



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Big Ideas in Novel Sensors I</b>	<b>Session Code</b>	<b>Mo-A1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-A1-1**

**10:30 - 11:00**

**[Invited] Stretchable Tactile Sensors and Flexible Sound Detecting Devices for Wearable and Implantable Electronic Applications**

Steve Park  
KAIST, Korea

**Mo-A1-2**

**11:00 - 11:30**

**[Invited] Thermoelectric Array Sensors for Breath Gas Monitoring**

Woosuck Shin<sup>1,2</sup>, Toshio Itoh<sup>1</sup>, Akihiro Tsuruta<sup>1</sup>, and Takafumi Akamatsu<sup>1</sup>  
<sup>1</sup>AIST, Japan, <sup>2</sup>Nagoya Inst. of Tech., Japan

**Mo-A1-3**

**11:30 - 12:00**

**[Invited] Sensitization by Surface n-p Heterojunction of SMOX Gas Sensors**

Nicolae Barsan and Udo Weimar  
Univ. of Tuebingen, Germany

**Mo-A1-4**

**12:00 - 12:30**

**[Invited] Molecular Sensing SERS Substrates for Practical Applications**

Dong-Ho Kim  
KIMS, Korea



<b>Session Title</b>	<b>Magnetic Nanomaterials</b>	<b>Session Code</b>	<b>Mo-B1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-B1-1**

**10:30 - 11:00**

**[Keynote] Self-Controlled Magnetic Nanohyperthermia: Ideas, Materials, Prospects of Core-Shell Architecture**

Oleksandr Tovstolytkin  
Inst. of Magnetism, Ukraine

**Mo-B1-2**

**11:00 - 11:30**

**[Invited] Improving the Properties of Iron Oxide in the Ranostic Applications by the Use of Elongated Nanoparticles**

Javier Muro-Cruces<sup>1</sup>, Alejandro G. Roca<sup>1</sup>, Alberto López-Ortega<sup>2</sup>, Miryana Hemadi<sup>3</sup>, Igor V. Golosovsky<sup>4</sup>, and Josep Nogués<sup>1,5</sup>

<sup>1</sup>Institut Català de Nanociència i Nanotecnologia, Spain, <sup>2</sup>CIC-Nanogune, Spain, <sup>3</sup>Univ. Paris Diderot, France, <sup>4</sup>B.P. Konstantinov Petersburg Nuclear Physics Inst., Russia, <sup>5</sup>ICREA, Spain

**Mo-B1-3**

**11:30 - 12:00**

**[Invited] Structural and Spin Interfaces within a Single Magnetic Nanoparticle**

Barbara Pacakova<sup>1,2</sup>, Simona Kubickova<sup>3</sup>, Alice Reznickova<sup>3</sup>, Gorca Salas<sup>4</sup>, Marzia Marciello<sup>5</sup>, Puerto Morales<sup>5</sup>, Daniel Niznansky<sup>3</sup>, Martin Kalbac<sup>1</sup>, Marco Sanna<sup>6</sup>, Carla Cannas<sup>6</sup>, and Jana Vejpravova<sup>3</sup>

<sup>1</sup>Czech Academy of Sci., Czech, <sup>2</sup>Norwegian Univ. of Sci. and Tech., Norway, <sup>3</sup>Charles Univ., Czech, <sup>4</sup>IMDEA Nanosci., Spain, <sup>5</sup>Inst. de Ciencia de Materiales de Madrid, Spain, <sup>6</sup>Univ. Degli Studi Di Cagliari, Italy

**Mo-B1-4**

**12:00 - 12:30**

**[Invited] Low-Temperature Synthesis of High- $M_s$  Iron-based Nanoparticles and Their Nano-Composite Structure for Highly Functionalized Magnetic Device Applications**

Tomoyuki Ogawa<sup>1,2</sup>

<sup>1</sup>Tohoku Univ., Japan, <sup>2</sup>Future Materialz Co. Ltd., Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Optical Materials and Devices I</b>	<b>Session Code</b>	<b>Mo-C1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-C1-1**

**10:30 - 11:00**

### **[Invited] Femtosecond Laser Induced Microstructures in Glass and their Applications**

Jianrong Qiu  
Zhejiang Univ., China

**Mo-C1-2**

**11:00 - 11:30**

### **[Invited] Unravelling Diffraction Pattern of Glass, Liquids, and Amorphous Materials**

Shinji Kohara  
NIMS, Japan

**Mo-C1-3**

**11:30 - 11:45**

### **Intermediate-Band-Induced Strong Near-Infrared Absorption in Au Hyperdoped Si**

Wenjie Yang<sup>1</sup>, Naheed Ferdous<sup>2</sup>, Peter J. Simpson<sup>3</sup>, Quentin Hudspeth<sup>4</sup>, Austin J. Akey<sup>5</sup>, Jeffrey M. Warrender<sup>4</sup>, Elif Ertekin<sup>2</sup>, Michael J. Aziz<sup>5</sup>, and Jim S. Williams<sup>1</sup>  
<sup>1</sup>Australian Nat'l Univ., Australia, <sup>2</sup>Univ. of Illinois USA, <sup>3</sup>Univ. of Western Ontario, Canada, <sup>4</sup>U.S. Army ARDEC- Benet Laboratories, USA, <sup>5</sup>Harvard John A. Paulson School of Engineering and Applied Sci., USA

**Mo-C1-4**

**11:45 - 12:00**

### **Optically Thin Metal Film Electrodes with A Dense Array of Tiny Holes**

H.Jessica Pereira, Joseph Reed, Steven Huband, and Ross Hatton  
Univ. of Warwick, UK

**Mo-C1-5**

**12:00 - 12:15**

### **Effect of Short-Range Ordered Two-Dimensional Electron Gas at Al<sub>2</sub>O<sub>3</sub>/In<sub>2</sub>O<sub>3</sub> Heterojunction**

Sang Yeon Lee and Hyungtak Seo  
Ajou Univ., Korea

**Mo-C1-6**

**12:15 - 12:30**

### **Growth Mechanism and Luminescence Properties of CsPbBr<sub>3</sub>@Cs<sub>4</sub>PbBr<sub>6</sub> Single Crystal**

Xiaomei Chen and Haizheng Zhong  
Beijing Inst. of Tech., China



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bio-integrated Electronics I</b>	<b>Session Code</b>	<b>Mo-D1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-D1-1**

**10:30 - 11:00**

**[Invited] Transient Electronics**

SukWon Hwang  
Korea Univ., Korea

**Mo-D1-2**

**11:00 - 11:30**

**[Invited] Soft Optofluidic Neural Systems for In Vivo Wireless Pharmacology and Optogenetics**

Jaewoong Jeong  
KAIST, Korea

**Mo-D1-3**

**11:30 - 12:00**

**[Invited] Long-Term Electrical Properties of Interfacing Electrodes in Bodily Environments**

Sohee Kim  
DGIST, Korea

**Mo-D1-4**

**12:00 - 12:15**

**Electrospun Nanofiber Yarn for Direct, Highly Sensitive, Label-Free Bacteriophage Biosensor**

Jin Gook Bae<sup>1</sup>, Chanhon Kim<sup>1</sup>, Alana F. Ogata<sup>2</sup>, Won-Tae Hwang<sup>1</sup>, Reginald M. Penner<sup>2</sup>, and Il-Doo Kim<sup>1</sup>

<sup>1</sup>KAIST, Korea, <sup>2</sup>Univ. of California, USA



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Carbon based devices applications</b>	<b>Session Code</b>	<b>Mo-E1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-E1-1**

**10:30 - 11:00**

**[Invited] Adapting Carbon-based Interconnect Technology to Non-Classical FET Drivers for Enhanced Performance**

Subindu Kumar, Tarun Kumar Sharma, Vatsala Raj, Neeta Bharti, and Princy Sharma  
ISM, India

**Mo-E1-2**

**11:00 - 11:30**

**[Invited] Diamond: a Brilliant Wide Bandgap Semiconductor**

Robert J Nemanich  
Arizona State Univ., USA

**Mo-E1-3**

**11:30 - 12:00**

**[Keynote] Tuning the Thermoelectric Properties of Carbon Nanotube Films by Supramolecules**

Yoshiyuki Nonoguchi  
Nara Inst. of Sci. and Tech., Japan

**Mo-E1-4**

**12:00 - 12:15**

**The Transport and Optoelectronic Properties of  $\gamma$ -Graphyne-based Molecular Magnetic Tunnel Junctions**

Jin Li, Li-Chun Xu, Yongzhen Yang, Xuguang Liu, and Zhi Yang  
Taiyuan Univ. of Tech., China

