

**[TS01] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS01W\_BP\_1****Hierarchical Phonon Scattering from Nano to Macro Scale in Bismuth Telluride Bulk Composites and Cost-Effective Module Structure**

Anil Kumar<sup>1</sup>, Saurabh Thoravat<sup>1</sup>, Pooja Rawat<sup>1</sup>, Hyungyu Jin<sup>2</sup>, and Jong Soo Rhyee<sup>1</sup>  
 (<sup>1</sup>*Kyung Hee University*, <sup>2</sup>*POSTECH*)

**TS01W\_BP\_2****First-Principles Study of Mitigating Interfacial Degradation in Semi-Transparent Perovskite Solar Cells**

Wonze Jung<sup>1</sup>, Syed Dildar Haider Naqvi<sup>2</sup>, SeJin Ahn<sup>2</sup>, and Kanghoon Yim<sup>1</sup>  
 (<sup>1</sup>*Chungnam National University*, <sup>2</sup>*KIER*)

**TS01W\_BP\_3****Enhancing the Output Energy and Durability of Triboelectric Nanogenerator via Nanostructured Interface of Dielectric and Electrode with Hot Water Treatment**

Seonghun Hwang<sup>1</sup>, Yoonsang Ra<sup>1</sup>, Donghyeon Yoo<sup>2</sup>, and Dongwhi Choi<sup>1</sup>  
 (<sup>1</sup>*Kyung Hee University*, <sup>2</sup>*University of Illinois Urbana-Champaign*)

**TS01W\_BP\_4****Finger Motion Recognition with Triboelectric Multimodal Sensor based on Kinematic Design for Human-Machine Interfaces**

Sangbeom Nam, Sumin Cho, Donghan Lee, Sunmin Jang, and Dongwhi Choi  
 (*Kyung Hee University*)

**TS01W\_BP\_5****Self-Powered Temperature Monitoring System based on Polydiacetylene Embedded Polyvinylidene Fluoride Nanofibers**

Hakjeong Kim, Jaewon Cho, Seongmin Na, Huang ChenYao, Kyungwho Choi, Miso Kim, and Dukhyun Choi  
 (*Sungkyunkwan University*)

**TS01W\_BP\_6****Analysis of Improved Shock Detection and Dielectric Heating Properties by Adding CNTs to Piezoelectric Paint**

Jihun Lee<sup>1</sup>, Hyunjin Bae<sup>2</sup>, and Kyungwho Choi<sup>1,2</sup>  
 (<sup>1</sup>*Sungkyunkwan University*, <sup>2</sup>*Korea Aerospace University*)

**TS01W\_BP\_7**

**Development of a Battery Thermal Management System with Thermoelectric Module and Phase Change Material**

Sung Kyu Chung, Bui Minh Quang, and Kyungwho Choi  
(*Sungkyunkwan University*)

**TS01W\_BP\_8**

**Characterization of a Body-Attached Thermoelectric Generator based on Polyurethane Foam Coated with Carbon Nanotubes**

Insik Jo and Kyungwho Choi  
(*Sungkyunkwan University*)

**TS01W\_BP\_9**

**Recovered Graphene-Hydrogel Nanocomposites for Multi-Modal Recognition via Optimized Triboelectrification and Machine Learning**

Thien Trung Luu and Dukhyun Choi  
(*Sungkyunkwan University*)

**TS01W\_BP\_10**

**Pyramid-Shaped Ag/PDMS Nanocomposites for Triboelectric Nanogenerators**

Akhmetzhanov Nursalim<sup>1</sup>, Kang Dong Joo<sup>1</sup>, Kim Jong Man<sup>1</sup>, Shin Dong-Myeong<sup>2</sup>, and Hwang Yoon-Hwae<sup>1</sup>  
(<sup>1</sup>*Pusan National University*, <sup>2</sup>*The University of Hong Kong*)

**TS01W\_BP\_11**

**Investigating Charge Dynamics: Copper-N-Type Silicon Interface in Sliding Mode DC Triboelectric Nanogenerator**

Dimaral Aben<sup>1</sup>, Yerkezhan Amangeldinova<sup>1</sup>, Kassymzhomart Kunanbayev<sup>2</sup>, Dong-Myeong Shin<sup>3</sup>, and Yoon-Hwae Hwang<sup>1</sup>  
(<sup>1</sup>*Pusan National University*, <sup>2</sup>*KAIST*, <sup>3</sup>*The University of Hong Kong*)

**TS01W\_BP\_12**

**Enhanced Performance of NdFeB-PMMA Composites Based Triboelectric Nanogenerator using Magnetization**

Nhat Nam Hoang<sup>1</sup>, Gi Hyeon Han<sup>2</sup>, and Jae Won Lee<sup>1</sup>  
(<sup>1</sup>*Kangwon National University*, <sup>2</sup>*Yonsei University*)

**TS01W\_BP\_13**

**Eu/Y-Codoped TiO<sub>2</sub>-Based Thin Film for Power Enhancement and UV Protection of Dye-Sensitized Solar Cells**

Darya Goponenko, Kamila Zhumanova, and Timur Sh. Atabaev  
(*Nazarbayev University*)

TS01W\_BP\_14

**TiO<sub>2</sub>-NaYF<sub>4</sub>:Yb,Er Upconverting Nanostructures for the Improved Solar Light Harnessing in Dye Sensitized Solar Cells (DSSCs) and Photoelectrochemical (PEC) Devices**

Kamila Zhumanova, Darya Goponenko, and Timur Atabaev

*(Nazarbayev University)*

TS01W\_BP\_15

**Magneto-Mechano-Triboelectric Nanogenerator for Stray Magnetic Field Energy Harvesting**

Tae Kyoung Yoon<sup>1,2</sup>, Hyun Soo Kim<sup>1</sup>, Hyun-Cheol Song<sup>1</sup>, and Jeong Min Baik<sup>2</sup>

*(<sup>1</sup>KIST, <sup>2</sup>Sungkyunkwan University)*

TS01W\_BP\_16

**Non-Contact Rotating Triboelectric Nanogenerator for Self-Powered Safety Light**

Jong Gun Park and Jae Won Lee

*(Kangwon National University)*

TS01W\_BP\_17

**Enhancing Charge Retention in Non-Contact Triboelectric Nanogenerators using Electrospun Polyvinyl Alcohol (PVA)/Polystyrene Sulfonic Acid (PSSA) Nanofibers**

Yoo Song Lee and Jae Won Lee

*(Kangwon National University)*

TS01W\_BP\_18

**Chemically Transformed Cu<sub>2</sub>Se-PbSe Thermoelectric Kinked Nanaowires**

Minseong Lee, Seungwon Moon, Huigeun Lee, Sumin Choi, Geonhaeng Lee, Junyeong Suh, Sungmin Go, Sung-Gu Kang, Hyeon-Jun Bae, Sangwoo Lee, and Yun-Mo Sung

*(Korea University)*

TS01W\_BP\_19

**High Durability Moisture Electric Generator with PSSA/PVA/CNC Film**

Yeong heum Moon, Yeong jun Moon, and Jae Won Lee

*(Kangwon National University)*

TS01W\_BP\_21

**Mechanically Guided Geometry Transformation-Based Three-Dimensional Structure to Assign Various Functionality to Sensor**

Dongik Kam, Dayeon Jang, Yu-seop Kim, Donghan Lee, Hyeoncheol Yang, and Dongwhi Choi

*(Kyung Hee University)*

**[TS02] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30-12:00
<b>Place</b>	Exhibition Hall 4,5

**TS02W\_BP\_1****Screening Strategy of Ideal Quinone-Based RMs for Direct Cathode Lithiation of Spent Li-Ion Batteries**

Hyun Ju Yoon, Suji Kim, and Won-Hee Ryu

*(Sookmyung Women's University)***TS02W\_BP\_2****Functional Group Control of Polarizable Molecular Dipoles as Interface Stabilizing Electrolyte Additive for Rapid Operative and Longer Lifespan Lithium Metal Batteries**

ChaeYeong Son and Won-Hee Ryu

*(Sookmyung Women's University)***TS02W\_BP\_3****Binder-Free Oxide-Sulfide Composite Electrolyte Membrane for All-Solid-State Batteries**A-Yeon Kim<sup>1,2</sup>, Hyeon-Ji Shin<sup>1</sup>, Jun Tae Kim<sup>1</sup>, and Hun-Gi Jung<sup>1,3</sup>*(<sup>1</sup>KIST, <sup>2</sup>Korea University, <sup>3</sup>UST)***TS02W\_BP\_4****The Cathode Material  $\text{Na}_3\text{V}_{1.5}\text{Cr}_{0.4}\text{Fe}_{0.1}(\text{PO}_4)_3$ , Belonging to the NASICON-Type, Is Renowned for its Exceptional Performance in Sodiumion Batteries, Particularly for its High Voltage and High-Rate Capabilities**

Deokhyeon Son and Jang-Yeon Hwang

*(Hanyang University)***TS02W\_BP\_5****Elucidating Redox Mediator-Assisted Relithiation Mechanisms for Direct Cathode Recycling of Spent Li-Ion Batteries**

Suji Kim, Hyun Ju Yoon, and Won-Hee Ryu

*(Sookmyung Women's University)*

**TS02W\_BP\_6**

**Enhanced Dispersibility and Electrochemical Properties of Thick Dry Electrodes through Thermoplastic Binder-CNT Composite**

Min Jeong Kim<sup>1</sup>, Jang-Yeon Hwang<sup>1</sup>, and Jung-Keun Yoo<sup>2</sup>

*(<sup>1</sup>Hanyang University, <sup>2</sup>KIST)*

**TS02W\_BP\_7**

**Improvement of Lithium-Ion Battery Performance through Siloxane Binder Application**

Jun-Kyu Park<sup>1,2</sup>, Jin-Joo<sup>2</sup>, and Jung-Keun Yoo<sup>1</sup>

*(<sup>1</sup>KIST, <sup>2</sup>Kyungpook National University)*

**TS02W\_BP\_8**

**Controlling Dendrite Growth in Sodium Metal Batteries using Tailored Gel Polymer Electrolytes**

Da-Sol Kwon<sup>1</sup>, Jimin Shim<sup>2</sup>, and Minah Lee<sup>1</sup>

*(<sup>1</sup>KIST, <sup>2</sup>Seoul National University)*

**TS02W\_BP\_9**

**Applying for the Thermoplastic Polyurethane (TPU) Blending Binder for High Energy Density Lithium-Ion Batteries**

Min Sol Kim<sup>1</sup>, Jong Soon Kim<sup>1</sup>, and Jung-Keun Yoo<sup>2</sup>

*(<sup>1</sup>Sungkyunkwan University, <sup>2</sup>KIST)*

**TS02W\_BP\_10**

**Enhanced Li-Ion Conductivity by Directionally Ordered Oxygen Vacancies in Perovskite Oxide-Based Solid Electrolyte**

Hyeon-Ah Ju<sup>1</sup>, Eun-Byeol Park<sup>1</sup>, Jaejin Hwang<sup>2</sup>, Young-Hoon Kim<sup>1</sup>, Jae Hyuck Jang<sup>3</sup>, Jaekwang Lee<sup>2</sup>, Jae-Hyun Shim<sup>4</sup>, and Young-Min Kim<sup>1</sup>

*(<sup>1</sup>Sungkyunkwan University, <sup>2</sup>Pusan National University, <sup>3</sup>KBSI, <sup>4</sup>Dongshin University)*

**TS02W\_BP\_11**

**Weakly Solvating Solution-Based Chemical Prelithiation for Lithium-Ion Capacitors with High Energy Density**

Seungyun Jeon<sup>1,2</sup>, Sehee Im<sup>1</sup>, Inyeong Kang<sup>1</sup>, Dongki Shin<sup>1</sup>, Seung-Ho Yu<sup>2</sup>, Minah Lee<sup>1</sup>, and Jihyun Hong<sup>1</sup>

*(<sup>1</sup>KIST, <sup>2</sup>Korea University)*

**TS02W\_BP\_12**

**Stabilized Electrolyte Design for High-Voltage Co-Free NMX Cathode with CEI-Controlling**

Myungeun Choi, Junseong Kim, and Jongsoon Kim

*(Sungkyunkwan University)*

TS02W\_BP\_13

**Highly Conductive and Durable  $\text{WO}_{3-x}$  Particles as Cathode Framework Stabilizing Additive for All-Solid-State Batteries**

Hyeon-Ju Song, Yoo-Jung Choi, and Won-Hee Ryu

*(Sookmyung Women's University)*

TS02W\_BP\_14

**Heterogeneous Oxide Composite Nanofiber as Robust and Efficient Catalyst for High-Performance Li-CO<sub>2</sub> Batteries**

Huiju Kim<sup>1</sup>, Dae-Kwon Boo<sup>2</sup>, Ji-Won Jung<sup>2</sup>, and Won-Hee Ryu<sup>1</sup>

*(<sup>1</sup>Sookmyung Women's University, <sup>2</sup>University of Ulsan)*

TS02W\_BP\_15

**Non-Precious Metal Based Dual Atom Catalysts Loaded on N-Doped Carbon Nanotubes for High Performance Li-O<sub>2</sub> Batteries**

Yeji Lim, Yoon Jeong Yoo, and Won-Hee Ryu

*(Sookmyung Women's University)*

TS02W\_BP\_16

**CEI Layer Formation by TPU-Based Binder for Improved Cyclability of LiFePO<sub>4</sub> Lithium-Ion Batteries**

Jiny Lee<sup>1</sup>, Jong Soon Kim<sup>1</sup>, and Jung-Keun Yoo<sup>2</sup>

*(<sup>1</sup>Sungkyunkwan University, <sup>2</sup>KIST)*

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**[TS03] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS03W\_BP\_1****Bioresorbable Energy-Generating Skin Capable of Dual-Mode Tactile Perception**

Shengyou Li, Kaiying Zhao, Guangtao Zan, and Cheolmin Park

*(Yonsei University)***TS03W\_BP\_2****Nanostructuring of Ir-Based Complex Oxide for Maximizing Surface Amorphization Enables Efficient and Stable Oxygen Evolution Reaction**

