., Japan

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Fuyuki Harata, Tomoya Nakamura, Minh Anh Truong, Richard Murdey, and Atsushi Wakamiya$^*$
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$^1$Korea Institute of Fusion Energy, Korea, $^2$Kunsan National University, Korea, $^3$Seoul National University, Korea

Stable TiO$_2$-SWCNT Hybrid Catalyst with High-density SWCNT Networks for Hydrogen Evolution Reaction
Minji Park$^{1,2}$, Eun-Jin Choi$^{1,2}$, Min Ji Im$^1$, Sugang Bae$^1$, Sanghan Lee$^2$, Sang Seok Lee$^1$*, and Jangyup Son$^*$
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$^1$Sungkyunkwan University, Korea, $^2$Institute for Basic Science, Korea, $^3$Sookmyung Women’s University, Korea, $^4$Korea University, Korea
[P1_EN_0529]  Carrier Dynamics in Non-Stoichiometric Colloidal CdSe Quantum Dots

Dong Gwon Heo, Sung Hun Kim, and Hong Seok Lee*
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[P1_EN_0531]  Synthesis of CsPbBr3 Nanocrystals with Tunable Bandgap by Supersaturate Recrystallization

Jun Yeong Heo, Dong Gwon Heo, Sung Hun Kim, and Hong Seok Lee*
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[P1_EN_0544]  Porous Manganese Oxide Scaffold Supported Polyoxometalate (POM): Tailoring the Stability and Efficiency of POM for Water Oxidation at High Ph

Muhammad Zubair and Dae Joon Kang*
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[P1_EN_0579]  Improvement of Open-circuit Voltage with Reduced Charge Carrier Recombination by Adjusting S/Se Ratio in Sb2(S,Se)3 Solar Cells

Geumha Lim1, Ha Kyung Park1, Yazi Wang2, Seunghwan Ji2, Byungha Shin2, and William Jo1*
1Ewha Womans University, Korea, 2Korea Advanced Institute of Science and Technology, Korea

[P1_EN_0611]  Interfacial Engineering of type-II Heterostructure Based on NiO@GaN Nanorods With Accelerated Charge Separation for Enhanced Photoelectrochemical Water-Splitting

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[P1_EN_0754]  Optimal Sputtering Parameters for NiOx Hole Transport Layers: Enhancing the Performance of Perovskite Solar Cells

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[P1_EN_0791]  Unraveling the Surface Passivation Mechanism of 2D Cation Treatment on Perovskite Film

Donggyu Lee1, Jeehong Park1, Kitae Kim1,2, and Yeonjin Yi1*
1Yonsei University, Korea, 2Korea Institute of Science and Technology, Korea


Joon Woo Park1, Jeehong Park1, Kitae Kim1,2, Soohyoung Park2, and Yeonjin Yi1*
1Yonsei University, Korea, 2Korea Institute of Science and Technology, Korea
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[P1_QM_0040] Tunability in Spin-to-Charge Conversion Through Interface Modulation Between Co and Bi$_x$Sb$_2$

Seungwon Rho$^1$, Hanbum Park$^2$, Jeehong Park$^1$, Kwangsik Jeong$^3$, Hyeongmun Kim$^4$, Seok-Bo Hong$^1$, Jonghoon Kim$^1$, Hyeon Wook Lim$^1$, Yeonjin Yi$^1$, Jaeseok Huh$^1$, Jaehan Park$^1$, Hyeongjun Son$^1$, Chul Kang$^1$, and Mann-Ho Cho$^1$

$^1$Yonsei University, Korea, $^2$National University of Singapore, Singapore, $^3$Dongguk University, Korea, $^4$Chonnam National University, Korea, $^5$Gwangju Institute of Science and Technology, Korea

[P1_QM_0044] Midwavelength Infrared Colloidal Nanorod Laser

Soeun Jeon, Gahyeon Kim, Dongsun Choi, and Kwang Seob Jeong

Korea University, Korea

[P1_QM_0065] Exploration of Nonlinear Acoustic-to-Optic Magnonic Coupling in a Synthetic Antiferromagnet