**Mo-E1-5**

**12:15 - 12:45**

**[Invited] Electrical Properties of Diamond-Like Carbon Films under Mechanical Pressure**

Yasuharu Ohgoe, Takahiro Suzuki, Shuji Obata, Kenji Hirakuri, and Akihiko Homma  
Tokyo Denki Univ., Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Stretchable Electrodes and Applications I</b>	<b>Session Code</b>	<b>Mo-F1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-F1-1**

**10:30 - 11:00**

### **[Invited] Ultrathin Gold Nanowires for Soft Electronics**

Wenlong Cheng  
Monash Univ., Australia

**Mo-F1-2**

**11:00 - 11:30**

### **[Invited] Silver Nanowire based Stretchable and Wearable Electronics**

Yong Zhu, Shanshan Yao, and Zheng Cui  
North Carolina State Univ., USA

**Mo-F1-3**

**11:30 - 11:45**

### **Hydrogen Gas Sensing by Palladium-based Stretchable Conductive Fiber**

Sanggeun Lee and Taeyoon Lee  
Yonsei Univ., Korea

**Mo-F1-4**

**11:45 - 12:00**

### **Paper-based Circuit with High Folding Stability**

FaLi Li, YiWei Liu, and Run-Wei Li  
CAS, China

**Mo-F1-5**

**12:00 - 12:15**

### **An Elastic Conductor with High Dynamic Stability based on Calabash Bunch Network Structure**

Zhe Yu<sup>1,2</sup>, Shang Jie<sup>1</sup>, Xuhong Niu<sup>1</sup>, Yiwei Liu<sup>1</sup>, and Run-Wei Li<sup>1</sup>  
<sup>1</sup>CAS, China, <sup>2</sup>Univ. of CAS, China

**Mo-F1-6**

**12:15 - 12:30**

### **General Method for the Flat Stretchable Electrode and Application**

Minsik Kong, Hyun Woo Kim, and Unyong Jeong  
POSTECH, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Ferro/Piezo I</b>	<b>Session Code</b>	<b>Mo-G1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-G1-1**

**10:30 - 11:00**

**[Invited] Strain Synthesis of Multiferroics: A Novel Way of using Strain**

Honyung Lee  
ORNL, USA

**Mo-G1-2**

**11:00 - 11:30**

**[Invited] Large Area Control of Ferroic Functionalities in Epitaxial Oxide Thin Films**

Yogesh Sharma, A. T. Wong, A. Herklotz, N. Balke, H. N. Lee, P. D. Rack, and T. Z. Ward  
ORNL, USA

**Mo-G1-3**

**11:30 - 12:00**

**[Invited] Simulating Ferroic Functionalities with Finite Elements: Five Years of Adventures Developing the Ferret Code**

Serge Nakhmanson  
Univ. of Connecticut, USA

**Mo-G1-4**

**12:00 - 12:15**

**Multiferroic Magnetoelectric Coupling Effect with Optimized Adhesion Layer**

Geon Tae Hwang<sup>1</sup>, Palneedi Haribabu<sup>1</sup>, Peddigari Mahesh<sup>1</sup>, Byung-Dong Hahn<sup>1</sup>, Jong-Jin Choi<sup>1</sup>, Cheol-Woo Ahn<sup>1</sup>, Jong-Woo Kim<sup>1</sup>, Yuho Min<sup>1</sup>, Youngson Choe<sup>2</sup>, and Jungho Ryu<sup>3</sup>  
<sup>1</sup>KIMS, Korea, <sup>2</sup>Pusan Nat'l Univ., Korea, <sup>3</sup>Yeungnam Univ., Korea

**Mo-G1-5**

**12:15 - 12:30**

**Investigation of BiFeO<sub>3</sub>/CoFe<sub>2</sub>O<sub>4</sub> Bilayered Multiferroic Nano-Hollow Spheres**

Maheebub Alam and Kalyan Mandal  
S. N. Bose Nat'l Centre for Basic Sci., India



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>3D Device Printing I</b>	<b>Session Code</b>	<b>Mo-H1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-H1-1**

**10:30 - 11:00**

**[Invited] Highly Conductive and Durable 3D-Printed Cu Electrodes: In-Situ Compositional/Microstructural Evolution by Optical Sintering Process**

Sunho Jeong  
KRICT, Korea

**Mo-H1-2**

**11:00 - 11:30**

**[Invited] Fully Flexible "Flexion Film Technology" and the Touch Sensor from It**

Sang Ho Kim<sup>1,2</sup>  
<sup>1</sup>Kongju Nat'l Univ., Korea, <sup>2</sup>N&B, Korea

**Mo-H1-3**

**11:30 - 12:00**

**[Invited] All-Inkjet-Printed Flexible Wireless Power Transfer Module with a Configuration of Hybrid Metal-Coil/NiZn-Ferrite: Rigid Materials into Flexible**

Murali Bissannagari and Jihoon Kim  
Kongju Nat'l Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Hybrid Materials and Processing Technologies I</b>	<b>Session Code</b>	<b>Mo-I1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-I1-1**

**10:30 - 11:00**

### **[Invited] Nanocrystal based Electronic Devices and Wearable Sensors**

Soong Ju Oh  
Korea Univ., Korea

**Mo-I1-3**

**11:15 - 11:30**

### **Improved Degassing Process during Uranium Zirconium Alloying via Induction Heating Casting**

Seoungwoo Kuk, SungChan Park, YoungMo Ko, and Jeong-Yong Park  
KAERI, Korea

**Mo-I1-4**

**11:30 - 12:00**

### **[Invited] Thermal Plasma Nanofabrication: A Universal Fabrication Process for Highly Functional Nanomaterials**

Jae Won Jeong, Mise Chang, Sansun Yang, and Yongjin Kim  
KIMS, Korea

**Mo-I1-5**

**12:00 - 12:15**

### **Multifunctional Nanoparticle Array on Nitrogen-Doped Graphene for Heterogeneous Catalysts**

SangRim Shin<sup>1</sup>, JungHyo Park<sup>2</sup>, Kyung Min Choi<sup>3</sup>, and Jeung Ku Kang<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Agency for Defense Development, Korea, <sup>3</sup>Sookmyung Women's Univ., Korea

**Mo-I1-6**

**12:15 - 12:30**

### **Developments of Nanostructured Metal Oxide Thin Films as Photoanodes for Water Splitting**

Susanta Bera<sup>1</sup>, and Se-Hun Kwon<sup>1,2</sup>  
<sup>1</sup>Global Frontier R&D Center, Korea, <sup>2</sup>Korea Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Solar Fuels</b>	<b>Session Code</b>	<b>Mo-J1</b>
<b>Date and Time</b>	<b>2018-08-20 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-J1-1**

**10:30 - 11:00**

**[Keynote] Materials for Solar Fuels: Coupling Efficient Water Splitting Catalysts and High-Performance Photovoltaics by Atomic Layer Deposition**

Paul (Cameron) McIntyre  
Stanford Univ., USA

**Mo-J1-2**

**11:00 - 11:30**

**[Invited] Photoelectrochemical Water Splitting and CO<sub>2</sub> Reduction**

Joel W. Ager  
Univ. of California Berkeley, USA

**Mo-J1-3**

**11:30 - 11:45**

**Reduced Graphene Oxide as a Catalyst Binder: Extended Photoelectrochemical Stability of Cu(In,Ga)Se<sub>2</sub> Photocathode for Solar Water Splitting**

Bonhyeong Koo<sup>1</sup>, Segi Byun<sup>1</sup>, Sung-Wook Nam<sup>2</sup>, Song-Yi Moon<sup>1,3</sup>, Suncheul Kim<sup>4</sup>, Jeong Young Park<sup>1,3</sup>, Byung Tae Ahn<sup>1</sup>, and Byungha Shin<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Kyungpook Nat'l Univ., Korea, <sup>3</sup>IBS, Korea, <sup>4</sup>Samsung Electronics, Korea

**Mo-J1-4**

**11:45 - 12:00**

**Solution Aging of Vanadyl Acetylacetonate in Methanol and their Effects on the Material and Photoelectrochemical Properties of the Solution Processed-BiVO<sub>4</sub> Photoanodes**

Segi Byun, Gihun Jung, and Byungha Shin  
KAIST, Korea

**Mo-J1-5**

**12:00 - 12:15**

**Direct Chemical Bath Deposition of Mo:BiVO<sub>4</sub> Photoanode with Controllable Morphology and Texture for Photoelectrochemical Water-Oxidation**