Siyeon Kim, Gyu Rac Lee, and Yeon Sik Jung

*(KAIST)***TS03W\_BP\_3****Enhanced Catalytic Activity and Selectivity of Platinum supported on Ditungsten Oxide Electride for Chlorine Evolution Reaction**

Seongsu Choi, Hanhwi Jang, and Yeon Sik Jung

*(KAIST)***TS03W\_BP\_4****Facial Synthesis of Mo<sub>4</sub>P<sub>3</sub> Nanowires for 2e<sup>-</sup> Oxygen Reduction Reaction**Seo Hyun Kim<sup>1</sup>, Changkyu Hwang<sup>2</sup>, Jong Min Kim<sup>2</sup>, and Hyeuk Jin Han<sup>1</sup>*(<sup>1</sup>Sungshin Woman's University, <sup>2</sup>KIST)***TS03W\_BP\_5****Electrochemical Synthesis of Ammonia via Nitrogen Reduction and Oxygen Evolution Reactions at Intermediate Temperature**Hizkia Manuel Vieri<sup>1</sup> and Sun Hee Choi<sup>1,2</sup>*(<sup>1</sup>KIST, <sup>2</sup>UST)*

**TS03W\_BP\_6**

**Catalytic Insights into Ammonia Decomposition: Single-Atom Ru and Ru Nanoparticle Formation on MgAl<sub>2</sub>O<sub>4</sub> support**

Solicha Hanifah<sup>1,2</sup>, Jin Su Kim<sup>1</sup>, Beom-Sik Kim<sup>3</sup>, Chang Houn Rhee<sup>3</sup>, and Hyuntae Sohn<sup>1,2</sup>

*(<sup>1</sup>KIST, <sup>2</sup>UST-KIST, <sup>3</sup>POSCO)*

**TS03W\_BP\_7**

**TiO<sub>2</sub> – rGO Composite Films decorated with Gold Nanoparticles for Electrocatalytic Hydrogen Evolution**

Imanzhussip Serkul, Kuralay Rustembekkyzy, and Timur Sh. Atabaev

*(Nazarbayev University)*

**TS03W\_BP\_8**

**Suppressing Sn<sup>2+</sup> Oxidation in Perovskite Precursor Solution using Sustainable Reductant for Stable Sn-Pb Mixed Perovskite Solar Cells**

Doyun Im<sup>1</sup>, Sung Woong Yang<sup>1</sup>, Yeonghun Yun<sup>2</sup>, Jungchul Yun<sup>1</sup>, Jina Jung<sup>1</sup>, Rajendra Kumar Gunasekaran<sup>1</sup>, and Sangwook Lee<sup>1</sup>

*(<sup>1</sup>Kyungpook National University, <sup>2</sup>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH)*

**TS03W\_BP\_9**

**Multi-Facet Passivation of Silver Bismuth Sulfide Colloidal Quantum Dot Suppressed the Voltage Loss in Lead-Free Photovoltaic**

Dongeon Kim<sup>1</sup>, Gaeun Cho<sup>1,2</sup>, Han Seul Kim<sup>3</sup>, and Se-Woong Baek<sup>1</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST, <sup>3</sup>Chungbuk National University)*

**TS03W\_BP\_10**

**Comparison of Photothermal Performance of Metal Nanoparticles**

Chanho Eum<sup>1</sup> and Dong-Kwon Lim<sup>1,2</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST)*

**TS03W\_BP\_11**

**Unassisted Photoelectrochemical H<sub>2</sub>O<sub>2</sub> Production with in Situ Glycerol Valorization using  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>**

Sarang Kim, Dongrak Oh, and Ji-Wook Jang

*(UNIST)*



## [TS04] Poster Session 1 Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30-12:00
<b>Place</b>	Exhibition Hall 4,5

### TS04W\_BP\_1

#### **Research on the Development of Aluminum-Nano Carbon Composite Materials for Aviation Cables Manufactured by Hot Extrusion**

Chan Yang Lee, Min Chul Oh, and Geon Hong Kim

*(Institute for Advanced Engineering)*

### TS04W\_BP\_2

#### **Randomly Oriented MoS<sub>x</sub> Clusters Based Anticounterfeiting Tags Induced by Capillary and Marangoni Flow**

Changgyun Moon and Sunkook Kim

*(Sungkyunkwan University)*

### TS04W\_BP\_3

#### **Investigation of the Mechanical Properties of Nano-Diamond Dispersed Epoxy Composites**

Ji Hoon Min, Jihun Mun, and Sungwook Joo

*(Gyeongbuk Hybrid Technology Institute)*

### TS04W\_BP\_4

#### **Development of Novel Functional Hydrophobic Coatings Enhanced with Detonation Nano-Diamond Powders**

Ji Hoon Min<sup>1</sup>, Yeon Jung Kwak<sup>2</sup>, Jihun Mun<sup>1</sup>, and Sungwook Joo<sup>1</sup>

*(<sup>1</sup>Gyeongbuk Hybrid Technology Institute, <sup>2</sup>View Interior)*

### TS04W\_BP\_5

#### **Fabrication and Properties Analysis of Al-SUS Functionally Graded Materials by Spark Plasma Sintering**

Kyungju Kim<sup>1,2</sup>, Myunghoon Cho<sup>1,2</sup>, Seungchan Cho<sup>3</sup>, and Hansang Kwon<sup>1,2</sup>

*(<sup>1</sup>Pukyong National University, <sup>2</sup>Next Generation Materials Co., Ltd., <sup>3</sup>KIMS)*

**TS04W\_BP\_6**

**Fabrication of the Carbon Nanotube-Reinforced Aluminum Composite Pipe for Air Conditioning and Heating System by Extrusion Method**

Kyungju Kim<sup>1,2</sup>, Myunghoon Cho<sup>1,2</sup>, Seungchan Cho<sup>3</sup>, and Hansang Kwon<sup>1,2</sup>

(<sup>1</sup>*Pukyong National University*, <sup>2</sup>*Next Generation Materials Co., Ltd.*, <sup>3</sup>*KIMS*)

**TS04W\_BP\_7**

**Hybrid Design of Cu-Steel Dissimilar Weld Geometry for Li-Ion Battery Pack Manufacturing using Electroplating and Single-Mode Fiber Laser**

Jae-Hyeon Park<sup>1</sup>, Myung-Jin Kim<sup>2</sup>, Heeshin Kang<sup>3</sup>, and Eun-Jun Chun<sup>1</sup>

(<sup>1</sup>*Pukyong National University*, <sup>2</sup>*HUBIS Co., Ltd.*, <sup>3</sup>*KIMM*)

**TS04W\_BP\_8**

**Solidification Cracking Susceptibilities of Hafnium-Free 247LC Superalloy for Potential WAAM Repair Process**

Seong-Jin Lee<sup>1</sup>, Seong-Moon Seo<sup>2</sup>, and Eun-Joon Chun<sup>1</sup>

(<sup>1</sup>*Pukyong National University*, <sup>2</sup>*KIMS*)

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## [TS05] Poster Session 1 Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30-12:00
<b>Place</b>	Exhibition Hall 4,5

### TS05W\_BP\_1

#### Space Environment Effect on Electrical Reliability to a-IGZO Thin-Film Transistors Caused by Proton Bombardment

Junho Noh and Byoungdeog Choi  
(*Sungkyunkwan University*)

### TS05W\_BP\_2

#### Micro-Alloying as a Solution for Mitigating Hydrogen Embrittlement in Ultra High Strength Press Hardening Steel (PHS)

Seokhwan Ju<sup>1</sup>, Ho Hyeong Lee<sup>1</sup>, Seawoong Lee<sup>2</sup>, and Dong-Woo Suh<sup>1</sup>  
(<sup>1</sup>POSTECH, <sup>2</sup>POSCO)

### TS05W\_BP\_3

#### Periodic Spinodal Decomposition in Double-Strengthened Medium-Entropy Alloy

Hyojin Park<sup>1</sup>, Farahnaz Haftlang<sup>1,2</sup>, Yoon-Uk Heo<sup>1</sup>, Jae Bok Seol<sup>3</sup>, Zhijun Wang<sup>4</sup>, and Hyoung Seop Kim<sup>1</sup>  
(<sup>1</sup>POSETCH, <sup>2</sup>Northwestern University, <sup>3</sup>Gyeongsang National University, <sup>4</sup>Northwestern Polytechnical University)

### TS05W\_BP\_4

#### Grain Boundary Embrittlement in Age Hardenable Fe-Ni-X Alloys

Dong-Hyun Kim and Yoon-Uk Heo  
(POSTECH)

### TS05W\_BP\_5

#### Hydrogen Absorption during Austenitization in Al-Based Intermetallic Coated 31MnB5 Steel

Seong-Min Ko<sup>1</sup>, Seon-Keun Oh<sup>1</sup>, Nu-Ri Cho<sup>1</sup>, Changhun Kim<sup>2</sup>, Donghwa Lee<sup>2</sup>, Seongwoo Kim<sup>3</sup>, Jinkeun Oh<sup>3</sup>, and Young-Kook Lee<sup>1,2</sup>  
(<sup>1</sup>Yonsei University, <sup>2</sup>POSTECH, <sup>3</sup>POSCO)

### TS05W\_BP\_6

#### Bader Charge Analysis of Oxygen Content Impact on the Lattice Structure of Additively Manufactured TiZrNb Alloys

Aamir Malik<sup>1</sup>, Muhammad Akmal<sup>2</sup>, and Ho Jin Ryu<sup>1</sup>  
(<sup>1</sup>KAIST, <sup>2</sup>KIMS)

**TS05W\_BP\_7****The Effect of Rhenium Addition on the Mechanical Properties and Microstructures of Ni-16Mo ODS Alloys for Nuclear Applications**Deasik Kim<sup>1</sup>, Jaeyoon Bae<sup>1</sup>, Kunok Chang<sup>2</sup>, Young-Sang Youn<sup>3</sup>, and Sanghoon Noh<sup>1</sup>*(<sup>1</sup>Pukyong National University, <sup>2</sup>Kyung Hee University, <sup>3</sup>Yeungnam University)***TS05W\_BP\_8****Hydrogen Absorption and Embrittlement of Martensitic Medium-Mn Steels**Ahjeong Lyu<sup>1</sup>, Junghoon Lee<sup>1,2</sup>, Jae-Hoon Nam<sup>1,3</sup>, Minjeong Kim<sup>1</sup>, and Young-Kook Lee<sup>1,4</sup>*(<sup>1</sup>Yonsei University, <sup>2</sup>RIST, <sup>3</sup>Samsung Electronics Co., Ltd., <sup>4</sup>POSTECH)***TS05W\_BP\_9****A Nanoindentation Study on the Micromechanical Behavior of Multi Layered Medium-Entropy Alloy**Zhe Gao<sup>1</sup>, Dong-Hyun Lee<sup>2</sup>, Yakai Zhao<sup>3</sup>, Hyoung Seop Kim<sup>4</sup>, Upadrasta Ramamurty<sup>5</sup>, and Jae-il Jang<sup>1</sup>*(<sup>1</sup>Hanyang University, <sup>2</sup>Chungnam National University, <sup>3</sup>Institute of Materials Research Engineering, <sup>4</sup>POSTECH, <sup>5</sup>Nanyang Technological University)***TS05W\_BP\_10****High Temperature Oxidation Behavior of C-Doped CoCrNi Medium Entropy Alloy Fabricated by Laser Powder Bed Fusion**

Soobin Kim, So-Yeon Park, and Kee-Ahn Lee

*(Inha University)***TS05W\_BP\_11****Evaluation of Mechanical Property of Thermally Aged Austenitic Stainless Steel Weld for Reactor Vessel Internal in Nuclear Power Plants**Seokmin Hong<sup>1</sup>, Yoojin Kim<sup>1,2</sup>, Se-Mi Hyun<sup>1,3</sup>, Hyung-Ha Jin<sup>1</sup>, Min-Chul Kim<sup>1</sup>, and Jongmin Kim<sup>1</sup>*(<sup>1</sup>KAERI, <sup>2</sup>Chungnam National University, <sup>3</sup>Korea University)***TS05W\_BP\_12****High-Temperature Resistance of Modified A357 Alloy for Aerospace Applications**Hyunyoung Park<sup>1</sup>, Seoyeon Jeon<sup>1</sup>, Boram Lee<sup>1</sup>, Jonguk Hwang<sup>2</sup>, Suwon Park<sup>1</sup>, and Hyunjoon Choi<sup>1</sup>*(<sup>1</sup>Kookmin University, <sup>2</sup>Eloi Materials Lab Co., Ltd.)***TS05W\_BP\_13****The Influence of Mechanical Alloying on the Microstructure and Mechanical Properties of Nickel-Based ODS (Oxide Dispersion Strengthened) Alloys**

Jaeyoon Bae, Jungmin Lee, and Sanghoon Noh

*(Pukyong National University)*

**TS05W\_BP\_14**

**Multiscale Characterization from Micrometer down to Atomic Regime for Mechanistic Understanding of STS 316L upon Deformation at 4.2 K**

Muhammad Ishtiaq<sup>1</sup>, Young-Kyun Kim<sup>2</sup>, Saurabh Tiwari<sup>1</sup>, Ka-Ram Lim<sup>2</sup>, Young-Sang Na<sup>2</sup>, and Jae-Bok Seol<sup>1</sup>  
(<sup>1</sup>Gyeongsang National University, <sup>2</sup>KIMS)

**TS05W\_BP\_15**

**Promising Elevated Temperature Mechanical Properties of Novel Nano and Ultrafine-Grained Fe<sub>47</sub>Mn<sub>25</sub>Al<sub>13</sub>Cr<sub>7</sub>Ni<sub>5</sub>C<sub>3</sub> Medium-Entropy Alloy**

Gang Hee Gu, Jae Heung Lee, Hyeonseok Kwon, and Hyoung Seop Kim  
(POSTECH)

**TS05W\_BP\_16**

**Effect of PWHT Conditions on Mechanical Properties of TIG Welded Reduced Activation Ferritic/Martensitic Steels**

MD Asraful Islam Ashik, Sejin Kim, and Sanghoon Noh  
(Pukyong National University)