Mujin You$^1$, Moojune Song$^1$, Albert Min Gyu Park$^1$, Donghyeon Lee$^2$, Sanghoon Kim$^2$, and Kab-Jin Kim$^1$

$^1$Korea Advanced Institute of Science and Technology, Korea, $^2$University of Ulsan, Korea

[P1_QM_0067] Effective Spin to Charge Interconversion: The Impact of Oxygen Vacancy Tuning in Transition Metal Oxides of Topological Insulators

Youngmin Lee$^{1,2}$, Jonghoon Kim$^1$, Seungwon Rho$^1$, Seok-Bo Hong$^1$, Dajung Kim$^1$, Jaehan Park$^1$, Jaeseok Huh$^1$, Myung-Ho Bae$^{1,2}$, and Mann-Ho Cho$^1$

$^1$Yonsei University, Korea, $^2$Korea Research Institute of Standards and Science, Korea

[P1_QM_0095] Energy level Alignment of PbS Colloidal Quantum Dot films

Subeen Kim$^{1,2}$, Mahnmin Choi$^3$, Sohee Jung$^3$, and Jeong Won Kim$^{1,2}$

$^1$Korea Research Institute of Standards and Science, Korea, $^2$University of Science and Technology, Korea, $^3$Sungkyunkwan University, Korea

[P1_QM_0102] Suppression of Leakage Current in Mid-wave Infrared InAsSb/InAsPSb Multiple Quantum Wells Infrared Light-emitting Diodes Grown on InAsP Metamorphic Buffer by Using MOCVD

Dongwan Kim$^1$, Jiyeon Jeon$^1$, Phuc Dinh Nguyen$^1$, Jong su Kim$^2$, Byong Sun Chun$^1$, and Sang jun Lee$^1$

$^1$Korea Research Institute of Standards and Science, Korea, $^2$Yeungnam University, Korea

[P1_QM_0116] Generation of Quantum Emitters in Hexagonal Boron Nitride

S. Karankova$^{1,2}$, Y. Lee$^{1,3}$, Y. G. Lee$^{4,5}$, C. Jang$^4$, Y. D. Kim$^5$, Y.-W. Song$^{1,2}$, and H. Moon$^{1,2}$

$^1$Korea National University of Science and Technology, Korea, $^2$Korea University, Korea, $^3$Korea Institute of Science and Technology, Korea, $^4$Kyung Hee University, Korea

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Sunghu Kim, Seongmin Park, Meeree Kim, and Sohee Jeong

Sungkyunkwan University, Korea
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Jong Il Yoon¹, Hyoin Kim², Meeree Kim², Hwchan Cho¹, Mahnmin Choi², Ji-Sang Park², Sohee Jeong², and Moon Sung Kang³*  
¹Sogang University, Korea, ²Sungkyunkwan University, Korea

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Jibin Shin, Mahnmin Choi, and Sohee Jeong*  
Sungkyunkwan University, Korea

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Jeonbuk National University, Korea

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Siyun Noh, Jaehyeok Shin, Seungbwan Jhee, Sumin Kang, Yumin Lee, and Jin Soo Kim*  
Jeonbuk National University, Korea

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G. Bonifas*, A. Jiji, C. Nayral, and F. Delpech  
Université de Toulouse, France

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Quan Niu*, Jiangxia Huang, and Wenxin Lin  
South China University of Technology, China

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Hyemin Kim¹², Yong-Hoon Cho², and Young-Ho Ko¹*  
¹Electronics and Telecommunications Research Institute, Korea, ²Korea Advanced Institute of Science and Technology, Korea

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Chaegwang Lim¹, Jaeyeop Lee¹, Woon Ho Jung², Jaehoon Lim², and Jeongkyun Roh¹*  
¹Pusan National University, Korea, ²Sungkyunkwan University, Korea

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S. I. Park and J. D. Song*  
Korea Institute of Science and Technology, Korea
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Mahnmin Choi, Jibin Shin, Hyoin Kim, and Sohee Jeong*
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Gyeongsang National University, Korea

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1Korea Maritime University, Korea, 2Korea Research Institute of Ships & Ocean Engineering, Korea