Bit Na Kim<sup>1</sup>, Hyun Woo Lim<sup>1</sup>, Hyun Soo Han<sup>2</sup>, and In Sun Cho<sup>1</sup>  
<sup>1</sup>Ajou Univ., Korea, <sup>2</sup>Stanford Univ., USA



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Big Ideas in Novel Sensors II</b>	<b>Session Code</b>	<b>Mo-A2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Mo-A2-1

13:30 - 14:00

### **[Invited] Recent Advances in Tailored Nanofibers for Selective Sensing**

Il-Doo Kim  
KAIST, Korea

Mo-A2-2

14:00 - 14:15

### **Au-Loaded Cr<sub>2</sub>O<sub>3</sub> Yolk-Shell Spheres with Highly Sensitive and Selective Detection of Trimethylamine**

Tae-Hyung Kim, Ji-Wook Yoon, Yun Chan Kang, and Jong-Heun Lee  
Korea Univ., Korea

Mo-A2-3

14:15 - 14:30

### **Highly Selective and Sensitive SnS<sub>2</sub>/rGO Hybrid Composite based Chemoresistive Gas Sensors**

Seo Yun Park, Yeon Hoo Kim, Tae Hoon Kim, and Ho Won Jang  
Seoul Nat'l Univ., Korea

Mo-A2-4

14:30 - 15:00

### **[Invited] Chemoresistive Gas Sensor Array based on 2D Materials: Recent Advances and Issues**

Ho Won Jang  
Seoul Nat'l Univ., Korea

Mo-A2-5

15:00 - 15:15

### **Facile Synthesis of Pt Functionalized PdO NWs for Room Temperature Hydrogen Gas Sensor**

Hee-Jin Cho<sup>1</sup>, Vivian Chen<sup>2</sup>, Shaopeng Qiao<sup>2</sup>, Won-Tae Koo<sup>1</sup>, Il-Doo Kim<sup>1</sup>, and Reginald Penner<sup>2</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Univ. of California, USA

Mo-A2-6

15:15 - 15:30

### **Design of Ultrasensitive and Sensitive Xylene Sensor using Cr<sub>2</sub>O<sub>3</sub>/ZnCr<sub>2</sub>O<sub>4</sub> Hetero-Nanostructures**

Jae-Hyeok Kim, Hyun-Mook Jeong, Chan Woong Na, Ji-Won Yoon, and Jong-Heun Lee  
Korea Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thin Films and Interfacial Phenomena</b>	<b>Session Code</b>	<b>Mo-B2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-B2-1**

**13:30 - 14:00**

**[Keynote] Magnetic Skyrmions in Magnetic Multilayers**

Axel Hoffmann  
ANL, USA

**Mo-B2-2**

**14:00 - 14:30**

**[Invited] Critical Currents in  $\text{YBa}_2\text{Cu}_3\text{O}_7$ -based Coated Conductors in Pulsed Fields**

B. Maiorov<sup>1</sup>, M. Leroux<sup>1</sup>, F.F. Balakirev<sup>1</sup>, M. Miura<sup>2</sup>, and K. Agatsuma<sup>2</sup>  
<sup>1</sup>Los Alamos Nat'l Laboratory, USA, <sup>2</sup>Seikei Univ., Japan

**Mo-B2-3**

**14:30 - 15:00**

**[Invited] Low-Core Loss Nanogranular Co-based Soft Magnetic Films for 10 GHz Applications**

Hanae Kijima-Aoki and Hiroshi Masumoto  
Tohoku Univ., Japan

**Mo-B2-4**

**15:00 - 15:15**

**Interaction Characterization between U-Zr-RE Ternary Alloy And  $\text{Y}_2\text{O}_3$  Ceramic Coating Layer at Elevated Temperature**

Seung-Uk Mun<sup>1,2</sup>, Ki-Hwan Kim<sup>2</sup>, Jeong-Young Park<sup>2</sup>, and Sun-Ig Hong<sup>1</sup>  
Agency for Defense Development, Korea

**Mo-B2-5**

**15:15 - 15:30**

**The Study of Multilayer ta-C Film for the Protection of High-Precision Mold**

Jing Wei, Hanchao Li, Peiling Ke, and Aiyang Wang  
CAS, China



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<b>Session Title</b>	<b>Optical Materials and Devices II</b>	<b>Session Code</b>	<b>Mo-C2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-C2-1**

**13:30 - 14:00**

### **[Invited] Quantum Dot/Nanocrystal-Doped Glass Fiber with Near/Mid-Infrared Emission**

Guoping Dong<sup>1</sup>, Shiliang Kang<sup>1</sup>, Xiongjian Huang<sup>1</sup>, and Jianrong Qiu<sup>2</sup>  
<sup>1</sup>South China Univ. of Tech., China, <sup>2</sup>Zhejiang Univ., China

**Mo-C2-2**

**14:00 - 14:30**

### **[Invited] Relationships between Structures and Physical Properties of Oxide Glasses**

Hirokazu Masai<sup>1</sup>, Shinji Kohara<sup>2</sup>, Yohei Onodera<sup>3</sup>, Takahiro Ohkubo<sup>4</sup>, Akitoshi Koreeda<sup>5</sup>, and Yasuhiro Fujii<sup>5</sup>  
<sup>1</sup>AIST, Japan, <sup>2</sup>NIMS, Japan, <sup>3</sup>Kyoto Univ., Japan, <sup>4</sup>Chiba Univ., Japan, <sup>5</sup>Ritsumeikan Univ., Japan

**Mo-C2-3**

**14:30 - 14:45**

### **Soft, Self-Healable Light Sources**

Yu Jun Tan, Hareesh Godaba, and Benjamin Chee Keong Tee  
Nat'l Univ. of Singapore, Singapore

**Mo-C2-4**

**14:45 - 15:00**

### **DNA Directed Plasmonic Nanostructures with Designed Chirality**

Qiangbin Wang  
CAS, China

**Mo-C2-5**

**15:00 - 15:15**

### **Growth Challenges for ZnO Nanorods in Hydrothermal Method and Their Application in Optoelectronics**

Khyati Gautam, Inderpreet Singh, P.K. Bhatnagar, and K.R. Peta  
Univ. of Delhi, India

**Mo-C2-6**

**15:15 - 15:30**

### **Balancing Refractive Index of Glass Beads for Use in Road Marking Applications to Enhance Their Retro-Reflectance in Dry And Wet Weather Conditions**

Sang Yeol Shin<sup>1</sup>, Ji In Lee<sup>1</sup>, Sunghoon Cho<sup>2</sup>, and Yong Gyu Choi<sup>1</sup>  
<sup>1</sup>Korea Aerospace Univ., Korea, <sup>2</sup>Ewha Industrial Co. Ltd, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bio-integrated Electronics II</b>	<b>Session Code</b>	<b>Mo-D2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-D2-1**

**13:30 - 14:00**

**[Invited] Materials and Devices for Advanced Wearable Sensors**

Sheng Xu  
Univ. of California, San Diego, USA

**Mo-D2-2**

**14:00 - 14:30**

**[Invited] Breathable Nano-Mesh Structure for Inflammation Free E-Skin Sensor**

Sungwon Lee  
DGIST, Korea

**Mo-D2-3**

**14:30 - 15:00**

**[Invited] Soft, Thin Skin-Mounted Power Management Systems**

Jung Woo Lee  
Pusan Nat'l Univ., Korea

**Mo-D2-4**

**15:00 - 15:30**

**[Invited] Battery-Free Wireless System for Wearable Sensors**

Jeonghyun Kim  
Kwangwoon Univ., Korea

**Mo-D2-5**

**15:30 - 15:45**

**Wearable Optoelectronic Device with Thermally, Mechanically Invisible to the Human Skin**

Han Hee Jung and Kyung-In Jang  
DGIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>2D Devices &amp; Heterostructures</b>	<b>Session Code</b>	<b>Mo-E2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-E2-1**

**13:30 - 14:00**

**[Invited] Novel Van Der Waals Heterostructure Devices with Exceptional Functions**

Gwan-Hyoung Lee  
Yonsei Univ., Korea

**Mo-E2-2**

**14:00 - 14:30**

**[Invited] Three-Terminal Artificial Synapse based on Phase-Engineered Two-Dimensional Heterostructures for Neuromorphic Computing**

Chul-Ho Lee  
Korea Univ., Korea

**Mo-E2-3**

**14:30 - 14:45**

**Two-Dimensional Layered Materials-based Pnp Heterojunction Devices**

Geonyeop Lee, Janghyuk Kim, Hyunik Park, Suhyun Kim, and Jihyun Kim  
Korea Univ., Korea