**TS05W\_BP\_17**

**Hydrogen Storage Properties and Microstructural Evolution of Ti-Fe-C Alloys**

Kyubin Hwang<sup>1,2</sup>, Jinyoung You<sup>2</sup>, Yunseok Kim<sup>1,2</sup>, Young-Su Lee<sup>1</sup>, and Jae-Hyeok Shim<sup>1,2</sup>  
(<sup>1</sup>KIST, <sup>2</sup>Sungkyunkwan University)

**TS05W\_BP\_18**

**Comparison of Dynamic Tensile Extrusion Behavior of Pure Cu Fabricated by Equal Channel Angular Pressing and Powder Injection Molding**

Keunho Lee<sup>1</sup>, Seok Bong Kim<sup>1</sup>, Leeju Park<sup>1</sup>, and Kyung-Tae Park<sup>2</sup>  
(<sup>1</sup>ADD, <sup>2</sup>Hanbat National University)

**TS05W\_BP\_19**

**Regulation of Cryogenic Mechanical Behaviors of C-Added Non-Equiatomic CoCrFeNiMo Ferrous Medium-Entropy Alloy via Control of Initial Microstructure**

Ji Yeong Lee<sup>1</sup>, Hyeonseok Kwon<sup>1</sup>, and Hyeong Seop Kim<sup>1,2,3</sup>  
(<sup>1</sup>POSTECH, <sup>2</sup>Tohoku University, <sup>3</sup>Yonsei University)

**TS05W\_BP\_20**

**Superior Tensile Properties and Formability Synergy of High-Entropy Alloys through Inverse-Gradient Structures**

Rae Eon Kim, Gang Hee Gu, Yeon Taek Choi, Jeong Ah Lee, and Hyoung Seop Kim  
(POSTECH)

**TS05W\_BP\_21**

**Effects of V Addition on Hydrogen Storage Properties of Ti-Fe-Ce Alloys**

Si-Won Jin<sup>1,2</sup>, Young-Kook Lee<sup>2</sup>, and Jae-Hyeok Shim<sup>1</sup>

(<sup>1</sup>KIST, <sup>2</sup>Yonsei University)

**TS05W\_BP\_22**

**Effects of Sub-Micron Cell Size Variation on Mechanical Properties of High Entropy Alloy Fabricated via Laser Powder Bed Fusion**

Meng-Yun Lee<sup>1,2</sup>, HyoJin Park<sup>1</sup>, Chung-En Cheng<sup>2</sup>, Pie-Keng Shen<sup>2</sup>, Che-Wei Tsai<sup>2</sup>, An Chou Yeh<sup>2</sup>, and Hyoung Seop Kim<sup>1</sup>

(<sup>1</sup>POSTECH, <sup>2</sup>National Tsing Hua University)

**TS05W\_BP\_23**

**Influence of Top-of-Tubesheet Denting on General Corrosion Behavior of Steam Generator Tube in PWR Secondary System**

Ji-Young Han<sup>1,2</sup>, Hee-Sang Shim<sup>1</sup>, Sung-Woo Kim<sup>1</sup>, and Soon-Hyeok Jeon<sup>1</sup>

(<sup>1</sup>KAERI, <sup>2</sup>Yonsei University)

**TS05W\_BP\_24**

**Investigating the Preparation of Refractory High Entropy Alloy via Optical Floating Zone Crystal Growth Processing**

Hung Yen<sup>1</sup>, Che-Jen Liu<sup>1</sup>, An-Chou Yeh<sup>1</sup>, and Hyeong-Seop Kim<sup>2</sup>

(<sup>1</sup>National Tsing Hua University, <sup>2</sup>POSTECH)

**TS05W\_BP\_25**

**Deformation Mechanism of a Partially Recrystallized Metastable Medium Entropy Alloy**

Jae Heung Lee<sup>1</sup>, Hyeonseok Kwon<sup>1</sup>, Gang Hee Gu<sup>1</sup>, Ji Yeong Lee<sup>1</sup>, Sang Guk Jeong<sup>1</sup>, Emad Maawad<sup>2</sup>, Changwan Ha<sup>3</sup>, Sangbong Yi<sup>4</sup>, and Hyoung Seop Kim<sup>1</sup>

(<sup>1</sup>POSTECH, <sup>2</sup>Helmholtz-Zentrum Hereon, <sup>3</sup>Pohang Accelerator Laboratory, <sup>4</sup>Kumho National Institute of Technology)

**TS05W\_BP\_26**

**Evaluation of L-DED Additively Manufactured 316L Stainless Steel Valve**

Suk Hoon Kang, Seungmun Jung, Young-Bum Chun, and Chang-Kyu Rhee

(KAERI)

## [TS06] Poster Session 1 Best Poster Awards Candidates

Date & Time	July 3(Wed.), 2024 / 10:30-12:00
Place	Exhibition Hall 4,5

### TS06W\_BP\_1

**Tungsten-Doped Molybdenum Disulfide for Improved NO<sub>2</sub> Sensing Properties at Room Temperature**  
Jae-Woo Seo, Ga-Yeon Baek, Seung-Ho Choi, Yeon-Joo kim, and Seon-Jin Choi  
(*Hanyang University*)

### TS06W\_BP\_2

**Two-Dimensional Conductive Cu-Based Metal-Organic Frameworks for Reversible and Reproducible m-Xylene Sensing**  
Gyeong-Won Kwak, Jae-Woo Seo, and Seon-Jin Choi  
(*Hanyang University*)

### TS06W\_BP\_3

**Highly Sensitive Photon Upconversion Moisture-Sensing Hydrochromic Smart Materials for Cryptographic Applications**  
Joo Hyeong Han and Won Bin Im  
(*Hanyang University*)

### TS06W\_BP\_4

**Size-Controlled Co-MOF-74 for Improved NH<sub>3</sub> Adsorption Property**  
Gyeong-Won Kwak, Jae-Woo Seo, and Seon-Jin Choi  
(*Hanyang University*)

### TS06W\_BP\_5

**WS<sub>2</sub> Nanoflakes Functionalized with Porous ZnO Nanocubes for Improved NO<sub>2</sub> Sensing Properties**  
Jae-Woo Seo, Ga-Yeon Baek, Seung-Ho Choi, Yeon-Joo kim, and Seon-Jin Choi  
(*Hanyang University*)

### TS06W\_BP\_6

**Electrochemical Aptasensing for Exploring the Interplay between Inflammation and Psychological Distress through Salivary Interleukin-6 (IL-6) and Cortisol Detection**  
Kyungyeon Lee, Sunghyun Park, and Jayoung Kim  
(*Yonsei University*)

### TS06W\_BP\_7

**Computational Mechanism Study of Metalloporphyrin Functionalized SWCNT for NO<sub>2</sub> Sensing**  
Ga-Yeon Baek, Seung-Ho Choi, Jae-Woo Seo, Yeon-Joo Kim, and Seon-Jin Choi  
(*Hanyang University*)

**TS06W\_BP\_8**

**Miniaturized Neural Probe with Integrated Three-Electrode System for Simultaneous Real Time Detection of Dopamine and Glutamate**

Suhyung Kim, Dongwook Lee, Sunghyun Park, and Jayoung Kim

*(Yonsei University)*

**TS06W\_BP\_9**

**Multi-Scale Micro/Nano-Gap Device-Based Indirect Quantitation of Creatinine through its Chemical Reaction with Electrochemical Probe**

Hyun Jung Kim, Jong Kwan Park, Dong Hyun Kim, Seok Cheol Kim, Aejin Lee, Dong Hun Kim, and Wan Soo Yun

*(Sungkyunkwan University)*

**TS06W\_BP\_10**

**Humidity-Assisted NO<sub>2</sub> Detection under Visible Light Activation with a Submicron Conformal Polymeric Bilayer Coating**

Minhyun Kim, Booseok Jeong, and Il-Doo Kim

*(KAIST)*

**TS06W\_BP\_11**

**Enhanced Electrochemical Detection of Small Molecules using Affinity Based Molecularly Imprinted Composite Polymer**

Yujeong Lee, Kyungyeon Lee, and Jayoung Kim

*(Yonsei University)*

**TS06W\_BP\_12**

**Non-Covalent Selector Functionalization of P4VP-SWCNT Composite for Selective Acetate Detection Across  $\pi$ - $\pi$  Interaction**

Yeon-Joo Kim, Seung-Ho Choi, Jae-Woo Seo, Ga-Yeon Baek, and Seon-Jin Choi

*(Hanyang University)*

**TS06W\_BP\_13**

**Multimodal Breath Analysis System with Deep Learning for Early Detection of Lung Cancer**

Byeongju Lee<sup>1,2</sup>, Junyeong Lee<sup>1</sup>, Jin-Oh Lee<sup>1</sup>, Yoohwa Hwang<sup>3</sup>, Hyung-Keun Bahn<sup>3</sup>, Inkyu Park<sup>2</sup>, Sanghoon Jheon<sup>3</sup>, and Dae-Sik Lee<sup>1</sup>

*(<sup>1</sup>ETRI, <sup>2</sup>KAIST, <sup>3</sup>Seoul National University)*

**TS06W\_BP\_14**

**Surface-Enhanced Raman Spectroscopy in the Live Cell to Detect the mRNA**

Ju Eun Cho<sup>1</sup> and Dong-Kwon Lim<sup>1,2</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST)*



**TS06W\_BP\_15**

**Synthesis Optimization of Asymmetric Squaramide Derivatives**

Seung-Ho Choi, Yeon-Joo Kim, Dong-Hee Lee, Seung-Jae Lee, Se-Hong Park, and Seon-Jin Choi  
(*Hanyang University*)

**TS06W\_BP\_16**

**Chemically Modified MWCNT–UiO–66 Composites for Electrochemical Heavy Metal Ion Sensor**

Dong-Hee Lee, Seung-Ho Choi, Yeon-Joo Kim, and Seon-Jin Choi  
(*Hanyang University*)

**TS06W\_BP\_17**

**High Sensitive Near-Infrared Image Sensor using Degenerate Silicon**

YunJu Oh, Byeong Seon Kim, Seok Ki Lee, E Kyoung Kim, Areum Han, and Moon Hee Kang  
(*Chungbuk National University*)

**TS06W\_BP\_18**

**Transition–Metal Doped Ceria Nanoparticles Loaded Metal Oxide Nanofibers: Heightened Surface Activity for Chemiresistors**

Jong Won Baek and Il-Doo Kim  
(*KAIST*)

**TS06W\_BP\_19**

**Amine Engineered Interpenetrating Polymer Semiconductor Network for Ultrasensitive Chemosensor**

Elvis K. Boahen, Hyukmin Kweon, Hayoung Oh, and Do Hwan Kim  
(*Hanyang University*)

**TS06W\_BP\_20**

**Photothermal–Triggered Nanoparticle Redispersion on Metal Oxides**

Euichul Shin, Jong Won Baek, and Il-Doo Kim  
(*KAIST*)

**TS06W\_BP\_21**

**Systematic Design of Aptamer–Modified Extended–Gate MOSFET Biosensor for Sensitive Cortisol Detection**

Sunghyun Park and Jayoung Kim  
(*Yonsei University*)

**TS06W\_BP\_22**

**Enhanced Gas Sensing Performance with High Entropy Alloy Functionalized Tungsten Oxide Nanofibers**

Sang-Joon Kim<sup>1,2</sup>  
(<sup>1</sup>*KRICT*, <sup>2</sup>*UST*)

TS06W\_BP\_23

**The Enhancement in Low Sensitivity VOC Detection by Post-Concentrated Adsorbent Direct Heating/Desorption System**

Dong gwon Kang<sup>1,3</sup> and Sang-Joon Kim<sup>1,2</sup>

(<sup>1</sup>KRICT, <sup>2</sup>UST, <sup>3</sup>Yonsei University)

TS06W\_BP\_24

**Iridium Nanotrough Networks for Functionalized with Pd Catalyst: Highly Sensitive Hydrogen Sensor**

Ji-Won Choe<sup>1</sup> and Sang-Joon Kim<sup>1,2</sup>

(<sup>1</sup>KRICT, <sup>2</sup>UST)

TS06W\_BP\_25

**Oball-Shaped SnO<sub>2</sub> Hemispheres by Pt Infiltrated Porous Block Copolymer: Superior Detection of Formaldehyde**

Hyunji Lee<sup>1,2</sup> and Sang-Joon Kim<sup>1,2</sup>

(<sup>1</sup>KRICT, <sup>2</sup>UST)

TS06W\_BP\_26

**Oxygen-Mediated Surface Engineering of 3D Porous Graphene for All Graphene Humidity Sensing Devices**

Yeong Min Kwon, Min Hyeok Lim, Garam Bae, Hyeong-ku Jo, Do Hyung Lee, and Wooseok Song

(KRICT)

TS06W\_BP\_27

**Copper(I) Iodide Nanoparticles Embedded Stretchable Thermoelectric Fibers for Multimodal Temperature, Strain, and Pressure Sensing**

Kukro Yoon and Taeyoon Lee

(Yonsei University)

TS06W\_BP\_28

**Investigating the Role of Transition Metals of Zn, Fe and Cu and the Basis of Single and Double-Cavity Defective Graphenes in the Regeneration of CO<sub>2</sub> Gas**

Rahim Rahman-Abadi, Mohammad Haghgu, Zahra Rostami, and Reza Behjatmanesh Ardakani

(Payame Noor University)

## [TS07] Poster Session 1 Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30-12:00
<b>Place</b>	Exhibition Hall 4,5

### TS07W\_BP\_1

#### **Synthesis of Silica-Coated Gold Nanorods with Controlled Porosity of Silica Shell**

Minju Lee<sup>1</sup> and Dongkwon Lim<sup>1,2</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST)*

### TS07W\_BP\_2

#### **A Gold Nanostructured Platform for Assessment of Multipotency in Mesenchymal Stem Cells based on Differences in Cellular Metabolism**

Chang Dae Kim, Kyeong Mo Koo, and Tae-Hyung Kim

*(Chung-Ang University)*

### TS07W\_BP\_3

#### **Long-Term Maintenance of Multipotency of Stem Cells using Drug Delivery System-Loaded Polymer Nanoarray**

Yun-Sik Eom, Yeon-Woo Cho, and Tae-Hyung Kim

*(Chung-Ang University)*

### TS07W\_BP\_4

#### **Highly Sensitive Rapid Assay for the Detection of Influenza Incorporated with Simple Target Concentration Consisting of Graphene Oxide**