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1Korea Research Institute of Standards and Science, Korea, 2IRSpectra Co., Ltd., Korea

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D.-H. Kim¹, Y.-S. Song¹, S. Kim¹, S.-K. Lee², and T.-W. Kim*¹
¹Jeonbuk National University, Korea, ²Pusan National University, Korea

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Gachon University, Korea

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Han Gyeol Choi¹, Jung Hyeon Kang¹, Junyoung Jung¹, Keun Soo Kim², and A-Rang Jang¹*
¹Kongju National University, Korea, ²Sejong University, Korea

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Jung Hyeon Kang¹, Hyun Taek Lim¹, Han Gyeol Choi¹, and A-Rang Jang¹*
Kongju National University, Korea

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Hyunje Park, May Myat Noe Oo, Ha Young Choi, Heejoon Chae, and Dae Joon Kang*
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¹Sogang University, Korea, ²Yonsei University, Korea

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¹Sogang University, Korea, ²Sungkyunkwan University, Korea

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¹Korea Institute of Science and Technology, Korea, ²Korea University, Korea

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¹Korea Institute of Science and Technology, Korea, ²Korea University, Korea

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Woojin Shin1, Wonsik Kim2, Seungsun Choi1, Nahyun Kim1, Soohyung Park2, and Hyunbok Lee1*
1Kangwon National University, Korea, 2Korea Institute of Science and Technology, Korea

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Nagyeong Choi1, Junho Kim1, Jeehong Park1, Dongguen Shin2, and Yeonjin Yi1*
1Yonsei University, Korea, 2Chonnam National University, Korea
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<td>¹Panjab University, India, ²Pohang University of Science and Technology, Korea, ³Korea Institute of Science and Technology, Korea</td>
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<tr>
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<td>¹Korea Institute of Science and Technology, Korea, ²University of Science and Technology, Korea, ³Julius-Maximilians-Universität Würzburg, Germany</td>
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Moire Excitons in a Monolayer Semiconductor on Twisted hBN Moire Superlattice

Minhyun Cho¹, Biswajit Datta², Kwanghee Han¹, Saroj B. Chand³, Pratap Chandra Adak², Sichao Yu², Kenji Watanabe⁴, Takashi Taniguchi⁴, James Hone⁵, Gabriele Grosso³, Vinod M. Menon²*, and Young Duck Kim**

¹Kyung Hee University, Korea, ²City College of New York, USA, ³City University of New York, USA, ⁴National Institute for Materials Science, Japan, ⁵Columbia University, USA

Fabrication and Enhanced Performance of Ti₂N MQDs/1L MoS₂ Photodetector Under Ultraviolet Illumination

Zarmeena Akhtar, Anir S. Sharbirin, Trang Thu Tran, and Jeongyong Kim*

Sungkyunkwan University, Korea

Polarization- and Wavelength-Dependent Surface Photovoltage Characterizations of TMD Monolayers on Ag Nanogratings

Seoyoung Lim, Jungyoon Cho, Anh Thi Nguyen, Nahyun Kim, Eunseo Cho, Jungeun Song, and Dong-Wook Kim*

Ewha Womans University, Korea

Optical and Electrical Characteristics of TMD Monolayers on Silver Nanowire Networks

Anh Thi Nguyen, Jungyoon Cho, Nahyun Kim, Jungeun Song, Seoyoung Lim, and Dong-Wook Kim*

Ewha Womans University, Korea

Self-powered Flexible Perovskite Photodetectors Fabricated by Employing Multiple 2D Materials Such as Doped Graphene, Graphene Quantum Dots, WS₂, and h-BN

Dong Hee Shin¹, Chan Wook Jang², and Suk-Ho Choi²*

¹Andong National University, Korea, ²Kyung Hee University, Korea

Semitransparent Solar Cell Employing Graphene/WS₂/LaVO₃ Verticalheterostructure

Taegun Lee and Dong Hee Shin*

Andong National University, Korea

Performance Enhancement of Graphene/Si Quantum Dots Photodetectors by Reducing Dark Current Using h-BN Interlayer