**Mo-E2-4**

**14:45 - 15:00**

**Heat Spreading in 2D Materials via Van-Der Waals Heterostructures**

Fida Ali, Faisal Ahmed, and Won Jong Yoo  
Sungkyunkwan Univ., Korea

**Mo-E2-5**

**15:00 - 15:15**

**Hetero-Structure Transistors based on  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Thin Flakes And 2D Materials**

Janghyuk Kim, Gunyeop Lee, Suhyun Kim, Hyunik Park, and Jihyun Lim  
Korea Univ., Korea

**Mo-E2-6**

**15:15 - 15:30**

**Multifunctional Light-Emitting Tunneling Device of Monolayer WSe<sub>2</sub>**

Huije Ryu, Junyoung Kwon, and Gwan-Hyoung Lee  
Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Stretchable Electrodes and Applications II</b>	<b>Session Code</b>	<b>Mo-F2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-F2-1**

**13:30 - 14:00**

### **[Invited] Toward Flexible and Intrinsically Stretchable Organic Electronics**

Qibing Pei  
Univ. of California, USA

**Mo-F2-2**

**14:00 - 14:30**

### **[Invited] Light-Emitting Electrochemical Cells for Wemiconductor Lasers**

Taishi Takenobu  
Nagoya Univ., Japan

**Mo-F2-3**

**14:30 - 14:45**

### **Highly Flexible and Bright Alternating Current Electroluminescent Devices based on Ag Nanowire Electrodes**

Guojin Liang<sup>1</sup>, Ming Yi<sup>1</sup>, Haibo Hu<sup>2</sup>, Changhui Ye<sup>2</sup>, and Yunbin He<sup>1</sup>  
<sup>1</sup>Hubei Univ., China, <sup>2</sup>CAS, China

**Mo-F2-4**

**14:45 - 15:00**

### **Helical Structured Stretchable Conductive Fiber for Wearable Electronics**

Janghoon Woo, Jaekang Song, Jaehong Lee, and Taeyoon Lee  
Yonsei Univ., Korea

**Mo-F2-5**

**15:00 - 15:15**

### **Tensile-Induced Generation of Surface Microfibrils Network on Block Copolymer Elastomers and its Use for Stretchable Tactile Sensor Arrays**

Sungmin Moon and Unyong Jeong  
POSTECH, Korea

**Mo-F2-6**

**15:15 - 15:30**

### **Sticky PDMS Patch with Serpentine Patterns for Detection of EMG Signals by “Cut, Transfer and Paste” Approach**

Hyeokyu Chae, Srinivas Gandla, Uihyun Jung, Muhammad Naqi, and Sunkook Kim  
Sungkyunkwan Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Ferro/Piezo II</b>	<b>Session Code</b>	<b>Mo-G2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-G2-1**

**13:30 - 14:00**

### **[Invited] A New Paradigm for Eco-Friendly Energy Harvesting and Storage Devices**

Seung-Hyun Kim<sup>1</sup>, Sung Sik Won<sup>1,2</sup>, Masami Kawahara<sup>3</sup>, Chang Young Koo<sup>2</sup>, Hee Young Lee<sup>4</sup>, and Angus Kingon<sup>1</sup>

<sup>1</sup>Brown Univ., USA, <sup>2</sup>Quintess, Korea, <sup>3</sup>Kojundo Chemical Laboratory Co. Ltd., Japan, <sup>4</sup>Yeungnam Univ., Korea

**Mo-G2-2**

**14:00 - 14:30**

### **[Invited] Towards Stoichiometric LiNbO<sub>3</sub> Epitaxial Thin Films Grown by DLI-MOCVD**

Vincent Astie<sup>1,2</sup>, Stefania Oliveri<sup>1</sup>, Cyril Millon<sup>1</sup>, Samuel Margueron<sup>3</sup>, Marina Raschetti<sup>1</sup>, Jean-Manuel Decams<sup>2</sup>, Pascal Boulet<sup>4</sup>, and Ausrine Bartasyte<sup>1</sup>

<sup>1</sup>FEMTO-ST Inst., France, <sup>2</sup>AnnealSys, France, <sup>3</sup>LMOPS, France, <sup>4</sup>Jean Lamour Inst., France

**Mo-G2-3**

**14:30 - 15:00**

### **[Invited] Photon Associated Thermal Processing for Piezoelectric Thick Films on Magnetostrictive Metal Substrate**

Jungho Ryu<sup>1</sup>, Haribabu Palneedi<sup>2</sup>, Geon-Tae Hwang<sup>2</sup>, Deepam Maurya<sup>3</sup>, Hyun-Cheol Song<sup>4</sup>, Chong-Yun Kang<sup>4</sup>, and Shashank Priya<sup>5</sup>

<sup>1</sup>Yeungnam Univ., Korea, <sup>2</sup>KIMS, Korea, <sup>3</sup>Virginia Tech., USA, <sup>4</sup>KIST, Korea, <sup>5</sup>Pennsylvania State Univ., USA

**Mo-G2-4**

**15:00 - 15:15**

### **Giant Recoverable Energy Density in Highly Dense Pb(Zr,Ti)O<sub>3</sub> Thick Films Fabricated by Aerosol Deposition Method**

Mahesh Peddigari<sup>1</sup>, Haribabu Palneedi<sup>1</sup>, Kyung Won Lim<sup>1</sup>, Ga-Yeon Kim<sup>1</sup>, Geon Tae Hwang<sup>1</sup>, and Jungho Ryu<sup>2</sup>

<sup>1</sup>KIMS, Korea, <sup>2</sup>Yeungnam Univ., Korea

**Mo-G2-5**

**15:15 - 15:30**

### **Design and Fabrication of Micro-Energy Harvesters based on Multilayered Piezoelectric Thin Films**

Chongsei Yoon, Jae Kwon Ha, and Giwan Yoon  
KAIST, Korea

**Mo-G2-6**

**15:30 - 15:45**

### **Lead-Free Piezoelectric Thin Films for Small-Scale Electronic Device Applications**

Sungsik Won<sup>1,2</sup>, Chang Young Koo<sup>2</sup>, Angus Kingon<sup>1</sup>, and Seung-Hyun Kim<sup>1</sup>

<sup>1</sup>Brown Univ., USA, <sup>2</sup>Quintess Co. Ltd., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>3D Device Printing II</b>	<b>Session Code</b>	<b>Mo-H2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-H2-1**

**13:30 - 14:00**

**[Invited] Triboelectric Nanogenerators Based on a Printing Technology for Self-Powered Electronics**

Sang-Woo Kim  
Sungkyunkwan Univ., Korea

**Mo-H2-2**

**14:00 - 14:30**

**[Invited] Flexible Thermoelectric Generators using Organic Materials by Printing Process**

Song Yun Cho  
KRICT, Korea

**Mo-H2-3**

**14:30 - 15:00**

**[Invited] High-Performance Piezoelectric Nanogenerators based on Composite Thin Films**

Su Yeon Lee<sup>1</sup>, Eun Jung Lee<sup>1</sup>, Tae Yun Kim<sup>2</sup>, Sang-Woo Kim<sup>2</sup>, Beyong-Hwan Ryu<sup>1</sup>, Sunho Jeong<sup>1</sup>, and Youngmin Choi<sup>1</sup>  
<sup>1</sup>KRICT, Korea, <sup>2</sup>Sungkyunkwan Univ., Korea

**Mo-H2-4**

**15:00 - 15:30**

**[Invited] Customized ZIBs in 1D to 3D Geometries**

Bok Yeop Ahn<sup>1</sup>, Chanhon Kim<sup>2</sup>, Wontae Whang<sup>2</sup>, Yejin Jo<sup>3</sup>, Sungmook Jeong<sup>3</sup>, Sunho Jeong<sup>3</sup>, Youngmin Choi<sup>3</sup>, Il-Doo Kim<sup>2</sup>, and Jennifer Lewis<sup>1</sup>  
<sup>1</sup>Harvard Univ., USA, <sup>2</sup>KAIST, Korea, <sup>3</sup>KRICT, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Hybrid Materials and Processing Technologies II</b>	<b>Session Code</b>	<b>Mo-I2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-I2-1**

**13:30 - 14:00**

**[Invited] Unconventional Flexible Bio-Integrated Electronics for Biomedical Implants**

Ki Jun Yu  
Yonsei Univ., Korea

**Mo-I2-2**

**14:00 - 14:15**

**Synthesis and Study of Electromagnetic Absorbing Materials of The Composites of ABS/WCNT/(Ni<sub>1-x</sub>Zn<sub>x</sub>)Fe<sub>2</sub>O<sub>4</sub>**