Hye Jin Lee, Yun Guang Li, Jaeyeon Yoon, Jihyung Seo, Changyoon Baek, and Junhong Min

*(Chung-Ang University)*

### TS07W\_BP\_5

#### **Ultrasensitive, Specific, and Rapid Detection of SARS-CoV-2 using Isothermal Amplification Integrated with CRISPR/Cas13a**

Jaemin Kim<sup>1</sup> and Hyun Gyu Park<sup>2</sup>

*(<sup>1</sup>KRIBB, <sup>2</sup>KAIST)*

### TS07W\_BP\_6

#### **Production of Uniform and Diverse Polymeric Microparticles using Degassed Mold Based Discontinuous Dewetting**

Hyeon Ung Kim, Dong Min Shin, Yoon Ho Roh, Seok Joon Mun, and Ki Wan Bong

*(Korea University)*

TS07W\_BP\_7

**The Effect of Size, Shape, and Functional Groups of Nanoscale Materials on an Ice Recrystallization Inhibition Activity**

Yong Duk Kim<sup>1</sup> and Dong-Kwon Lim<sup>1,2</sup>

(<sup>1</sup>Korea University, <sup>2</sup>KIST)

TS07W\_BP\_8

**Enhanced Multiplex Immunoassays through Optimization of Reduced Capture Antibody Conjugation to Encoded Hydrogel Microparticles**

Do Yeon Kim, Jiwoo Kim, Wookyoung Jang, Hyunkyo Roh, and Ki Wan Bong

(Korea University)

TS07W\_BP\_9

**Exploration of Mechanisms of Drug Resistance in a Microfluidic Device and Patient Tissues**

Wanyoung Lim<sup>1</sup>, Inwoo Hwang<sup>1</sup>, Jiande Zhang<sup>1</sup>, Zhenzhong Chen<sup>1</sup>, Jeonghun Han<sup>1</sup>, Jaehyung Jeon<sup>1</sup>, Bon-Kyoung Koo<sup>2</sup>, Sangmin Kim<sup>1</sup>, Jeong Eon Lee<sup>1</sup>, Kenneth J. Pienta<sup>3</sup>, Sarah R. Amend<sup>3</sup>, Robert H. Austin<sup>4</sup>, Jee-Yin Ahn<sup>1</sup>, and Sungsu Park<sup>1</sup>

(<sup>1</sup>Sungkyunkwan University, <sup>2</sup>Institute of Molecular Biotechnology of the Austrian Academy of Sciences, <sup>3</sup>The Johns Hopkins University School of Medicine, <sup>4</sup>Princeton University)

TS07W\_BP\_10

**Smartphone-Based Iontophoresis Transdermal Drug Delivery System for Cancer Treatment**

Tae Hyeon Kim, Na Yeon Kim, Hee Uk Lee, Ji Wook Choi, Taewook Kang, and Bong Geun Chung

(Sogang University)

TS07W\_BP\_11

**Cytotoxicity Assay for Evaluating the Impact of Extracellular Adhesion Molecules on Cancer Cell Killing**

Seong-Eun Kim<sup>1</sup>, Junsang Doh<sup>2</sup>, and HongNam Kim<sup>1</sup>

(<sup>1</sup>KIST, <sup>2</sup>Seoul National University)

TS07W\_BP\_12

**Herd Immunity on a Chip: Reconstructing Virus Transmission in Human Society**

Jiande Zhang<sup>1</sup>, Narina Jung<sup>1,2</sup>, Wanyoung Lim<sup>1</sup>, Zhenzhong Chen<sup>1</sup>, Byungmook Weon<sup>1</sup>, and Sungsu Park<sup>1</sup>

(<sup>1</sup>Sungkyunkwan University, <sup>2</sup>KIAS)

TS07W\_BP\_13

**Kidney Organoid Gradient Chip for Screening Fabry Disease Drugs**

Ho Yeon Lee<sup>1</sup>, Yoon Young Choi<sup>1</sup>, Jin Won Kim<sup>2</sup>, Ji Wook Choi<sup>1</sup>, Yong Kyun Kim<sup>2</sup>, and Bong Geun Chung<sup>1</sup>

(<sup>1</sup>Sogang University, <sup>2</sup>The Catholic University of Korea)

**TS07W\_BP\_14**

**Study of Neurodegenerative Diseases using Gut Microbiome-Derived Metabolites and Extracellular Vesicles on a Gut-Brain Axis Chip**

Na Yeon Kim<sup>1</sup>, Ho Yeon Lee<sup>1</sup>, Yoon Young Choi<sup>1</sup>, Sung Jun Mo<sup>2</sup>, Soomin Jeon<sup>2</sup>, Jang Ho Ha<sup>1</sup>, Soo Dong Park<sup>2</sup>, Jae-Jung Shim<sup>2</sup>, Jaehwan Lee<sup>2</sup>, and Bong Geun Chung<sup>1</sup>

*(<sup>1</sup>Sogang University, <sup>2</sup>hy Co., Ltd.)*

**TS07W\_BP\_15**

**Simple Multiplex microRNA Detection by Target-Primed DNA Extension in Hydrogel Microparticles**

Wookyoung Jang, Yu Jin Kim, Hyun Kyo Roh, E Loomee Song, and Ki Wan Bong

*(Korea University)*

**TS07W\_BP\_16**

**Ultrathin and Durable Anticorrosive Polymer for Ingestible Device**

Jihoon Lim<sup>1</sup>, Booseok Jeong<sup>1</sup>, Jemin Yeun<sup>1</sup>, Sung Gap Im<sup>1</sup>, and Kyoung G. Lee<sup>2</sup>

*(<sup>1</sup>KAIST, <sup>2</sup>NNFC)*

**TS07W\_BP\_17**

**Electro-Responsive Hydrogel for Drug Delivery Application**

Sang Hun Lee<sup>1</sup>, Jang Ho Ha<sup>1</sup>, Jae Hyun Lim<sup>1</sup>, Jong Min Lee<sup>2</sup>, and Bong Geun Chung<sup>1,2</sup>

*(<sup>1</sup>Sogang University, <sup>2</sup>Yeungnam University College)*

**TS07W\_BP\_18**

**Portable Cellular Monitoring System for Quantitative Analysis of 3D Tumor Spheroids**

Ji Heon Lim, Ji Wook Choi, Na Yeon Kim, and Bong Geun Chung

*(Sogang University)*

**TS07W\_BP\_19**

**Designing Polymer Thin Films with Composition Gradient for Robust Anti Biofouling and Corrosion Resistance**

Booseok Jeong<sup>1</sup>, Jihoon Lim<sup>1</sup>, Jemin Yeun<sup>1</sup>, Kyoung G. Lee<sup>2</sup>, and Sung Gap Im<sup>1</sup>

*(<sup>1</sup>KAIST, <sup>2</sup>NNFC)*

**TS07W\_BP\_20**

**Dual-Stimuli Responsive Silica Nanoparticle-Mediated Neural Differentiation of Human Induced Pluripotent Stem Cells**

Jeong Hyun You, Na Yeon Kim, Hyung Woo Choi, and Bong Geun Chung

*(Sogang University)*

**TS07W\_BP\_21**

**Droplet Microfluidic Device for Continuous Detection of Microparticles**

Ji Woo Jeon, Ji Wook Choi, and Bong Geun Chung

*(Sogang University)*

**TS07W\_BP\_22**

**Development of a 3D Microfluidic Device for Mimicking Cerebral Arteries**

Hyeelim Kim, Jiyong Song, Kyeongseob Hwang, Youngseon Cho, and Hongnam Kim

*(KIST)*

**TS07W\_BP\_23**

**Real-Time Signal Analysis with Broader Dynamic Range and Enhanced Sensitivity in Multiplex Colorimetric Immunoassay using Encoded Hydrogel Microparticles**

Yong Jun Lim, Jun Hee Choi, Seok Joon Mun, Jiwoo Ki, and Ki Wan Bong

*(Korea University)*

**TS07W\_BP\_24**

**Optimization of Particle Washing in Post-synthesis Functionalization Process to Enhance Sensitivity of Encoded Hydrogel-Based Immunoassay**

Su Hyeon Bae, Wookyoung Jang, Jun Hee Choi, Seok Joon Mun, and Ki Wan Bong

*(Korea University)*

**TS07W\_BP\_25**

**Highly Specific Multiplex Detection of SNPs using Encoded Hydrogel Microparticles with Universal Mismatch-Incorporated DNA Probes**

Hyun June Moon, Seok Joon Mun, Jun Ho Lee, Yoon Ho Roh, Yong Jun Lim, Jiwoo Kim, and Ki Wan Bong

*(Korea University)*

**[TS08] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS08W\_BP\_1****Ion Transport Accelerated Particle Incorporated Composite Actuator for Soft Robotics**

Minjeong Kim, So Young Kim, Hanbin Choi, and Do Hwan Kim

*(Hanyang University)***TS08W\_BP\_2****Mechanotransduction via Piezo-Driven Ion Declustering Dynamics for Innocuous Wireless Biosignal Monitoring Platform**Jihong Kim<sup>1</sup>, Haerim Kim<sup>2</sup>, Won Hyuk Choi<sup>1</sup>, Seungyoung Ahn<sup>2</sup>, and Do Hwan Kim<sup>1</sup>*(<sup>1</sup>Hanyang University, <sup>2</sup>KAIST)***TS08W\_BP\_3****Synthesis of Au-Based Nanoparticles through Chemical Transformation**

Heesoo Jeong, Yun Jae Hwang, Boeun An, and Don-Hyung Ha

*(Chung-Ang University)***TS08W\_BP\_4****Flexible Sensor with Multi-Taste Capability for Flavor Analysis via Deep Learning**Junwoo Yea<sup>1</sup>, Han Hee Jung<sup>2</sup>, Hyunjong Lee<sup>1</sup>, Jeongho Kwak<sup>1</sup>, Jihwan P. Choi<sup>3</sup>, and Kyung-In Jang<sup>1</sup>*(<sup>1</sup>DGIST, <sup>2</sup>Hannam University, <sup>3</sup>KAIST)***TS08W\_BP\_5****Anti-Temperature Interference Strain Sensing Layer based on Metal Nanoparticles by Optimized Hybrid Ligand Exchange**Young Kyun Choi<sup>1</sup>, Taesung Park<sup>1</sup>, Dong Hyun David Lee<sup>2</sup>, Junhyuk Ahn<sup>1</sup>, Yong Hwan Kim<sup>1</sup>, Sanghyun Jeon<sup>1</sup>, Myung Joon Han<sup>2</sup>, and Soong Ju Oh<sup>1</sup>*(<sup>1</sup>Korea University, <sup>2</sup>KAIST)***TS08W\_BP\_6****Flexible Neural Probe with 3D Nanoporous Microelectrodes for Deep Brain Decoding in Non-Human Primates**

Janghwan Jekal, Saehyuck Oh, and Kyung-In Jang

*(DGIST)*

**TS08W\_BP\_7**

**Wearable Multimodal Haptic System based on Ultra Light-Weight Textiles**

Jinhee Hwang, Sun Hong Kim, and Yei Hwan Jung

*(Hanyang University)*

**TS08W\_BP\_8**

**In-Depth Investigations on Synergistic Composition of Solution-Derived Quaternary Oxide Dielectrics for Enhanced Thin-Film Transistors**

Seokhyeon Baek<sup>1</sup>, Jun-Gyu Choi<sup>2</sup>, and Sungjun Park<sup>1</sup>

*(<sup>1</sup>Ajou University, <sup>2</sup>GIST)*

**TS08W\_BP\_9**

**Kinetically Controlled Morphology and Composition of Colloidal Nanoparticles: Cation Exchange Reactions from Copper Sulfide to Transition Metal (Mn, Zn, Co, and Fe) Sulfides**

Boeun An, Heesoo Joeng, and Don-Hyung Ha

*(Chung-Ang University)*

**TS08W\_BP\_10**

**Selective Patterning of Sol-Gel-Derived Oxide Semiconductors for Partially Overlapped Heterojunction Transistor**

Jun-Gyu Choi, Seokhyeon Baek, and Sungjun Park

*(Ajou University)*

**TS08W\_BP\_12**

**High-Performance Ultra-Flexible Organic Photovoltaic using Stretchable PDMS Nanopillar**

Jae-Hyun Ki<sup>1</sup>, Byoungwook Park<sup>2</sup>, Seulki Song<sup>3</sup>, Junyong Ahn<sup>4</sup>, Jaebin Jeong<sup>1</sup>, Sang-Hyeon Nam<sup>5</sup>, Seung-Hoon Lee<sup>6</sup>, Junyong Park<sup>4</sup>, and Sungjun Park<sup>1</sup>

*(<sup>1</sup>Ajou University, <sup>2</sup>KRICT, <sup>3</sup>Chungnam National University, <sup>4</sup>Kumoh National Institute of Technology, <sup>5</sup>KAIST, <sup>6</sup>Kongju National University)*

**TS08W\_BP\_13**

**Miniaturized Biosensors using Organic Electrochemical Transistors on Microfibers**

Jonghyun Won, Inho Lee, Hyeongbeom Lee, and Sungjun Park

*(Ajou University)*

**TS08W\_BP\_14**

**3D-Multilayered Organic Photodiode for Selective Light Sensing**

Jaebin Jeong, Jae-Hyun Kim, and Sungjun Park

*(Ajou University)*



TS08W\_BP\_15

**High-Amplification, Ultra-Flexible Organic Electrochemical Transistors for Skin-Interfaced Sensors**

Inho Lee, Hyeongbeom Lee, Jonghyun Won, and Sungjun Park

*(Ajou University)*

TS08W\_BP\_16

**Ultra-Conductive Fibers with Durability and Waterproof Properties for Bio-Signal Monitoring Systems**

Hansu Kim, Taeyeon Oh, Hyeongbeom Lee, Inho Lee, and Sungjun Park

*(Ajou University)*

TS08W\_BP\_17

**Biodegradable Multi-Dyad Encapsulation for Transient Electronics**

Hyeonji Yoo<sup>1</sup>, Gyeong-Seok Hwang<sup>1</sup>, Jae-Hwan Lee<sup>2</sup>, Seung-Kyun Kang<sup>2</sup>, and Ju-Young Kim<sup>1</sup>