Do Hoon Kim and Dong Hee Shin*

Andong National University, Korea

Excellent Thermoelectric Performance of Novel Single-layer ZrHfS₄

Won Seok Yun¹*, Sang Wook Han², and Myoung-Jae Lee¹

¹DGIST, Korea, ²University of Ulsan, Korea

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[P2_2D_0186] Modulating the Transition Metal Dichalcogenide Reaction Energy with Bimetal Substrates
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[P2_2D_0198] Vertically Stacked Monolithic 2D Materials-Based 1T1R Cross-Bar Array
Younghoon Lim, Junsung Byeon, Min Jung, Byeongchan Kim, and SeungNam Cha*
Sungkyunkwan University, Korea

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Sookmyung Women’s University, Korea

[P2_2D_0254] Self-powered Graphene/Silicon Quantum Dots Broadband Photodetectors with a Noise Significantly Reduced by Using Graphene Quantum Dots as an Interlayer
Chan Wook Jang1, Dong Hee Shin2, and Suk-Ho Choi1*
1Kyung Hee University, Korea, 2Andong National University, Korea

[P2_2D_0267] High-mobility Junction Field-effect Transistor via Graphene/MoS2 Heterointerface
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1Sookmyung Women’s University, Korea, 2North China Electric Power University, China, 3Sungkyunkwan University, Korea

[P2_2D_0299] Synthesis of MoS2/Graphene Nanowall Heterostructure on Copper Film Using Electron Cyclotron Resonance Plasma System
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Korea Institute of Fusion Energy, Korea

[P2_2D_0353] Effects of Strained hBN on the Optical Phonons, Excitons, and Trions in hBN/WSe2/hBN Heterostructures
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1Jeonbuk National University, Korea, 2Daegu Gyeongbuk Institute of Science and Technology, Korea

[P2_2D_0365] Ultrafast Electron Dynamics in 1T-TiSe2 by Tr-ARPES
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1Ming Chiao Tung University, Taiwan, 2Yang Ming Chiao Tung University, Taiwan, 3National Synchrotron Radiation Research Center, Taiwan, 4National Tsing Hua University, Taiwan, 5National Taiwan University, Taiwan
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1Korea Institute of Science and Technology, Korea, 2Jeonbuk National University, Korea, 3Gyeongsang National University, Korea

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Incheon National University, Korea

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Yunjo Jeong1, Jong-Bae Park2, Eunjin Choi1, Dae Chul Kim2, Young-Woo Kim2, Sukang Bae1, and Jangyup Son1*
1Korea Institute of Science and Technology, Korea, 2National Fusion Research Institute, Korea

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1Korea Institute of Science and Technology, Korea, 2Seoul National University, Korea

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Woo Hun Choi, Seong Won Lee, and Su-Hyun Gong*
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1Jeonbuk National University, Korea, 2K-tip Corporation, Korea

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Sungkyunkwan University, Korea
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[P2_2D_0569] Nano Imaging of Ultrafast Dynamics in 2-Dimensional Materials with PiFM and s-SNOM
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¹Korea Research Institute of Standards and Science, Korea, ²Pohang University of Science and Technology, Korea

[P2_2D_0575] Neuronal Modulation Mechanism-Inspired 2D Synaptic Phototransistor for Effective Image Segmentation
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Korea Institute of Science and Technology, Korea

[P2_2D_0613] Tailoring the Dopant Configuration in Monolayer MoS2 for Efficient Hydrogen Evolution Reaction
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¹Ulsan National Institute of Science and Technology, Korea, ²Korea University, Korea

[P2_2D_0658] Deterministic Control of Electron Density in Atomically Thin Semiconductor
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¹Pohang University of Science and Technology, Korea, ²Ulsan National Institute of Science and Technology, Korea, ³Institute for Basic Science, Korea, ⁴Sungkyunkwan University, Korea

[P2_2D_0661] Memristive Characteristics of MoS₂-MoOₓ Memory Device Through UV-O₃ Treatment
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Chungnam National University, Korea

[P2_2D_0681] Dark Excitons from Ws₂ Monolayer on the Au Micro-pillar Structures
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¹Korea Institute of Science and Technology, Korea, ²Hanyang University, Korea

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1Sungkyunkwan University, Korea, 2Jeonbuk National University, Korea