Bing-Jing Li and Yung-Ji Jang  
Nat'l Cheng-Kung Univ., Taiwan

**Mo-I2-3**

**14:15 - 14:30**

**Designing of Subnanometric Cobalt Cluster Embedded Multi Shell Hollow Metal-Organic Frameworks using Selective Collapse Approach**

Won Ho Choi, Hee Soo Jung, and Jeung Ku Kang  
KAIST, Korea

**Mo-I2-4**

**14:30 - 15:00**

**[Invited] Aerodynamic and Aeroelastic Flutter-Membrane based Triboelectric Nanogenerators**

Hong Suck Won  
Pusan Nat'l Univ., Korea

**Mo-I2-5**

**15:00 - 15:15**

**Bimodal and Wide Range Hydrogen Sensors based on Hole-Doping Nanohybrids of Reduced Graphene Oxide and Chemochromic Pd:MoO<sub>3</sub> Nanoflakes**

Le Thai Duy and Hyungtak Seo  
Ajou Univ., Korea

**Mo-I2-6**

**15:15 - 15:30**

**Study on Functional Hybrid Structures based on Transition Metal Dichalcogenides and  $\pi$ -Conjugated Organic Materials**

Young Ki Hong and Sunkook Kim  
Sungkyunkwan Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Inorganic Solar Cells</b>	<b>Session Code</b>	<b>Mo-J2</b>
<b>Date and Time</b>	<b>2018-08-20 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-J2-1**

**13:30 - 14:00**

### **[Invited] Minority Carrier Extraction Study in High Performance Kesterite Solar Cell**

Oki Gunawan<sup>1</sup>, Seong Ryul Pae<sup>2</sup>, Jekyung Kim<sup>2</sup>, Tayfun Gokmen<sup>1</sup>, and Byungha Shin<sup>2</sup>  
<sup>1</sup>IBM Research, USA, <sup>2</sup>KAIST, Korea

**Mo-J2-2**

**14:00 - 14:30**

### **[Invited] Alternative Routes for The Fabrication of Cu<sub>2</sub>ZnSnS<sub>4</sub> Solar Cells**

Stela Canulescu<sup>1</sup>, Mungunshagai Gansukh<sup>1</sup>, Simón López Mariño<sup>1</sup>, Sara Lena Josefin Engberg<sup>1</sup>, Filipe Mesquita Alves Martinho<sup>1</sup>, Niels Christian Schjødt<sup>2</sup>, Andrea Crovetto<sup>1</sup>, Eugen Stamate<sup>1</sup>, Chang Yan<sup>3</sup>, Xiaojing Hao<sup>3</sup>, Ole Hansen<sup>1</sup>, and Jørgen Schou<sup>1</sup>  
<sup>1</sup>Technical Univ. of Denmark, Denmark, <sup>2</sup>Haldor Topsoe A/S, Haldor Topsøes Allé<sup>1</sup>, Denmark, <sup>3</sup>Univ. of New South Wales, Australia

**Mo-J2-3**

**14:30 - 15:00**

### **[Invited] Synthesis of Novel Earth-Abundant Chalcogenide and Its Applications to Solar Energy Conversion Devices**

Donghyeop Shin<sup>1</sup> and David Mitzi<sup>2</sup>  
<sup>1</sup>KIER, Korea, <sup>2</sup>Duke Univ., USA

**Mo-J2-4**

**15:00 - 15:30**

### **[Invited] Emerging Nitride Materials as Thin Film Photovoltaic Absorbers**

Andriy Zakutayev  
Nat'l Renewable Energy Laboratory, USA

**Mo-J2-5**

**15:30 - 15:45**

### **Stable N-Type InAs Colloidal Quantum Dots for Energy Application**

Hyekyoung Choi<sup>1</sup>, Jung Hoon Song<sup>1</sup>, Hien Thu Pham<sup>1</sup>, and Sohee Jeong<sup>1,2</sup>  
<sup>1</sup>KIMM, Korea, <sup>2</sup>UST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Big Ideas in Novel Sensors III</b>	<b>Session Code</b>	<b>Mo-A3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-A3-1**

**16:00 - 16:30**

### **[Invited] Stimulus-Responsive Conjugated Polymer Nanotubes**

Jong-Man Kim  
Hanyang Univ., Korea

**Mo-A3-2**

**16:30 - 16:45**

### **Crumpled Graphene Oxide Templated Morphology Engineered SnO<sub>2</sub> Nanofibers for Superior Chemiresistors**

Dong-Ha Kim, Ji-Soo Jang, Won-Tae Koo, and Il-Doo Kim  
KAIST, Korea

**Mo-A3-3**

**16:45 - 17:00**

### **Ultrasensitive Detection of Carcinogenic Benzene Gas Sensor using Pd-SnO<sub>2</sub> Sensing Film with a Catalytic Co<sub>3</sub>O<sub>4</sub> Overlayer**

Seong-Yong Jeong, Ji-Wook Yoon, Tae-Hyung Kim, Hyun-Mook Jeong, Chul-soon Lee, Yun Chan Kang, and Jong-Heun Lee  
Korea Univ., Korea

**Mo-A3-4**

**17:00 - 17:30**

### **[Invited] Nanomechanical Sensors (MSS, AMA) with AI toward Artificial Olfaction**

Genki Yoshikawa  
NIMS, Japan

**Mo-A3-5**

**17:30 - 17:45**

### **Pt and ZnO Nanoparticles Sensitized Nanoporous Reduced Graphene Oxide for Wearable NO<sub>2</sub> Gas Sensors: Reversible Reaction Kinetics at Room Temperature**

Joon-Young Kang, Won-Tae Koo, Ji-Soo Jang, Hee-Jin Cho, Dong-Ha Kim, and Il-Doo Kim  
KAIST, Korea

**Mo-A3-6**

**17:45 - 18:00**

### **Crumpled Holey Metal Oxide Nanosheets Templated by Graphene Oxide via Spray Pyrolysis**

Rheehyun Kim, Ji-Soo Jang, Hee-Jin Cho, Dong-Ha Kim, Won-Tae Koo, and Il-Doo Kim  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>2D Materials and Epitaxial Thin Films</b>	<b>Session Code</b>	<b>Mo-B3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-B3-1**

**16:00 - 16:30**

### **[Invited] Silicene and Beyond: Group IV 2D Materials in their Epitaxial Form**

Yukiko Yamada-Takamura  
JAIST, Japan

**Mo-B3-2**

**16:30 - 17:00**

### **[Invited] Anomalous Strain Dependence of the Magnetocrystalline Easy Axis/Plane in Epitaxial $\text{La}_{0.67}\text{Ba}_{0.33}\text{MnO}_3$ Films**

Hong Zhu, JinZeng Tian, Qingyong Duanmu, Xiangnan Xie, Haoru Wang, and Guankai Lin  
Univ. of Sci. and Tech. of China, China

**Mo-B3-3**

**17:00 - 17:15**

### **Ultraclean Transfer Method of CVD-Grown Graphene by using Sublimable Film**

Min Jung Kim<sup>1</sup>, Andrea Gnisci<sup>2</sup>, Giuliana Faggio<sup>2</sup>, Nicola Lisi<sup>3</sup>, Andrea Capasso<sup>4</sup>, and Gwan-Hyoung Lee<sup>1</sup>

<sup>1</sup>Yonsei Univ., Korea, <sup>2</sup>Univ. "Mediterranea" of Reggio Calabria, Italy, <sup>3</sup>Casaccia Research Centre, Italy, <sup>4</sup>IIT Graphene Labs, Italy

**Mo-B3-4**

**17:15 - 17:30**

### **The Influence of Mixed Functional Group on the Structural and Electronic Properties of $\text{Cr}_2\text{C}$**

Minyeong Je<sup>1</sup>, Youngbin Lee<sup>2</sup>, and Yong-Chae Chung<sup>1</sup>

<sup>1</sup>Hanyang Univ., Korea, <sup>2</sup>MIT, USA



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Functional Nanomaterials for Biomedical Applications</b>	<b>Session Code</b>	<b>Mo-D3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-D3-1**