*(<sup>1</sup>UNIST, <sup>2</sup>Seoul National University)*

TS08W\_BP\_18

**Nano-Fabrication of Inorganic Stretchable Encapsulation for Stretchable Organic Solar Cells**

Ji-Hyeon Jo, Hyeonji Yoo, Gyeong-Seok Hwang, and Ju-Young Kim

*(UNIST)*

TS08W\_BP\_19

**Laser-Based Photothermal Processing of Stretchable Nanocomposite for Fully Stretchable Multilayer Circuit**

Sangmin Son<sup>1,2</sup>, Wonryung Lee<sup>1</sup>, Seung Hwan Ko<sup>2</sup>, and Hojeong Jeon<sup>1</sup>

*(<sup>1</sup>KIST, <sup>2</sup>Seoul National University)*

TS08W\_BP\_20

**Stretchable, Self-Healing Conductors for Bioresorbable, Transient Electronic Systems**

Tae-Min Jang<sup>1</sup>, Won Bae Han<sup>1,2</sup>, and Suk-Won Hwang<sup>1,3</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>Georgia Institute of Technology, <sup>3</sup>KIST)*

TS08W\_BP\_21

**Membrane-Assisted Fabrication of Multilayer Biodegradable Polymer Microneedles with Reliable Drug Delivery**

Ha Young Choi<sup>1,2</sup>, Sangmin Song<sup>1</sup>, Hojeong Jeon<sup>1</sup>, Honggu Chun<sup>2</sup>, and Myoung-Ryul Ok<sup>1,3</sup>

*(<sup>1</sup>KIST, <sup>2</sup>Korea University, <sup>3</sup>UST)*

TS08W\_BP\_22

**Bioresorbable, Wireless, System for Electrotherapy at Wound Sites**

Daniel Tiruneh and Hanjun Ryu

*(Chung-Ang University)*

**TS08W\_BP\_23**

**A Scalable and Sustainable Transfer Printing using Self-Assembled Monolayers for Mass Production of Nano-Scale Electronics**

Seung-Min Lee, Woo-Jin Lee, Jae-Young Bae, Ji-Woo Gu, and Seung-Kyun Kang  
(*Seoul National University*)

**TS08W\_BP\_24**

**Defining Roles of the Cathodic Phase on the Binary Mg Alloys for the Generation Behavior of Reactive Oxygen Species**

Minjung Chae<sup>1,2</sup>, Goeen Jeon<sup>1,2</sup>, Guangzhe Li<sup>1</sup>, Hojeong Jeo<sup>1,3,4</sup>, Yu-Chan Kim<sup>1,3</sup>, Seung-Kyun Kang<sup>2</sup>, Ho Won Jang<sup>2</sup>, and Myoung-Ryul Ok<sup>1,3</sup>  
(<sup>1</sup>*KIST*, <sup>2</sup>*Seoul National University*, <sup>3</sup>*UST-KIST*, <sup>4</sup>*Korea University*)

**TS08W\_BP\_25**

**Bioresorbable Material-Based Negatively Responsive Strain Sensing Suture for Continuous Health Monitoring**

Jinho Kim and Jaehong Lee  
(*DGIST*)

**[TS09] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS09W\_BP\_2****Transcytosis Enhanced Delivery of Albumin Nanomedicines for High-Resolution Tumor Imaging and Therapy**

Yeonju Boo<sup>1</sup>, Hyori Lee<sup>1</sup>, and Won Jong Kim<sup>1,2</sup>  
 (<sup>1</sup>POSTECH, <sup>2</sup>OmniaMed Co., Ltd.)

**TS09W\_BP\_3****Deep Brain Stimulation by Blood-Brain-Barrier-Crossing Piezoelectric Nanoparticles Generating Current and Nitric Oxide under Focused Ultrasound**

Jihye Lee, Taejeong Kim, and Won Jong Kim  
 (POSTECH)

**TS09W\_BP\_4****Development of a Tumor Microenvironment (TME) Mimicking 3D In Vitro Coculture Platform Facilitating Differentiation of Normal Fibroblast into Cancer Associated Fibroblast (CAF)**

Hyeon Song Lee<sup>1</sup>, Eun Ji Yeom<sup>1</sup>, Hwa Kyung Byun<sup>2</sup>, Woong Sub Koom<sup>2</sup>, and Won-Gun Koh<sup>1</sup>  
 (<sup>1</sup>Yonsei University, <sup>2</sup>Yonsei University College of Medicine)

**TS09W\_BP\_5****M1 Macrophages Induced PCL/PVP Blended Nanofibers-Based Microwells System for Immunotherapy of Breast Cancer**

Juhwan Choi and Won-Gun Koh  
 (Yonsei University)

**TS09W\_BP\_6****A Transformable siRNA Nanomedicine via Spatially Controlled Disulfide Polymerization for Stable Packaging and Synergistic Therapy**

Gaeun Park<sup>1</sup>, Sangpil Kim<sup>1</sup>, Yumi Cho<sup>1</sup>, Dohyun Kim<sup>1</sup>, Seung Hak Oh<sup>1</sup>, Eunshil Choi<sup>1</sup>, Sang Kyu Kwak<sup>2</sup>, and Ja-Hyoung Ryu<sup>1</sup>  
 (<sup>1</sup>UNIST, <sup>2</sup>Korea University)

**TS09W\_BP\_7****Triple Dumbbell Template-Mediated Exponential Amplification System with Structure-Specific Invasive Cleavage for Breast Cancer Diagnosis**

Jueun Han, Khulan Nyamzaya, Yejin Song, Jihee Lee, and Eunjung Kim  
 (Incheon National University)

**TS09W\_BP\_8**

**Molecular Diagnostic System for Early Detection of Peritoneal Fibrosis in Peritoneal Dialysis Patients**

Yejin Song, Jueun Han, Khulan Nyamzaya, Jihee Lee, and Eunjung Kim

*(Incheon National University)*

**TS09W\_BP\_9**

**Innovative o-Phenylenediamine Derivatives as Nitric Oxide Scavengers for Rheumatoid Arthritis Therapy**

Sangmin Lee<sup>1</sup>, Yeong Mi Lee<sup>1</sup>, and Won Jong Kim<sup>1,2</sup>

*(<sup>1</sup>POSTECH, <sup>2</sup>OmniaMed Co., Ltd.)*

**TS09W\_BP\_10**

**Aloe-derived Extracellular Nanovesicles for Acute Colitis Treatment**

Sang-Hun Choi and Jihoon Kim

*(Chung-Ang University)*

**TS09W\_BP\_11**

**Magnetic Nanoparticle-Based Multifunctional Porous Microspheres Loaded with Oncolytic Bacteria for Targeted Cancer Therapy**

Ga-Hyun Bae and Wooram Park

*(Sungkyunkwan University)*

**TS09W\_BP\_12**

**High-Z Materials-Based Nanomedicine for Enhanced Cancer Radiotherapy**

Seungyong Shin and Wooram Park

*(Sungkyunkwan University)*

**TS09W\_BP\_13**

**Improving the Delivery of Paclitaxel Drug via Silk Proteins to Target Ovarian Cancer**

Jaehoon Ko, Yoonho Hwang, Seonmin Choi, Hyeyoun Cho, and Jaehong Key

*(Yonsei University)*

**TS09W\_BP\_14**

**Silk Protein-Based Drug Delivery System for Lung Cancer Treatment**

Hyeyoun Cho, Jaehoon Ko, Yoonho Hwang, Seonmin Choi, and Jaehong Key

*(Yonsei University)*

TS09W\_BP\_15

**Potential of AuNR@SiO<sub>2</sub> with a Tunable Silica Shell Thickness in Nanoscale for Immuno-Photothermal Therapeutics**

Wonseok Yang<sup>1</sup>, Wan Su Yun<sup>1</sup>, Yong Duk Kim<sup>1</sup>, Kwangmeyung Kim<sup>2</sup>, and Dong-Kwon Lim<sup>1,3</sup>

(<sup>1</sup>Korea University, <sup>2</sup>Ewha Womans University, <sup>3</sup>KIST)

TS09W\_BP\_16

**Anisotropic Hybrid Hydrogel with Aligned Electrospun Fibrils for Directed Muscle Cell Growth**

Go Eun Bae, Seung Yeop Yoo, Min Jin Kim, and Hyun Jong Lee

(Gachon University)

TS09W\_BP\_17

**Partial VEGF Peptide as an Inhibitor of Angiogenesis**

Kevin Kent Vincent Canlas and Hansoo Park

(Chung-Ang University)

TS09W\_BP\_18

**Development of pH-Responsive Drug Releasing System for Enhanced Ferroptosis-Based Anticancer Therapy**

Seohee Lee, Junha Lim, and Wonjong Kim

(POSTECH)

TS09W\_BP\_19

**Enhancing Cancer Therapy with CXCR4-targeted Biomimetic Hybrid Nanovesicles for Dual Delivery of Manganese and Doxorubicin**

Yeonwoo Jang<sup>1</sup>, Young Seok Cho<sup>2</sup>, James J. Moon<sup>2</sup>, and Hansoo Park<sup>1</sup>

(<sup>1</sup>Chung-Ang University, <sup>2</sup>University of Michigan)

TS09W\_BP\_20

**Harnessing Dual Responsive DNA-Functionalized Gold Nanoparticles for Enhanced Photothermal Anti-tumor Therapy**

Yunyoung Nah<sup>1</sup>, Jinseong Kim<sup>1</sup>, and Won Jong Kim<sup>1,2</sup>

(<sup>1</sup>POSTECH, <sup>2</sup>OmniaMed Co., Ltd.)

TS09W\_BP\_21

**Nanostructured Casein-Tannic Acid Film for Environmentally Friendly Hair Protection**

Sujin Kyung, Yeon Tae Kang, and Hyun Jong Lee

(Gachon University)

TS09W\_BP\_23

**Iodine and Manganese Doped Carbon Dots as Novel Radiocontrast Agents**

Zarina Baranchiyeva<sup>1</sup>, Bakyt Duisenbayeva<sup>2</sup>, Dong-Wook Han<sup>3</sup>, and Timur Sh. Atabaev<sup>1</sup>

*(<sup>1</sup>Nazarbayev University, <sup>2</sup>Republican Diagnostic Center, <sup>3</sup>Pusan National University)*

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## [TS10] Poster Session 1 Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30-12:00
<b>Place</b>	Exhibition Hall 4,5

### TS10W\_BP\_1

#### Investigation of Electrical Properties in ReRAM Devices Utilizing IGZO with Varied Electrode Configurations

Jaewook Park, Jaegoo Lee, and Hongseok Oh  
(*Soongsil University*)

### TS10W\_BP\_2

#### Generation of Indistinguishable and Efficient Single Photons from Quantum Dots

Dong Hyun Park, Kyu Young Kim, and Je Hyung Kim  
(*UNIST*)

### TS10W\_BP\_3

#### Enhancement of the Mobility in Rare Metal-Free Oxide Semiconductors through Metal Induced Crystallization

Kyusun Han, Jiyong Kim, Jaegoo Lee, and Hongseok Oh  
(*Soongsil University*)

### TS10W\_BP\_4

#### Reversible Oxidative p-doping in Two-Dimensional Tin Halide Perovskite Transistors

Jaeyong Woo<sup>1</sup>, Yeeun Kim<sup>1</sup>, Young-Kwang Jung<sup>2</sup>, Heebeom Ahn<sup>1</sup>, Inha Kim<sup>1</sup>, Youjin Reo<sup>3</sup>, Hyungbin Lim<sup>1</sup>, Changjun Lee<sup>1</sup>, Jonghoon Lee<sup>1</sup>, Yongjin Kim<sup>1</sup>, Hyeonmin Choi<sup>1</sup>, Min-Hyun Lee<sup>4</sup>, Jeongjae Lee<sup>6</sup>, Samuel D. Stranks<sup>2</sup>, Henning Sirringhaus<sup>2</sup>, Yong-Young Noh<sup>3</sup>, Keehoon Kang<sup>1</sup>, and Takhee Lee<sup>1</sup>  
(<sup>1</sup>*Seoul National University*, <sup>2</sup>*University of Cambridge*, <sup>3</sup>*POSTECH*, <sup>4</sup>*Samsung Electronics Co., Ltd.*)

### TS10W\_BP\_5

#### Large HOMO-LUMO Gap Molecular Transistors Enabled by Mixed SAM Configurations

Donguk Kim, Hyemin Lee, Minwoo Song, Jongwoo Nam, and Takhee Le  
(*Seoul National University*)

### TS10W\_BP\_6

#### Highly Sensitive and Fast Responding Flexible Force Sensors using ZnO/ZnMgO Coaxial Nanotubes on Graphene Layers for Breath Sensing

Asad Ali<sup>1</sup>, Jamin Lee<sup>1</sup>, Kyoungho Kim<sup>1</sup>, Hongseok Oh<sup>2</sup>, and Gyu-Chul Yi<sup>1</sup>  
(<sup>1</sup>*Seoul National University*, <sup>2</sup>*Soongsil University*)

TS10W\_BP\_7

**Spectral Tunability and Performance Enhancement in Hybrid Graphene-Based Photodetectors via Interfacial Photogating Effect**

Hai Phuong Duong and Ki Kang Kim  
(*Sungkyunkwan University*)

TS10W\_BP\_8

**Photo-Oxidative Crack Propagation in Transition Metal Dichalcogenides**

Andrew Ben-Smith<sup>1</sup>, Soo Ho Choi<sup>1</sup>, Stephen Boandoh<sup>1</sup>, Byung Hoon Lee<sup>1</sup>, Duc Anh Vu<sup>1</sup>, Huong Thi Thanh Nguyen<sup>1</sup>, Laud Anim Adofo<sup>1</sup>, Jeong Won Jin<sup>1</sup>, Soo Min Kim<sup>2</sup>, Young Hee Lee<sup>1</sup>, and Ki Kang Kim<sup>1</sup>  
(<sup>1</sup>*Sungkyunkwan University*, <sup>2</sup>*Sookmyung Women's University*)