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Junseo Lee and Jin-Hong Park*
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[P2.AI_0773] High Performance Resistive Switching Device with Ag/VOx/Pt Structure by Ag Filament Formation for Unconventional Computing
Jiyeon Ryu, Kitae Park, and Tae-Sik Yoon*
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[P2.AI_0775] Pt/p-LiCoO2/p-NiO/Pt Memristor with Analog Synaptic Weight Change by Li Ion Redistribution for Neuromorphic Computing
Boyoung Jeong, Peter Hayoung Chung, Jimin Han, Taeyun Noh, and Tae-Sik Yoon*
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[P2.AI_0803] Electrically Controllable Tamm Plasmon for Wavelength-selective Optical Neuromorphic Device
D. H. Seo, J. H. Ko, S. Y. Kim, and Y. M. Song*
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[P2.AI_0804] Ferroelectric based Pre-Programmable Optoelectronic Neuromorphic Devices for Motion Detection
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[P2.AI_0811] Design Strategies of 3T1C Synapse for High-efficiency Analog Neural Network Training
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[P2_PH_0384] Compact Coherent Perfect Absorbers based on Topological Junction Metasurface
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[P2_PH_0409] Engineering the Band Topology with Compound Waveguide Lattice
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Jonggeun Hwang, Yeonjeong Koo, Sehwa Jeong, and Kyoung-Duck Park*
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[P2_PH_0473] High-efficiency THz Metamaterial Polarizer for Precise Polarization Measurement
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¹University of Ulsan, Korea, ²Korea Advanced Institute of Science and Technology, Korea

[P2_PH_0476] Spectroscopic Visualization of Lattice Induced Resonance Dispersion in Twodimensional Metallic/Dielectric Arrayed Structure by Using Fourier Plane Measurement
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¹University of Ulsan, Korea, ²Dongguk University, Korea

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Mingu Kang¹, Hwi Je Woo¹, Eun Seong Lee¹*, and Junghoon Jahng¹*
¹Korea Research Institute of Standards and Science, Korea, ²Pohang University of Science and Technology, Korea

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Heejoon Chae, Hyunj Park, and Dae Joon Kang*
Sungkyunkwan University, Korea

Mid-Infrared Quantum Cascade Lasers Emitting at 5-6 μm
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¹Korea Institute of Science and Technology, Korea, ²Hanyang University, Korea, ³Korea University, Korea, ⁴Dongguk University, Korea

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Chungnam National University, Korea

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¹Korea University, Korea, ²Sungkyunkwan University, Korea

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Haerin Jeong¹, Jin Tae Kim²*, and Myung-Ki Kim¹*
¹Korea University, Korea, ²Electronics and Telecommunications Research Institute, Korea

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Seonhye Eom¹, Gangseon Ji¹, Hamoon Fahrvandi¹, Myeong Seop Song², Hyoung-Taek Lee¹, Seung Chul Chae², Jun Hee Lee²*, and Hyeong-Ryeol Park*
¹Ulsan National Institute of Science and Technology, Korea, ²Seoul National University, Korea

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Ulsan National Institute of Science and Technology, Korea
Surface-emitting Nanolaser with Inverse-gain Approach: Practical Design and Semiconductor Nanofabrication
Dayong Lee, Wonil Lee, Gunpyo Kim, and Jae Woong Yoon*
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1Ewha Womans University, Korea, 2Dongguk University, Korea
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¹Korea Institute of Science and Technology, Korea, ²Sungkyunkwan University, Korea, ³Korea Advanced Institute of Science and Technology, Korea, ⁴Pohang Accelerator Laboratory, Korea, ⁵Gwangju Institute of Science and Technology, Korea, ⁶KIST School Univer

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¹Kongju National University, Korea, ²Soonchunhyang University, Korea
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¹Hanyang University, Korea, ²Kookmin University, Korea

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¹Hanyang University, Korea, ²Kookmin University, Korea

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¹Hanyang University, Korea, ²Kookmin University, Korea

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¹University of Seoul, Korea, ²Kyung Hee University, Korea