**16:00 - 16:15**

### **DNA-Guided Plasmonic Nanogap Engineering for Optical Analysis of Biomaterials**

Jeong-Wook Oh and Jwa-Min Nam  
Seoul Nat'l Univ., Korea

**Mo-D3-2**

**16:15 - 16:30**

### **Functional Nanocomposites Scaffold for Tissue Regeneration Applications**

Chang Du  
South China Univ. of Tech., China

**Mo-D3-3**

**16:30 - 16:45**

### **Preparation of Drug-Doped Nanopump Pressed by Temperature Control**

Seong Yeol Kim  
Lucky Industry Co., Ltd., Korea

**Mo-D3-4**

**16:45 - 17:00**

### **Advanced Dental Cleaning Technique by Nanobubbles Generated from Piezoelectric Materials**

Panpan Li, Chungik Oh, Melodie Chen-Glasser, and Seungbum Hong  
KAIST, Korea

**Mo-D3-5**

**17:00 - 17:15**

### **Design and Development of Bioactive $\alpha$ -Hydroxy Carboxylate Group Modified $MnFe_2O_4$ Nanoparticle: Comparative Fluorescence, Magnetism and DNA Interaction Study**

Indranil Chakraborty<sup>1</sup>, Urmila Saha<sup>2</sup>, Rupali Rakshit<sup>1</sup>, Souvanik Talukdar<sup>1</sup>, Gopinatha Suresh Kumar<sup>2</sup>, and Kalyan Mandal<sup>1</sup>

<sup>1</sup>S. N. Bose Nat'l Centre for Basic Sci., India, <sup>2</sup>Indian Inst. of Chemical Biology, India

**Mo-D3-6**

**17:15 - 17:30**

### **Synthesis and Characterization of Boron-Containing Thermoresponsive Polymer Nanomicelle**

Shuichiro Yoneoka and Takehiko Tsukahara  
Inst. of Innovative Research, Japan

**Mo-D3-7**

**17:30 - 17:45**

### **Interface-Mediated Self-Assembly of Nanoparticles and Block Copolymers**

Seulki Kang and So-Jung Park  
Ewha Womans Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>2D Materials Growth &amp; Characterization</b>	<b>Session Code</b>	<b>Mo-E3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-E3-1**

**16:00 - 16:30**

### **[Invited] Growth and Processing of 2D TMDCs for Future Electronic Applications**

Swee-Liang Wong, Weifeng Yang, Shijie Wang, and Dongzhi Chi  
IMRE, Singapore

**Mo-E3-2**

**16:30 - 17:00**

### **[Invited] Synthesis of Wafer-Scale 2-Dimensional Metal Chalcogenide Films**

Changgu Lee  
Sungkyunkwan Univ., Korea

**Mo-E3-3**

**17:00 - 17:15**

### **Wafer-Scale MoS<sub>2</sub> Monolayer Grown on SiO<sub>2</sub>/Si Substrate by Modified Atomic Layer Deposition**

Dae Hyun Kim, Dae Woong Kim, Tea Jun Seok, Hyun Soo Jin, and Tae Joo Park  
Hanyang Univ., Korea

**Mo-E3-4**

**17:15 - 17:30**

### **Electronic Band Structure Study of Millimeter-sized Mono-Layer WSe<sub>2</sub> using Angle-Resolved Photoemission Spectroscopy**

Guodong Liu, Wenjuan Zhao, Yuan Huang, Cong Li, Ying Ding, Yu Xu, Yong Hu, and Xingjiang Zhou  
CAS, China

**Mo-E3-5**

**17:30 - 17:45**

### **Crystallization of Amorphous Carbon to Synthesize Graphene through Thermal Annealing**

Hanchao Li<sup>1,2</sup>, Jing Wei<sup>1</sup>, and Aiyang Wang<sup>1</sup>  
<sup>1</sup>CAS, China <sup>2</sup>ShanghaiTech Univ., China

**Mo-E3-6**

**17:45 - 18:00**

### **SnS<sub>2</sub>-Coated SiO<sub>2</sub> Nanorods for Highly Sensitive NO<sub>2</sub> Sensor at Room Temperature with Excellent Recovery**

Jun Min Suh<sup>1</sup>, Ki Chang Kwon<sup>1</sup>, Kyung Soon Choi<sup>2</sup>, Seung-Pyo Hong<sup>1</sup>, Tae Hyung Lee<sup>1</sup>, Kootak Hong<sup>1</sup>, Chung Won Lee<sup>1</sup>, Young Geun Song<sup>3</sup>, Young-Seok Shim<sup>3</sup>, and Ho Won Jang<sup>1</sup>  
<sup>1</sup>Seoul Nat'l Univ., Korea, <sup>2</sup>KBSI, Korea, <sup>3</sup>KIST





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Wearable Sensors I</b>	<b>Session Code</b>	<b>Mo-F3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-F3-1**

**16:00 - 16:30**

**[Invited] Hydraulically Amplified Self-Healing ELectrostatic (HASEL) Transducers: a New Class of High-Performance Soft Actuators**

Christoph Keplinger  
Univ. of Colorado Boulder, USA

**Mo-F3-2**

**16:30 - 17:00**

**[Invited] Materials for 2D, 3D and 4D Electronics**

Shlomo Magdassi  
Hebrew Univ. of Jerusalem, Israel

**Mo-F3-3**

**17:00 - 17:30**

**[Invited] Ultrathin and Ultra-Conformable Films for (Bio)electronic Applications**

Virgilio Mattoli  
Italian Inst. of Tech., Italy

**Mo-F3-4**

**17:30 - 17:45**

**Tailoring the Physical and Mechanical Properties of PDMS Elastomer for Stretchable Electronic Applications**

Gandla Srinivas<sup>1</sup>, Dipti Gupta<sup>2</sup>, and Sunkook Kim<sup>1</sup>  
<sup>1</sup>Sungkyunkwan Univ., Korea, <sup>2</sup>IITB, India

**Mo-F3-5**

**17:45 - 18:00**

**Fabrication of Micro-Particle Tactile Sensor via Simple Dry Process**

Hyejin Hwang, Wonjeong Suh, and Unyong Jeong  
POSTECH, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Ferro/Piezo III</b>	<b>Session Code</b>	<b>Mo-G3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-G3-1**

**16:00 - 16:30**

### **[Invited] Quantifying Sensitivity and Hysteresis in Voltage Modulated Nanoelectromechanical Measurements**

Roger Proksch<sup>1</sup>, Liam Collins<sup>2</sup>, and Olga Ovchinnikova<sup>2</sup>  
<sup>1</sup>Asylum Research, USA, <sup>2</sup>ORNL, USA

**Mo-G3-2**

**16:30 - 17:00**

### **[Invited] First-Principles Design of Multiferroic Memcapacitors for Neuromorphic Computation**

Jun Hee Lee  
UNIST, Korea

**Mo-G3-3**

**17:00 - 17:15**

### **Various Piezoelectric PbTiO<sub>3</sub>-Dimensional Nanostructure Arrays for High Temperature Applications**

Hyun-Cheol Song<sup>1</sup>, William T. Reynolds<sup>2</sup>, and Shashank Priya<sup>3</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>Virginia Tech., USA, <sup>3</sup>Penn. State Univ., USA

**Mo-G3-4**

**17:15 - 17:30**

### **Aerosol Deposition of Ceramic Dielectric Films on Polymer Substrates for Power Electronics in Electric Drive Vehicles**

Balu Balachandran  
ANL, USA

**Mo-G3-5**

**17:30 - 17:45**

### **Ionics Technology for Ultra Low-Frequency Mode and High Energy Density Energy Harvesters and Sensors: Beyond Piezoelectrics and Triboelectrics**

Chang Kyu Jeong<sup>1</sup> and Yong Zhan<sup>2</sup>  
<sup>1</sup>Chonbuk Nat'l Univ., Korea, <sup>2</sup>Wuhan Univ. of Tech., China

**Mo-G3-6**

**17:45 - 18:00**

### **Resistive Switching in Amorphous Perovskite Oxides**

Soumyadeep Dutta, Navakanta Bhat, and Krupanidhi S.B.  
Indian Inst. of Sci., India

**Mo-G3-7**

**18:00 - 18:15**

### **Flexible Piezoelectric Acoustic Sensors for Machine Learning based Speaker Recognition**

Jae Hyun Han, Hee Seung Wang, Seongkwang Hong, and Keon Jae Lee  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>3D Device Printing III</b>	<b>Session Code</b>	<b>Mo-H3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-H3-1**

**16:00 - 16:30**

### **[Invited] High-Resolution 3D Printing for Wearable Electronics**

Jang-Ung Park  
UNIST, Korea

**Mo-H3-2**

**16:30 - 17:00**

### **[Invited] Scratch to Sensitize; Scratch Induced Sensitivity Enhancement in Thin-Film Types of Sensors**

Geonhee Lee<sup>1,2</sup>, Min Choi<sup>1,3</sup>, Soo Sang Chae<sup>1</sup>, Duwon Jeong<sup>1</sup>, Yunho Kim<sup>1</sup>, Hyunju Chang<sup>1</sup>, and Jeong-O Lee<sup>4</sup>