TS10W\_BP\_9

**High-Luminance Deep-Blue Light Emitting Diode Fabricated from Defect-Controlled Graphene Quantum Dots**

Sukki Lee<sup>1</sup>, Jinu Park<sup>1</sup>, Byungha Shin<sup>1</sup>, and Seokwoo Jeon<sup>2</sup>  
(<sup>1</sup>*KAIST*, <sup>2</sup>*Korea University*)

TS10W\_BP\_10

**Reconfigurable VO<sub>2</sub> Mott Memristor for Neuromorphic Electronics**

Gwaneyeong Park, Sanghyeon Choi, and Gunuk Wang  
(*Korea University*)

TS10W\_BP\_11

**Evaluation of Electrical Properties of Pt/Cr/HfO<sub>2</sub>/Pt/Cr/HfO<sub>2</sub>/SiO<sub>2</sub>/Si Flash-Type Gate Stack Capacitors as a Function of SiO<sub>2</sub> Oxide Film Thickness**

TaeHwan Koo, HyeongJin Chae, SoYeon Jung, JaeMin Kim, JuYeong Chae, and Moongyu Jang  
(*Hallym University*)

TS10W\_BP\_12

**In-Depth Study on Multi-Level Cell Characteristics of TaO<sub>x</sub>-Based Vertical RRAM for 3D Stackable Memory Applications**

Hojin Moon, Seonuk Jeon, Yunsur Kim, and Jiyong Woo  
(*Kyungpook National University*)

TS10W\_BP\_13

**Probabilistic Bits with SiO<sub>x</sub>-Based Threshold Switches for Vehicle Routing Problem**

Jihyun Kim, Hyun Wook Kim, Hyeonsik Choi, and Jiyong Woo  
(*Kyungpook National University*)



**TS10W\_BP\_14**

**Effect of Post-Annealing in Back-End-Of-Line Compatible Transistors with Oxide Channel/High-k Dielectric Stacks for 3D Stackable Memory Applications.**

Nayeon Kim, Hyoungjin Park, Jiae Jeong, and Jiyong Woo  
*(Kyungpook National University)*

**TS10W\_BP\_15**

**UV Response of IGZO Tunnel-Contact SGTs for Low-Power and High-Sensitivity UV Sensor Applications**

Junhyun Kim and Hongseok Oh  
*(Soongsil University)*

**TS10W\_BP\_16**

**Memristive Switching Mechanism of TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Crossbar Array Deposited by Atomic Layer Deposition Method and its Logic Gate Application**

Woohyeon Ryu, Chansoo Yoon, Sohwi Kim, and Bae Ho Park  
*(Konkuk University)*

**TS10W\_BP\_17**

**Spin-On Dopant Process as an Alternative Method for the Formation of Source/Drain of the Silicon MOSFET**

Byeong Seon Kim, YunJu Oh, Seok Ki Lee, E Kyoung Kim, Areum Han, and Moon Hee Kang  
*(Chungbuk National University)*

**TS10W\_BP\_18**

**Enhancing Performance of Homojunction a-InGaZnO Thin Film Transistors through Oxygen Vacancy Concentration Differences**

Yerim Lee, Junbeom Lee, Suhwon Choi, Yeoeun Yun, Jiyoung Bang, Hyeonjeong Sun, Seungmin Choi, Youngsoo Noh, Hyowon Kim, Seungjae Lee, Kyubin Hwang, and Seung-Beck Lee  
*(Hanyang University)*

**TS10W\_BP\_19**

**Improving Performance of Oxide Thin Film Transistors using Sputtering of Multi-Stack Oxide Heterostructure Layer**

Geonwoo Kim, Seungha Lee, Sehee Gu, Seungjae Lee, Hyowon Kim, Jiyoung Bang, Hyeonjeong Sun, Youngsoo Noh, Seungmin Choi, Yeoeun Yun, Kyubin Hwang, Eunsuk Choi, and Seung-Beck Lee  
*(Hanyang University)*

**TS10W\_BP\_20**

**Achieving High Field-Effect Mobility of Top Gate a-IGZO TFTs with High-k Gate Insulator through Capping Layer Oxidation**

Jinwook Do, Taeyang Kim, Jeongeun Kim, Jeemin Kang, Kyubin Hwang, Jiyoung Bang, Hyeonjeong Sun, Seungmin Choi, Yeongsoo Noh, Hyowon Kim, Seungjae Lee, Yeoeun Yun, and Seung-Beck Lee

**[TS11] Poster Session 1** Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS11W\_BP\_1****Recyclable Triboelectric Nanogenerator for Ocean Monitoring Systems**Junseong Ahn<sup>1</sup>, Ji-Hwan Ha<sup>2</sup>, Soon Hyoung Hwang<sup>2</sup>, Inkyu Park<sup>3</sup>, and Jun-Ho Jeong<sup>2</sup>*(<sup>1</sup>Korea University, <sup>2</sup>KIMM, <sup>3</sup>KAIST)***TS11W\_BP\_2****Multi-Factor Physical Unclonable Functions using Micro-Wrinkles**

Kitae Kim and Jun-Hee Na

*(Chungnam National University)***TS11W\_BP\_3****Wearable Colorimetric Sweat pH Sensor-Based Smart Textile for Cystic Fibrosis Monitoring**Ji-Hwan Ha<sup>1,2</sup>, Su A Park<sup>1</sup>, Junseong Ahn<sup>3</sup>, Yongrok Jeong<sup>4</sup>, Byung-Ho Kang<sup>1,2</sup>, Byeongmin Kang<sup>1,2</sup>, Sohee Jeon<sup>1</sup>, Soonhyoung Hwang<sup>1</sup>, Jun-Ho Jeong<sup>1</sup>, and Inkyu Park<sup>2</sup>*(<sup>1</sup>KIMM, <sup>2</sup>KAIST, <sup>3</sup>Korea University, <sup>4</sup>KAERI)***TS11W\_BP\_4****A Study on High Aspect Ratio Structure Fabrication via Microlens Arrays in SPPW Process**

Myung Seo Kim, Seok Kim, and Young Tae Cho

*(Changwon National University)***TS11W\_BP\_5****Analyzing Degradation Characteristics of Blue Thermally Activated Delayed Fluorescence Organic Light-Emitting Diodes via Capacitance-Voltage Method**

Jun-Young Park, Jian Cheng Bi, Seonghyeon Park, Ji-Sung Lee, and Byeong-Kwon Ju

*(Korea University)***TS11W\_BP\_6****Modulating the Color Spectrum of Organic Light-Emitting Diodes via Reflection Phase Delay in Nanostructures with 2,000ppi Resolution**

Seonghyeon Park, Jun-Young Park, Junbeom Song, Ji-Sung Lee, Hyejung Lim, and Byeong-Kwon Ju

*(Korea University)*

**TS11W\_BP\_7**

**Controlling the Phase Distribution of Single Bromide Quasi-2-Dimensional Perovskite Crystals via Solvent Engineering for High Efficiency Pure-Blue Light-Emitting Diodes**

Seoyeon Park<sup>1</sup>, Joonyun Kim<sup>2</sup>, Soohyeong Lee<sup>3</sup>, Byeong-Gwan Cho<sup>3</sup>, and Byungha Shin<sup>1</sup>

(<sup>1</sup>KAIST, <sup>2</sup>SAIT, <sup>3</sup>KRISS)

**TS11W\_BP\_8**

**Angle-Independent Color Filtering with Metal-Insulator-Metal-Based Meta-Mirror**

Yeonah Kim and Seung-Yeol Lee

(*Kyungpook National University*)

**TS11W\_BP\_9**

**3D-Printed Nano-Microstructure using Two-Photon Lithography**

Yunwoo Lee, Soon-Hyoung Hwang, Sohee Jeon, Junhyuk Choi, Dae-Geun Choi, Joo-Yeon Jeong, Hyun Min Cho, Jihye Lee, Won-Seok Jang, and Jun-Ho Jeong

(*KIMM*)

**TS11W\_BP\_10**

**Water-Floated Nanostructure as an Innovative Nano Transfer Technique to Curved Surface and its Application: Surface Enhanced Raman Scattering**

Byung-Ho Kang<sup>1,2</sup>, Junseong Ahn<sup>3</sup>, Ji-Hwan Ha<sup>1,2</sup>, Byungmin Kang<sup>1,2</sup>, Sohee Jeon<sup>2</sup>, Soon Hyoung Hwang<sup>2</sup>, Inkyu Park<sup>1</sup>, and Jun-Ho Jeong<sup>2</sup>

(<sup>1</sup>KAIST, <sup>2</sup>KIMM, <sup>3</sup>Korea University)

**TS11W\_BP\_11**

**Characteristics of Carbon By-Products Generated from Methane Gas-Liquid Metal Reaction**

Young In Park and Hyeonjin Eom

(*KITECH*)

**TS11W\_BP\_12**

**2 $\pi$ -Phase Tuning and Amplitude Control of Second Harmonic Generation by Nonlinear Polaritonic Metasurface**

Jaesung Kim<sup>1</sup>, Jaeyeon Yu<sup>1</sup>, Gerhard Boehm<sup>2</sup>, Mikhail Belkin<sup>2</sup>, and Jongwon Lee<sup>1</sup>

(<sup>1</sup>UNIST, <sup>2</sup>Technical University of Munich)

**TS11W\_BP\_13**

**Multilayered Nanoporous Gold Nanowires Forming a Profusion Nanogaps for Surface-Enhanced Raman Spectroscopy Analysis**

Hyojin An<sup>1,2</sup>, Byeong-Kwon Ju<sup>2</sup>, and Joo-Yun Jung<sup>1</sup>

(<sup>1</sup>KIMM, <sup>2</sup>Korea University)

**TS11W\_BP\_14**

**Wireless, Battery-Free, Optoelectronic Diagnostic Sensor Integrated Colorimetric Dressing for Wound Care**

Ji-Hwan Ha<sup>1,2</sup>, Seokjoo Cho<sup>2</sup>, Jihye Lee<sup>1</sup>, Junseong Ahn<sup>3</sup>, Yongrok Jeong<sup>4</sup>, Byung-Ho Kang<sup>1,2</sup>, Byeongmin Kang<sup>1,2</sup>, Sohee Jeon<sup>1</sup>, Soonhyoung Hwang<sup>1</sup>, Inkyu Park<sup>2</sup>, and Jun-Ho Jeong<sup>1</sup>

(<sup>1</sup>KIMM, <sup>2</sup>KAIST, <sup>3</sup>Korea University, <sup>4</sup>KAERI)

**TS11W\_BP\_15**

**Nanotransfer Printing of Metal and Metal-Oxide Nanopatterns on Electrospun Fibers for Wearable Healthcare Applications**

Ji-Hwan Ha<sup>1,2</sup>, Junseong Ahn<sup>3</sup>, Yongrok Jeong<sup>4</sup>, Byung-Ho Kang<sup>1,2</sup>, Byeongmin Kang<sup>1,2</sup>, Sohee Jeon<sup>1</sup>, Soonhyoung Hwang<sup>1</sup>, Inkyu Park<sup>2</sup>, and Jun-Ho Jeong<sup>1</sup>

(<sup>1</sup>KIMM, <sup>2</sup>KAIST, <sup>3</sup>Korea University, <sup>4</sup>KAERI)

**TS11W\_BP\_16**

**Change in Contact Angle of Water-Repellent Pattern Immersed in Water for 90 days**

Seo Rim Park, Seok Kim, and Young Tae Cho

(Changwon National University)

**TS11W\_BP\_17**

**Fabrication of Photopolymer-Based Nanoporous 3D Structure and Use as Absorber**

Na Ye Jang, Seo Rim Park, Seok Kim, and Young Tae Cho

(Changwon National University)

**[TS12] Poster Session 1** Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS12W\_BP\_1****Doping Strategies for Highly Efficient Electron-Transport-Layer-Free Perovskite Solar Cells**

Kelvian T. Mularso, Bonghyun Jo, and Hyun Suk Jung

*(Sungkyunkwan University)***TS12W\_BP\_2****High-Detectivity of Lead Sulfide Colloidal Quantum Dots for SWIR Photodetectors through an Interfacial Layer Integration**

Ha-Chi V. Tran, Eunji Jang, Jugyoung Kim, and Sohee Jeong

*(Sungkyunkwan University)***TS12W\_BP\_3****Thermally Stable Perovskite Solar Cells**Yu-Na Lee<sup>1</sup>, Thanh-Tuân Bui<sup>2</sup>, and Hui-Seon Kim<sup>1</sup>*(<sup>1</sup>Inha University, <sup>2</sup>CY Cergy Paris University)***TS12W\_BP\_4****Lattice Strain Control for Perovskite Solar Cells**

YunKyeong Hong, Sanghee Yang, and Hui-Seon Kim

*(Inha University)***TS12W\_BP\_5****Revisiting the Redox Reactions at Perovskite-Nickel Oxide Interfaces through an Innovative Method of Buried Interface Exposure based on Transfer Printing**

Geon Woo Yoon and Hyun Suk Jung

*(Sungkyunkwan University)***TS12W\_BP\_6****Effect of High-Pressure Hydrogen Annealing on Ultra-Thin ZnO Field Effect Transistor**Hae-Won Lee<sup>1,2</sup>, Minjae Kim<sup>1,2</sup>, Jae Hyeon Jun<sup>1,2</sup>, Chanbin Lee<sup>1,2</sup>, Kyuheon Kim<sup>1,2</sup>, and Byoung Hun Lee<sup>1,2</sup>*(<sup>1</sup>Center for Semiconductor Technology Convergence, <sup>2</sup>POSTECH)*

**TS12W\_BP\_7**

**Bimetal Nitride Monodisperse Nanoparticles for Efficient Water Oxidation Catalysis**

Jeseok Lee, Seohyun Kim, and Kyoungsuk Jin

*(Korea University)*

**TS12W\_BP\_8**

**Tailored Side-Chain in Ionogels for p or n-Type Sustainable Thermoelectrics**

Sungryong Kim and Taiho Park

*(POSTECH)*

**TS12W\_BP\_9**

**Impact of the Ultrasonic Dispersion Process Applied to a Cyclohexanol-Based Catalyst Paste on the Pore Structure and Electrochemical Performance of Screen-Printed Proton Exchange Membrane Fuel Cells**