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¹Ewha Womans University, Korea, ²Korea Institute of Science and Technology, Korea, ³Korea University, Korea

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¹Korea University, Korea, ²Korea Research Institute of Chemical Technology, Korea, ³Korea Institute of Science and Technology, Korea
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¹Multidisciplinary Core Institute for Future Energies, Korea, ²Incheon National University, Korea

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[P2_QM_0018] Boosting Monolayer WS₂ Electro- and Photo-luminescence by TFSI Treatment
A. R. Cadore*
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[P2_QM_0266] Deciphering the Role of Zinc Vacancy in Photoluminescence Quantum Yield Limitations of Giant ZnSe-alloyed Shell Quantum Dots
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¹Sungkyunkwan University, Korea, ²Hanyang University, Korea, ³Korea Advanced Institute of Science and Technology, Korea, ⁴Korea Electronics Technology Institute, Korea

[P2_QM_0281] Unveiling Size-Dependent Exciton Dynamics in InP Tetrapods through Time-Resolved Spectroscopy
Bora Kim¹, Sunghu Kim², Eunhye Cho², Sohee Jeong²*, and Young-Shin Park³*
¹Hanyang University, Korea, ²Sungkyunkwan University, Korea, ³Los Alamos National Laboratory, USA

[P2_QM_0285] Core/Shell Structure Effects on Electrical Properties of InAs Quantum Dot Field-effect Transistor
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¹Korea Institute of Industrial Technology, Korea, ²Sungkyunkwan University, Korea

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¹Ewha Womans University, Korea, ²Auburn University, USA, ³Sookmyung Women’s University, Korea, ⁴University of North Carolina at Chapel Hill, USA

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Jaeyeop Lee¹, Woon Ho Jung², Chaegwang Lim¹, Jaehoon Lim², and Jeongkyun Roh¹*
¹Pusan National University, Korea, ²Sungkyunkwan University, Korea

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Korea Electrotechnology Research Institute, Korea

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¹Korea Institute of Energy Technology, Korea, ²Sungkyunkwan University, Korea
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\textsuperscript{1}Korean Institute of Science and Technology, Korea, \textsuperscript{2}University of Science and Technology, Korea

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\textsuperscript{1}Sungkyunkwan University, Korea, \textsuperscript{2}Ewha Womans University, Korea

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Daekwon Shin, Hyeonjun Jeong, Jugyoung Kim, and Sohee Jeong\textsuperscript{*}
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\textsuperscript{1}Sungkyunkwan University, Korea, \textsuperscript{2}Sogang University, Korea

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Sungkyunkwan University, Korea
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Korea Maritime and Ocean University, Korea

Minsoo Lee¹, Ji Min Kim¹, Young-Woo Lee², and A-Rang Jang*¹
¹Kongju National University, Korea, ²Soonchunhyang University, Korea

Ji Min Kim¹, Minsoo Lee¹, Young-Woo Lee², and A-Rang Jang*¹
¹Kongju National University, Korea, ²Soonchunhyang University, Korea

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[P2_SE_0633] Small Molecule Probes for High Sensitivity OECT Protein Sensors
Ziling Jiang and Fengjiao Zhang*
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University of Chinese Academy of Sciences, China
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¹Sungkyunkwan University, Korea, ²Ewha Womans University, Korea

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<td>¹Hanyang University, Korea, ²DNF, Korea</td>
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¹Dongguk University, Korea, ²Kyushu University, Japan

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¹Korea Advanced Nano Fab Center, Korea, ²Seoul Women’s University, Korea

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¹Sungkyunkwan University, Korea, ²Pusan National University, Korea

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¹Pukyong National University, Korea, ²Korea Electrotechnology Research Institute, Korea, ³University of Science and Technology, Korea

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Jong-Keon Won and Jae-Hee Han*

Gachon University, Korea

[P2_CN_0685] Super Ultra-thin Polyimide-Carbon Nanotube Nanocomplex Annulling Yellowness Index Towards High Performance Foldable Solar Cells

Jin-Myung Choi¹, Jiye Han¹, Unsoo Kim², and Il Jeon*²

¹Sungkyunkwan University, Korea, ²Korea Institute of Energy Research, Korea