<sup>1</sup>KRICT, Korea, <sup>2</sup>Sungkyunkwan Univ., Korea, <sup>3</sup>UNIST, Korea, <sup>4</sup>KRICT, Korea

**Mo-H3-3**

**17:00 - 17:30**

### **[Invited] Customized Nanomaterials for Advanced Applications Viz White Light and Thermoelectric**

Priyesh More  
DIAT, India



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Pervoskite Solar Cells</b>	<b>Session Code</b>	<b>Mo-J3</b>
<b>Date and Time</b>	<b>2018-08-20 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Mo-J3-1**

**16:00 - 16:30**

### **[Invited] Domain Walls in Organic-Inorganic Halide Perovskite Materials**

Jae Sung Yun, Dohyung Kim, Martin Green, Shujuan Huang, Jan Seidel, and Anita Ho-Baillie  
Univ. of New South Wales, Australia

**Mo-J3-2**

**16:30 - 17:00**

### **[Invited] Discovery of Bismuth-based Alternatives to Lead-Halide Perovskite Solar Cells**

Robert Hoye  
Univ. of Cambridge, UK

**Mo-J3-3**

**17:00 - 17:30**

### **[Invited] Overcoming The Short-Circuit Behavior in Sn-based Halide Perovskite Solar Cells**

Tze-Bin Song  
Northwestern Univ., USA

**Mo-J3-4**

**17:30 - 17:45**

### **Atomic Scale Investigation of Degradation Process on MA(CH<sub>3</sub>NH<sub>3</sub>)PbBr<sub>3</sub> Single Crystal with Ambient Pressure Atomic Force Microscopy (AP-AFM)**

Joong Il Jake Choi<sup>1,2</sup>, Zafer Hawash<sup>3</sup>, Hyunhwa Lee<sup>2</sup>, Luis K. Ono<sup>3</sup>, Yabing Qi<sup>3</sup>, and Jeong Young Park<sup>1,2</sup>  
<sup>1</sup>IBS, Korea, <sup>2</sup>KAIST, Korea, <sup>3</sup>OIST, Japan

**Mo-J3-5**

**17:45 - 18:00**

### **Plasmon-Active Silver Window Electrodes for High Performance Organic Photovoltaics**

Jaemin Lee, Steven Huband, and Ross A. Hatton  
Univ. of Warwick, UK



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Big Ideas in Novel Sensors IV</b>	<b>Session Code</b>	<b>Tu-A1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-A1-1

10:30 - 11:00

### **[Invited] Room Temperature Gas Sensors based on Sn Compounds for IoT**

Chong-Yun Kang<sup>1,2</sup>, Young Geun Song<sup>1,2</sup>, and Seung Yeop Yi<sup>1,2</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>Korea Univ., Korea

Tu-A1-2

11:00 - 11:15

### **Few-Layered WS<sub>2</sub> Confined in Co, N-Doped Hollow Carbon Nanocages Derived from MOF for Superior NO<sub>2</sub> Sensors**

Won-Tae Koo<sup>1</sup>, Jun-Hwe Cha<sup>1</sup>, Ji-Won Jung<sup>1</sup>, Seon-Jin Choi<sup>2</sup>, Ji-Soo Jang<sup>1</sup>, Dong-Ha Kim<sup>1</sup>, and Il-Doo Kim<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>MIT, USA

Tu-A1-3

11:15 - 11:45

### **[Invited] A New Active Layer for a Different Level of Organic Electrochemical Transistor**

Junwoo Lee<sup>1,2</sup>, Sang-Il Choi<sup>1,2</sup>, and Sungsoo Kim<sup>1</sup>  
<sup>1</sup>Pai Chai Univ., Korea, <sup>2</sup>Flexolution Corp., Korea

Tu-A1-4

11:45 - 12:00

### **Catalyst Loaded WO<sub>3</sub>@SnO<sub>2</sub> Heteronanostructures: Synthesis and Their Gas Sensing Performance**

Peresi Majura Bulemo and Il-Doo Kim  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Functional Devices using Thin Flms and Nanoparticles</b>	<b>Session Code</b>	<b>Tu-B1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-B1-1

10:30 - 11:00

### **[Keynote] Magnetoplasmonic Nanodomains as a Novel Structure for Biomedical Applications**

Josep Nogues<sup>1,2</sup>, Z. Li<sup>1</sup>, A. Aranda-Ramos<sup>3</sup>, A. Lopez-Ortega<sup>4</sup>, P. Güell-Grau<sup>3</sup>, J.L. Tajada<sup>1</sup>, L. Pou-Macayo<sup>3</sup>, F. Pi<sup>3</sup>, S. Lope Piedrafita<sup>3</sup>, M.D. Baró<sup>3</sup>, J. Sort<sup>2,3</sup>, P. Vavasori<sup>4</sup>, C. Nogues<sup>3</sup>, and B. Sepúlveda<sup>1</sup>

<sup>1</sup>Catalan Inst. of Nanosci. and Nanotech., Spain, <sup>2</sup>ICREA, Spain, <sup>3</sup>Univ. Autònoma de Barcelona, Spain, <sup>4</sup>CIC nanoGUNE, Spain

Tu-B1-2

11:00 - 11:30

### **[Invited] Multifunctional Magnetic Plasmonic Nanoparticles for Innovative Biomedical and Sensing Applications**

Elvira Fantechi<sup>1</sup>, Alejandro Gomez Roca<sup>2</sup>, Claudia Innocenti<sup>3</sup>, Borja Sepulveda<sup>2</sup>, Francesco Pineider<sup>1</sup>, Claudio Sangregorio<sup>3,4</sup>, Neus Bastus<sup>2</sup>, Victor Puntès<sup>2,5,6</sup>, and Josep Nogues<sup>2,6</sup>

<sup>1</sup>Univ. of Pisa, Italy, <sup>2</sup>ICN<sup>2</sup>, Spain, <sup>3</sup>Univ. of Florence, Italy, <sup>4</sup>CNR-ICCOM, Italy <sup>5</sup>Vall d'Hebron Institut de Recerca, Spain, <sup>6</sup>ICREA, Spain

Tu-B1-3

12:00 - 12:15

### **Evaluation of Interfacial and Electrical Properties of HfO<sub>2</sub>/Ge Stacks Modulated by SiO<sub>2</sub> Interfacial Layer and Post Metallization Annealing**

Kumar Mallem<sup>1</sup>, Subhajit Dutta<sup>1</sup>, Ashwath Rey B.S<sup>2</sup>, Sunhwa Lee<sup>1</sup>, Taeyong Kim<sup>1</sup>, Yongkuk Kim<sup>1</sup>, and Junsin Yi<sup>1</sup>

<sup>1</sup>Sungkyunkwan Univ., Korea, <sup>2</sup>Visvesvaray Technological Univ., India

Tu-B1-4

11:30 - 12:00

### **[Invited] Controlling Charge Transport in Organic Field-Effect Transistors through the Systematic Polarization of Polar Gate Dielectric Layer**

Dipak Kumar Goswami  
Indian Inst. of Tech., India



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Optical Materials and Devices III</b>	<b>Session Code</b>	<b>Tu-C1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Tu-C1-1**

**10:30 - 11:00**

**[Invited] Record-High Temperature Stable Electro-Optic Polymer Modulator for 50 Gbps Transmission**

Shiyoshi Yokoyama  
Kyushu Univ., Japan

**Tu-C1-2**

**11:00 - 11:30**

**[Invited] Oxide Semiconductors for Nonlinear Optics and Ultrafast Pulse Lasers**

Xiaofeng Liu  
Zhejiang Univ., China

**Tu-C1-3**

**11:30 - 12:00**

**[Invited] Development of Three-Terminal Electrochromic Device using Water Electrolysis**

Hikomichi Ohta  
Hokkaido Univ., Japan

**Tu-C1-4**

**12:00 - 12:15**

**Synthesis and Optical Properties of Forsterite Ceramic Color Pigments using Mirror Wastes as a Flux**

Niti Yongvanich, Natchaya Lithira, Nitchakarn Nuniead, and Wanchalerm Chauyarsa  
Silpakorn Univ., Thailand

**Tu-C1-5**

**12:15 - 12:30**

**Enlarged Abbe Diagram in Long-Wavelength Infrared Region via Introducing Highly Dispersive Chalcogenide Glasses**

Jun Ho Lee, Woo Hyung Lee, Hyun Kim, and Yong Gyu Choi  
Korea Aerospace Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Biosensing and Bioimaging Nanoprobes</b>	<b>Session Code</b>	<b>Tu-D1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-D1-1