Kassim Mendoza, Takeshi Fukuda, Maito Tanabe, Ryuki Tsuji, and Seigo Ito

*(University of Hyogo)*

**TS12W\_BP\_10**

**Ozone-Assisted Hydrothermal Method of Sb-Doped SnO<sub>2</sub> Nanoparticles for Carbon-Free ORR Catalysts in Proton-Exchange-Membrane Hydrogen Fuel Cells**

Takeshi Fukuda, Kenji Iimura, Takanori Yamamoto, Ryuki Tsuji, Maito Tanabe, and Seigo Ito

*(University of Hyogo)*

**TS12W\_BP\_11**

**Enhanced Cycling Performance of Aqueous Zinc-Iodine Batteries Utilizing Transition Metal-Zeolite-Embedded Carbon Nanofibers**

Yoongu Lim<sup>1</sup>, Gyoung Hwa Jeong<sup>1</sup>, Joon Young Kim<sup>1</sup>, Dae Jun Moon<sup>1</sup>, and Uk Sim<sup>1,2,3</sup>

*(<sup>1</sup>KENTECH, <sup>2</sup>NEEL Sciences, <sup>3</sup>Chonnam National University)*

**TS12W\_BP\_12**

**Ambipolar Nature Accelerates Dual-Functionality on Ni/Ni<sub>3</sub>N@NC for Simultaneous Hydrogen and Oxygen Evolution in Water Splitting System**

Gnanaprakasam Janani<sup>1</sup>, Subramani Surendran<sup>1</sup>, Yoongu Lim<sup>1</sup>, Jinuk Choi<sup>1</sup>, and Uk Sim<sup>1,2</sup>

*(<sup>1</sup>KENTECH, <sup>2</sup>NEEL Sciences)*

**TS12W\_BP\_13**

**Interfacial Engineering of CuCo/CuCoO Mott-Schottky Electrocatalyst for High-Performance Sustainable Water Splitting Systems**

Subramani Surendran<sup>1</sup>, Gnanaprakasam Janani<sup>1</sup>, Jinuk Choi<sup>1</sup>, and Uk Sim<sup>1,2</sup>

*(<sup>1</sup>KENTECH, <sup>2</sup>NEEL Sciences)*

TS12W\_BP\_14

**In Situ Raman Spectroscopy Investigation of Perovskite  $\text{La}_{0.8}\text{Sr}_{0.2}\text{CrO}_3$  Nanofibers for Oxygen Evolution Reaction in Lithium–Oxygen Batteries**

Myeong–Chang Sung, Byoungjoon Hwang, and Dong–Wan Kim

*(Korea University)*

TS12W\_BP\_15

**Composition Analysis of Particle By–Products Generated from Fluorine Gas–Liquid Metal Reaction for Decomposing Fluorine Gas**

Dabin Lee and Hyeonjin Eom

*(KITECH)*

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## [TS13] Poster Session 1 Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30-12:00
<b>Place</b>	Exhibition Hall 4,5

### TS13W\_BP\_1

#### **The Impact of Grain Size and Composition on the Mechanical Properties of EUV Pellicle**

Won Jin Kim, Haneul Kim, Young Woo Kang, Young Wook Park, and Jinho Ahn

*(Hanyang University)*

### TS13W\_BP\_2

#### **Investigation of Selective Growth of Si on Polycrystalline Silicon Substrate**

Hoi Yoon Jung, Sung Jun Kim, Jun Hyeong Park, Wang Chul Shin, In-Sung Park, Young Wook Park, and Jinho Ahn

*(Hanyang University)*

### TS13W\_BP\_3

#### **EUV Ptychographic Imaging for High-Fidelity Actinic Inspection of Periodic Mask Patterns with EUV Ptychography Microscope**

Junho Hong, Dong Gi Lee, Seungchan Moon, and Jinho Ahn

*(Hanyang University)*

### TS13W\_BP\_4

#### **Analysis of Optical Constant Region Mitigating Best Focus Shift for High-NA EUV Mask**

Seungho Lee, Dongmin Jeong, Yunsoo Kim, and Jinho Ahn

*(Hanyang University)*

### TS13W\_BP\_5

#### **Dry Development Process for Vertically Tailored Hybrid Multilayer EUV Photoresist**

Ji-Hoo Seok<sup>1</sup>, Jiwon Kim<sup>1</sup>, Hyeonseok Ji<sup>1</sup>, Jaehyuk Lee<sup>1</sup>, In-Sung Park<sup>1</sup>, Kwangsub Yoon<sup>1,2</sup>, Myung Mo Sung<sup>1</sup>, and Jinho Ahn<sup>1</sup>

*(<sup>1</sup>Hanyang University, <sup>2</sup>Samsung Electronics Co., Ltd.)*

### TS13W\_BP\_6

#### **Experimental Investigation of the Mask Diffraction Obstructed by the Critical-Sized Sn Particles on EUV Pellicle**

Seungchan Moon, Dong Gi Lee, Junho Hong, and Jinho Ahn

*(Hanyang University)*



**TS13W\_BP\_7****Improving the Etching Performance of Platinum-Based Alloys for Advanced EUV Mask Absorber**

Yunsoo Kim, Dongmin Jeong, Seungho Lee, and Jinho Ahn

*(Hanyang University)***TS13W\_BP\_8****Control of Oxygen Levels in Cell Chips by Oxygen Expulsion via Tubing**

Jingyeong Yun, Geonho Cho, Tae-Joon Jeon, and Sun Min Kim

*(Inha University)***TS13W\_BP\_9****Oxygen Concentration-Dependent Trophoblast Migration in Microfluidic System**

Hyeonji Cho, Gun Ko, Tae-Joon Jeon, and Sun Min Kim

*(Inha University)***TS13W\_BP\_10****In-Vitro and In-Vivo Quantitative Monitoring of Exerkine APLN for Diagnosis and Treatment of Sarcopenia**Jisoo Park<sup>1,2</sup>, Gyudong Kim<sup>2</sup>, Jihoon Kim<sup>2</sup>, and Kwan Hyi Lee<sup>1,2</sup>*(<sup>1</sup>Korea University, <sup>2</sup>KIST)***TS13W\_BP\_11****Nanostructure-Based Polyaniline Supercapacitor with High Rate Capacitance and Cycle Stability**Gyumin Kim<sup>1</sup>, Kyoung G. Lee<sup>2</sup>, and Bong gill Choi<sup>1</sup>*(<sup>1</sup>Kangwon National University, <sup>2</sup>NNFC)***TS13W\_BP\_12****Polyaniline Nanopillar-Based Electrochemical Sensor for Calcium Ion Detection**Juha Park<sup>1</sup>, Kyoung G. Lee<sup>2</sup>, and Bong Gill Choi<sup>1</sup>*(<sup>1</sup>Kangwon National University, <sup>2</sup>NNFC)***TS13W\_BP\_13****Sequential Multi-Algorithm Reclassification Technique (SMART) Implemented in a Noninvasive FET Biosensor Enabling Precision Screening of Bladder Cancer**Hyung Joon Park<sup>1,2</sup>, Sungwook Park<sup>2</sup>, Heekseok Kang<sup>2</sup>, Yukyoung Choi<sup>1,2</sup>, Harin Jin<sup>2</sup>, Seok Jae Lee<sup>3</sup>, Yoo Min Park<sup>3</sup>, Seok Ho Kang<sup>1</sup>, and Kwan Hyi Lee<sup>1,2</sup>*(<sup>1</sup>Korea University, <sup>2</sup>KIST, <sup>3</sup>NNFC)*

**TS13W\_BP\_14**

**Development of an Impedimetric-Based Nanopillar Array Electrode Sensor for Measuring Ion Concentration**

Sung Tae Jang<sup>1</sup>, Seok Ju Won<sup>1</sup>, Kyoung G. Lee<sup>2</sup>, and Bong Gill Choi<sup>1</sup>

*(<sup>1</sup>Kangwon National University, <sup>2</sup>NNFC)*

**TS13W\_BP\_15**

**Discrimination of Single Functional-Groups of Neurotransmitters via MOF-Enhanced FET Biosensor**

Hyunro Kim<sup>1,2</sup>, Chanjoon Keum<sup>2</sup>, Sungwook Park<sup>2</sup>, Youngdo Jeong<sup>2</sup>, and Kwan Hyi Lee<sup>1,2</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST)*

**TS13W\_BP\_16**

**Detecting MPXV Viral DNA and Distinguishing Single Mutations in RNA through a Combined CRISPR Sensing System**

Yongjin Lee<sup>1,2</sup>, Seuk-Min Ryu<sup>1</sup>, Seunghwan Bang<sup>2</sup>, Sungwook Park<sup>2</sup>, Hojun Kim<sup>2</sup>, Youngdo Jeong<sup>2</sup>, and Kwan Hyi Lee<sup>1,2</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST)*

**TS13W\_BP\_18**

**Synthesis of Structure-Controlled Transition Metal Phosphide Nanowires**

Jieun Seo, Seohyun Kim, and Hyeukjin Han

*(Sungshin Women's University)*

**TS13W\_BP\_19**

**Additive Manufacturing of a Multiplex Colorimetric Detection Microchip for On-Site Foodborne Pathogen Analysis**

Seokwon Heo and Yong Tae Kim

*(Tech University of Korea)*

**TS13W\_BP\_20**

**Self-Assembled Bio-Inspired Nanoscale Physical Unclonable Function Labels Utilizing Block Copolymer Techniques**

Janghun Ko, Jun Seok Choe, and Bong Hoon Kim

*(DGIST)*

**[TS14] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS14W\_BP\_1****Exploring Nanoscale Polymer Viscoelasticity: Advancements in nanoDMA Techniques**

Sang-Jun Gim, Dae-Yeon Won, Sung-Oh Kim, Byoung-Woon Ahn, and Sang-Joon Cho  
(Parksystems)

**TS14W\_BP\_2****Photo-Induced Force Microscopy Integration with In-Line AFM: Advancements and Applications**

Jin-Young Na, Hyun Hwangbo, Byoung-Woon Ahn, and Sang-Joon Cho  
(Parksystems)

**TS14W\_BP\_3****Deep Learning-Embedded 4D-STEM Crystallographic Mapping of Polymorphic Phase Distribution in Polycrystalline Oxide Thin Films**

Sang-Hyeok Yang, Young-Hoon Kim, Min-Hyoung Jung, and Young-Min Kim  
(Sungkyunkwan University)

**TS14W\_BP\_4****Few Images-Based High-Resolution Electron Tomography of Porous Carbon Supports with Deep Learning Interpolation**

Yerin Jeon, Sang-Hyeok Yang, Eun-Byeol Park, Min-Hyoung Jung, and Young-Min Kim  
(Sungkyunkwan University)

**TS14W\_BP\_5****A Comparative Study of Singleslice and Multislice Electron Ptychography for Enhanced Visualization of Light Elements**

Semin Cheon and Yongsoo Yang  
(KAIST)

**TS14W\_BP\_6****Revealing the Complex Polar Topology of Nanoscale Ferroelectrics via Atomic Electron Tomography**

Chaehwa Jeong<sup>1</sup>, Juhyeok Lee<sup>1,2</sup>, Hyesung Jo<sup>1</sup>, Jaewhan Oh<sup>1</sup>, Hionsuck Baik<sup>3</sup>, Kyoung-June Go<sup>4</sup>, Junwoo Son<sup>5</sup>, Si-Young Choi<sup>4,6</sup>, Sergey Prosandeev<sup>7</sup>, Laurent Bellaiche<sup>7</sup>, and Yongsoo Yang<sup>1</sup>

(<sup>1</sup>KAIST, <sup>2</sup>Lawrence Berkeley National Laboratory, <sup>3</sup>KBSI, <sup>4</sup>POSTECH, <sup>5</sup>Seoul National University, <sup>6</sup>IBS, <sup>7</sup>University of Arkansas)

**TS14W\_BP\_7**

**Deep Learning-Assisted Structural Domain Analysis of Domain-Mediated Functional Materials**

Seon Je Kim<sup>1</sup>, Hyeon-Ah Ju<sup>1</sup>, Young-Min Kim<sup>1</sup>, and Hu Young Jeong<sup>2</sup>

(<sup>1</sup>*Sungkyunkwan University*, <sup>2</sup>*UNIST*)

**TS14W\_BP\_8**

**Defect-Mediated Stabilization of HfO<sub>2</sub>**

Yeongrok Jin, Minche Jo, and Jaekwang Lee

(*Pusan National University*)

**TS14W\_BP\_9**

**Two-Dimensional Electron Confinement in Antipolar Ordered Metallic SrFeO<sub>3</sub>**

Jaejin Hwang, Do Hyeon Hwang, and Jaekwang Lee

(*Pusan National University*)

**TS14W\_BP\_10**

**Inducing Ferroelectric Phase Transition in SrFe<sub>12</sub>O<sub>19</sub> through Biaxial Compressive Strain**

Seungjae Hwang, Yeongrok Jin, Jaejin Hwang, and Jaekwang Lee

(*Pusan National University*)

**TS14W\_BP\_11**

**Evaluation of Thermal Transport Properties of Thermal Interface Materials for Semiconductor Devices**

Jaehyung Song, Hyun Woo, and Hyejin Jang

(*Seoul National University*)

**TS14W\_BP\_12**

**Phonon Thermal Conductivity of Magnesium Oxide Particle Fillers for Thermal Management**

Yejin Lee, Hyun Woo, and Hyejin Jang

(*Seoul National University*)

**TS14W\_BP\_13**

**Thermal Conductivity of Gallium Oxide (Ga<sub>2</sub>O<sub>3</sub>) Films and Wafers Characterized by Time-Domain Thermoreflectance**

Byoungjoon Lee, Byoung Soo Kim, Ho Won Jang, and Hyejin Jang

(*Seoul National University*)

**TS14W\_BP\_14**

**Thermal Transport Properties of Chiral Two-Dimensional Hybrid Organic Inorganic Perovskites**

Jeongwook An<sup>1</sup>, Wonsik Lee<sup>1</sup>, Sang Hyun Nam<sup>2</sup>, Jin Kyu Lee<sup>2</sup>, Young-Hoon Kim<sup>2</sup>, and Hyejin Jang<sup>1</sup>

(<sup>1</sup>*Seoul National University*, <sup>2</sup>*Hanyang University*)

**TS14W\_BP\_15**

**Electron Paramagnetic Resonance (EPR) Simulation for a-IGZO**

Seongmun Kim, Yeongrok Jin, and Jaekwang Lee

*(Pusan National University)*

**TS14W\_BP\_16**

**Anharmonic Effects on Phonon Dispersion**

Kwanhong Park, Jaejin Hwang, Yeongrok Jin, and Jaekwang Lee

*(Pusan National University)*

**TS14W\_BP\_17**

**Magnetocaloric Effect of FeNiMn Operating Near Room Temperature**

Chang-Gi Lee<sup>1</sup>, TaeHyeok Kang<sup>2</sup>, Pyuck-Pa Choi<sup>2</sup>, and Se-Ho Kim<sup>1</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KAIST)*

**TS14W\_BP\_18**

**Enhancing Synthesis Methodology for High-Capacity Prussian White Cathodes in Sodium-Ion Batteries**

Jaeun Joo and Jong Min Yuk

*(KAIST)*

**TS14W\_BP\_19**

**Cathodoluminescence Nanothermometry in In Situ Transmission Electron Microscopy using Boltzmann Energy Distribution**

Pavel K. Olshin, Won-Woo Park, Ye-Jin Choi, and Oh-Hoon Kwon

*(UNIST)*

**TS14W\_BP\_20**

**In-Situ Liquid Cell TEM Study for Water Splitting with Hetero-Nanostructured Materials**

V. Navakoteswara Rao, Jung Ho Yoo, and Jun-Mo Yang

*(NNFC)*

**[TS15] Poster Session 1 Best Poster Awards Candidates**

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS15W\_BP\_1****High-Performance Insulating EMI Shielding Film using  $Ti_3C_2/Sr_2Nb_3O_{10}$  Blends**Eunjung Lee<sup>1,2</sup>, Jong Sung Kim<sup>1,2</sup>, Jong Hyuk Park<sup>2</sup>, and Kyungjune Cho<sup>2</sup>*(<sup>1</sup>Korea University, <sup>2</sup>KIST)***TS15W\_BP\_2****Preparation of Environmentally Relevant Nanoplastics using Focused Ultrasonic Fragmentation Method: Toward the Development of Reference Materials**

Kwanyoung Ko, Tae Geol Lee, and Jaeseok Kim

*(KRISS)***TS15W\_BP\_3****Chemo-Biological Upcycling of Polyethylene Terephthalate Waste to Solve the Microplastic Problem**Minsik Kang<sup>1,2</sup>, Siseon Lee<sup>3</sup>, Hyunjun Ko<sup>4</sup>, Jeong Chan Joo<sup>3</sup>, and Bong Hyun Sung<sup>1,2</sup>*(<sup>1</sup>KRIBB, <sup>2</sup>UST, <sup>3</sup>Catholic University, <sup>4</sup>Kangwon National University)***TS15W\_BP\_4****Thermal Annealing of Lignin: Towards Biocompatible Memory Devices**

Chan Kwon, Hyun Jeong, and Mun Seok Jeong

*(Hanyang University)***TS15W\_BP\_5****The Potential for Capturing and Removing Microplastics and Nanoplastics using *Streptomyces* sp. 414**Jae Eun Gwak<sup>1,3</sup>, Sung Ok Han<sup>3</sup>, and Gyeongtaek Gong<sup>1,2</sup>*(<sup>1</sup>KIST, <sup>2</sup>UST, <sup>3</sup>Korea University)***TS15W\_BP\_6****Ceria-Based Therapeutic Antioxidants for Preventing Radiation Proctitis**

Jihwan Son, Ye Seul Oh, and Min Soh

*(HyeonTechNBio, Inc.)*

**TS15W\_BP\_7**

**Giant Reduction of Effective Charge for Lipid Vesicle Membrane**

Jaehee Lee<sup>1</sup>, Joon Heon Kim<sup>2</sup>, Suyong Kwon<sup>3</sup>, and Myung Chul Choi<sup>1</sup>

(<sup>1</sup>KAIST, <sup>2</sup>Advanced Photonics Research Institute, <sup>3</sup>KRISS)

**TS15W\_BP\_8**

**Piezocatalyst in Motion: Self-Inducing Flow with Piezocatalyst for Enhanced Degradation**

Gunn Park, Seung-Hyun Kang, Se-Chang Oh, and Jae-Woo Park

(Hanyang University)

**TS15W\_BP\_9**

**Size- and Shape-Dependent Toxicity of Polyethylene Terephthalate Microplastics to Marine Amphipod *Monocorophium uenoi***

Jinyoung Song<sup>1</sup>, Jin Soo Choi<sup>1</sup>, Hyeonji Nam<sup>1</sup>, Asna Ali<sup>2</sup>, and June-Woo Park<sup>1,2</sup>

(<sup>1</sup>KIT, <sup>2</sup>UST)

**TS15W\_BP\_10**

**Nanotoxicity: Massive Data Extraction using ChatGPT and Development of Toxicity Prediction Models via Automated Machine Learning**

Eunyoung Ha<sup>1</sup>, Hyun-Yi Kim<sup>3</sup>, Minseop Kim<sup>1</sup>, Seung-geun Park<sup>1</sup>, Seung-min Ha<sup>1</sup>, Mingyu Bae<sup>1</sup>, Minjeong You<sup>1</sup>, Soonyeop Kwon<sup>1</sup>, and Tae Hyun Yoon<sup>1,2</sup>

(<sup>1</sup>Hanyang University, <sup>2</sup>Yoon Idea Lab Co., Ltd., <sup>3</sup>NGeneS Inc.)

**TS15W\_BP\_11**

**Integrative Transcriptomics Analysis for Evaluating Nanotoxicity Induced Adverse Outcome Pathway**

Seung-geun Park<sup>1</sup>, Eunseo Lee<sup>1</sup>, Seung-Min Ha<sup>1</sup>, Yewon Han<sup>1</sup>, Bogeum Kim<sup>1</sup>, Mingyu Bae<sup>1</sup>, Soonyeop Kwon<sup>1</sup>, and Tae Hyun Yoon<sup>1,2</sup>

(<sup>1</sup>Hanyang University, <sup>2</sup>Yoon Idea Lab Co., Ltd.)

**TS15W\_BP\_12**

**Enhancing Exosome Research with AI: Development of a ChatGPT-Based Data Curator and Analysis Copilot**

Minseop Kim<sup>1</sup>, Hyojin Kim<sup>1</sup>, Sunghyun Park<sup>1</sup>, Eunyoung Ha<sup>1</sup>, and Tae Hyun Yoon<sup>1,2</sup>

(<sup>1</sup>Hanyang University, <sup>2</sup>Yoon Idea Lab Co., Ltd.)

**TS15W\_BP\_13**

**Ceria-Based Therapeutic Antioxidants in Head and Neck Cancer Treatment as Radioprotectants**

Jisoo Lee, Ye Seul Oh, and Min Soh

(HyeonTechNBio, Inc.)

**[TS16] Poster Session 1** Best Poster Awards Candidates

<b>Date &amp; Time</b>	July 3(Wed.), 2024 / 10:30–12:00
<b>Place</b>	Exhibition Hall 4,5

**TS16W\_BP\_1****Characterizing Preferential Storage of Medicinal Biomaterials with Transfer Free Energy Calculations**

Minhye Kim and Chang Yun Son

*(POSTECH)***TS16W\_BP\_2****Solidification Simulation of Giga Casting Alloys: Controlling Al-Fe-Mn Beta Phase Formation with Phase-Field Simulation Study**

Hyung-Uk Jang, Hwi-Jae Cho, Dong-Uk Kim, and Pil-Ryung Cha

*(Kookmin University)***TS16W\_BP\_3****Compound Layer Growth Kinetics during Nitrocarburizing Process: A Phase Field Study**

Yelim Kim, Arigit Roy, and Pilryung Cha

*(Kookmin University)***TS16W\_BP\_4****Phase-Field Study of Solid-State Sintering with Multiphase Nano-Powders in Fe-Ni Alloys**

K. Kim, S. Sugathan, A. Roy, and P-R. Cha

*(Kookmin University)***TS16W\_BP\_5****Symmetry-Broken Manganese Oxide Nanocatalyst for Water Oxidation**Sunghak Park<sup>1</sup>, Taehwan Jang<sup>2</sup>, Seungwoo Choi<sup>1</sup>, Yoon Ho Lee<sup>1</sup>, Kang Hee Cho<sup>1</sup>, Moo Young Lee<sup>1</sup>, Hongmin Seo<sup>1</sup>, Hyung Kyu Lim<sup>3</sup>, Yujeong Kim<sup>4</sup>, Jinseok Ryu<sup>1</sup>, Sang Won Im<sup>1</sup>, Min Gyu Kim<sup>5</sup>, Ji-Sang Park<sup>6</sup>, Miyoung Kim<sup>1</sup>, Kyoungsuk Jin<sup>1,7</sup>, Sun Hee Kim<sup>4</sup>, Gyeong-Su Park<sup>1,8</sup>, Hyungjun Kim<sup>2</sup>, and Ki Tae Nam<sup>1</sup>*(<sup>1</sup>Seoul National University, <sup>2</sup>KAIST, <sup>3</sup>Kangwon National University, <sup>4</sup>KBSI, <sup>5</sup>POSTECH, <sup>6</sup>Sungkyunkwan University, <sup>7</sup>Korea University, <sup>8</sup>DGIST)***TS16W\_BP\_6****Phase Field Modeling of Strain Influenced Phase Transformations in MoTe<sub>2</sub>**

Muhammad Hassaan Ali, Won-Kyu Lee, and Yongwoo Kwon

*(Hongik University)*



**TS16W\_BP\_7**

**Nano Surface Control through Precision Analysis and Automating Defect Prediction Digital Transformation System**

Eun Kyoung Lee, Byeong Tae Im, and Ji Eun Kim

*(LG Innotek)*

**TS16W\_BP\_8**

**Effects of Energetic Disorder in Doped Conducting Polymer: Molecular Dynamics and Monte Carlo Study**

Seonghyeon Kang, Seungwon Jeong, and Chang Yun Son

*(POSTECH)*

**TS16W\_BP\_9**

**Machine-Learning Potential Based Molecular Dynamics Studies on Amorphous Solid-State Electrolytes**

Beomgyu Kang and Bong June Sung

*(Sogang University)*

**TS16W\_BP\_10**

**Conformation and Adsorption Energy of Single-Chain Polymer over Metal and Metal Oxide**

SeungBin Hong, DongUk Shin, and ChangYun Son

*(POSTECH)*

**TS16W\_BP\_11**

**First-Principles Study of the Copper Oxides under Reducing Conditions**

Hoseong Seol and Stefan Ringe

*(Korea University)*

**TS16W\_BP\_12**

**Functional Group-Dependent Proton Conductivity of Phosphoric Acid-Doped Ion-Pair Coordinated Polymer Electrolytes: A Molecular Dynamics Study**

Hyeonju Lee<sup>1,2</sup>, William A. Goddard III<sup>2</sup>, JinHyeok Cha<sup>3</sup>, Won Jae Choi<sup>3</sup>, Seung Hyo Noh<sup>3</sup>, Hyeyoung Shin<sup>4</sup>, and Hyungjun Kim<sup>1,2</sup>

*(<sup>1</sup>KAIST, <sup>2</sup>California Institute of Technology, <sup>3</sup>Hyundai Motor Company, <sup>4</sup>Chungnam National University)*

**TS16W\_BP\_13**

**Quality Analysis of Commercial Wine using Raman Spectroscopy and Artificial Intelligence Algorithm**

Onyu Kim<sup>1</sup> and Dong-Kwon Lim<sup>1,2</sup>

*(<sup>1</sup>Korea University, <sup>2</sup>KIST)*

TS16W\_BP\_14

**Ab Initio Study on Improving Electrochemical Performance of  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  Spinel Cathode for Lithium-Ion Batteries**

Phan Thi Yen Nhi, Truong Ba Tai, and Hyeyoung Shin

*(Chungnam National University)*

TS16W\_BP\_15

**Toward Feasible Single Atom-Based Hydrogen Evolution Electrocatalysts via Artificial Ensemble Sites for Anion Exchange Membrane Water Electrolyzer**

Hoang Nam Truong<sup>1</sup>, Won-Gwang Lim<sup>2</sup>, Jae-Yeop Jeong<sup>3</sup>, Seonggyu Lee<sup>4</sup>, Eunho Lim<sup>5</sup>, and Hyeyoung Shin<sup>1</sup>

*(<sup>1</sup>Chungnam National University, <sup>2</sup>KAIST, <sup>3</sup>KIMS, <sup>4</sup>Kumoh National Institute of Technology, <sup>5</sup>KRICT)*

TS16W\_BP\_16

**Computational Design of Transition Metals-Doped NiFe Layered Double Hydroxides for Oxygen Evolution Reaction**

Phuong Minh Nguyen and Hyeyoung Shin

*(Chungnam National University)*

TS16W\_BP\_17

**Understanding the Electrode-Electrolyte Interfaces for Enhancing Lithium-Ion Battery Performance**

Vy Nguyen Thuy and Hyeyoung Shin

*(Chungnam National University)*

TS16W\_BP\_18

**Two-Level Simulation Study of Memristive Device Interfacial Switching by Modulating the Schottky Barrier Height**

Sagar Khot, Dongmyung Jung, and Yongwoo Kwon

*(Hongik University)*

TS16W\_BP\_19

**Revealing the Electric Double Layer Structure with Constant Bulk Electrolyte Concentration Simulation**

Minho M. Kim, Seung-Jae Shin, and Hyungjun Kim

*(KAIST)*

TS16W\_BP\_20

**Coupling Phase Field and Viscoplasticity to Study Rafting in Ni-Based Super Alloys using Infinitesimal Strain Approximation**

Tariq Ali, Soumya Bandyopadhyay, and Pil-Ryung Cha

*(Kookmin University)*