10:30 - 11:00

**[Keynote] Upconversion Nanocrystals: Luminescence Modulation for Nanophotonic Applications**

Xiaogang Liu  
NUS, Singapore

Tu-D1-2

11:00 - 11:30

**[Keynote] Real-Time 3D Single-Particle Tracking: Spectroscopy, Imaging, and Control**

Haw Yang  
Princeton Univ., USA

Tu-D1-3

11:30 - 12:00

**[Invited] Quantum Dot Conjugates for Imaging Applications**

Sungjee Kim  
POSTECH, Korea

Tu-D1-4

12:00 - 12:30

**[Invited] Multimodal Endoscopic Optical Imaging Techniques for Comprehensive Structural and Molecular Imaging**

Hongki Yoo  
Hanyang Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Theoretical Approaches</b>	<b>Session Code</b>	<b>Tu-E1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-E1-1

10:30 - 11:00

## **[Invited] Collective Phenomena and Topological Properties of 2D Crystals**

Young-Woo Son  
KIAS, Korea

Tu-E1-2

11:00 - 11:30

## **[Invited] Electron Transport Behaviors in 2D Materials and Their Potential Applications—from Theoretical Perspective**

Gengchiao Liang  
Nat'l Univ. of Singapore, Singapore

Tu-E1-3

11:30 - 12:00

## **[Invited] 2D Materials: New Opportunities for Electronic and Optoelectronic Devices**

Youngki Yoon<sup>1</sup> and Sunkook Kim<sup>2</sup>  
<sup>1</sup>Univ. of Waterloo, Canada, <sup>2</sup>Sungkyunkwan Univ., Korea

Tu-E1-4

12:00 - 12:30

## **[Invited] Dirac Electrons in Moire Super-Lattice**

Hong Guo, Chen Hu, and Vincent Michaud-Rioux  
McGill Univ., Canada



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Wearable Sensors II</b>	<b>Session Code</b>	<b>Tu-F1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-F1-1

10:30 - 11:00

**[Invited] Ultrafast, Low power, Flexible Temperature Sensors with Ultra Precision Sensitivity for Healthcare Applications**

Dipak Kumar Goswami  
Indian Inst. of Tech., India

Tu-F1-2

18:00 - 18:30

**[Invited] Smart Contact Lens for Ocular Diabetic Theranosis**

Sei Kwang Hahn  
POSTECH, Korea

Tu-F1-3

11:00 - 11:30

**[Invited] Ultra-Sensitive, Flexible Strain-Gauge Sensor Inspired by Spider's Sensory Organ**

Tae-il Kim  
Sungkyunkwan Univ., Korea

Tu-F1-4

11:30 - 11:45

**Knittable  $Ti_3C_2Tx$  MXene Cotton Yarns for Energy Storage Applications**

Simge Uzun, Ariana Levitt, Mohamed Alhabeb, Genevieve Dion, and Yury Gogotsi  
Drexel Univ., USA

Tu-F1-5

11:45 - 12:00

**Conductive Fiber-based Multi-Modal Mechanical Sensor for Wearable Electronics**

Kukro Yoon<sup>1</sup>, Seung Hoon Choi<sup>2</sup>, Jaehong Lee<sup>1</sup>, Sera Shin<sup>1</sup>, Changhyun Pang<sup>2</sup>, and Taeyoon Lee<sup>1</sup>  
<sup>1</sup>Yonsei Univ., Korea, <sup>2</sup>Sungkyunkwan Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Ferro/Piezo IV</b>	<b>Session Code</b>	<b>Tu-G1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Tu-G1-1**

**10:30 - 11:00**

### **[Invited] Nanoscale Linear Permittivity Imaging based on Scanning Nonlinear Dielectric Microscopy**

Yoshiomi Hiranaga and Yasuo Cho  
Tohoku Univ., Japan

**Tu-G1-2**

**11:00 - 11:30**

### **[Invited] Piezoresponse Force Microscopy of Emergent Piezoelectric Materials**

Andrei Kholkin  
Univ. of Aveiro, Portugal

**Tu-G1-3**

**11:30 - 12:00**

### **[Invited] Science And Technology of Interface-Engineered High-K Dielectric / High Piezoelectricity Multifunctional Nanolaminate-based Oxides / Ultrananocrystalline Diamond Films for New Generation Super-Capacitors, CMOS and MEMS/NEMS Devices**

Orlando Auciello<sup>1</sup> and Geunhee Lee<sup>2</sup>  
<sup>1</sup>Univ. of Texas-Dallas, USA, <sup>2</sup>CVE Technology, USA

**Tu-G1-4**

**12:00 - 12:15**

### **Suppression of Leakage Current of SrTiO<sub>3</sub> as Ultra-High-K Dielectrics using Al Co-Doping Process**

Jiye Baek, Minhwan Go, Sang Yeon Lee, Seungik Han, and Hyungtak Seo  
Ajou Univ., Korea

**Tu-G1-5**

**12:15 - 12:30**

### **Functionalization of Wide Band Gap Dielectric Oxides: A Light Element Doping Approach**

Daesung Park<sup>1,2</sup>, Akash Bhatnagar<sup>1,2</sup>, Haiyuan Wang<sup>3</sup>, Gregory J. Rees<sup>4</sup>, and Diana Rata<sup>2</sup>  
<sup>1</sup>Zentrum für Innovationskompetenz SiLi-nano®, Germany, <sup>2</sup>Martin-Luther-Univ. Halle-Wittenberg, Germany, <sup>3</sup>Fritz-Haber-Inst. der Max-Planck-Gesellschaft, Germany, <sup>4</sup>Univ. of Warwick, UK



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thermoelectric I</b>	<b>Session Code</b>	<b>Tu-H1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-H1-1

10:30 - 11:00

**[Invited] Development of Hybrid Effect Nanocomposites and Advanced Thermal and Electrical Nanomeasurements**

Takao Mori  
NIMS, Japan

Tu-H1-2

11:00 - 11:30

**[Invited] Design of Multi-Defect Structures in Polycrystalline (Bi,Sb)<sub>2</sub>Te<sub>3</sub> Alloys for Thermal Conductivity Reduction**

Sang-il Kim  
Univ. of Seoul, Korea

Tu-H1-3

11:30 - 12:00

**[Invited] Phonon Dispersion and Scattering Considerations for Thermoelectrics**

Yanzhong Pei  
Tongji Univ., China

Tu-H1-4

12:00 - 12:15

**Chemical Potential Tuning and Enhancement of Thermoelectric Properties in the Vicinity of Topological Phase Transition in (Pb<sub>0.5</sub>Sn<sub>0.5</sub>)<sub>1-x</sub>KxTe<sub>0.95</sub>Se<sub>0.05</sub> Compounds**

Dianta Ginting<sup>1,2</sup>, Chan-Chieh Lin<sup>1</sup>, Ga Reoung Kim<sup>1</sup>, Bora Won<sup>1</sup>, Hyeon Seob So<sup>1</sup>, Jae Hyun Yun<sup>1</sup>, Hosun Lee<sup>1</sup>, and Jong-Soo Rhyee<sup>1</sup>  
<sup>1</sup>Kyung Hee Univ., Korea, <sup>2</sup>Mercu Buana Univ., Indonesia

Tu-H1-5

12:15 - 12:30

**Influence of RGO on The Thermoelectric Properties of SrTiO<sub>3</sub>-RGO Composites**

Jamil Ur Rahman<sup>1,2</sup>, Soonil Lee<sup>2</sup>, Woo Hyun Nam<sup>1</sup>, Van Du Nguyen<sup>1,2</sup>, Gul Rahman<sup>3</sup>, Altaf Ur Rahman<sup>3</sup>, Kyu Hyoung Lee<sup>4</sup>, Won Seon Seo<sup>1</sup>, Woen Ho Shin<sup>1</sup>, and Myong Ho Kim<sup>2</sup>  
<sup>1</sup>KICET, Korea, <sup>2</sup>Changwon Nat'l Univ., Korea, <sup>3</sup>Quaid-i-Azam Univ. Islamabad, Pakistan, <sup>4</sup>Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Hybrid Materials and Processing Technologies III</b>	<b>Session Code</b>	<b>Tu-I1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-I1-1

10:30 - 11:00

### **[Invited] Omniphobicity and Corrosion-Resistance of Oil-Impregnated Nanoporous Anodic Oxide Layer of Aluminum**

Junghoon Lee<sup>1</sup> and Chang-Hwan Choi<sup>2</sup>

<sup>1</sup>Pukyong Nat'l Univ., Korea, <sup>2</sup>Stevens Inst. of Tech., USA

Tu-I1-2

11:00 - 11:15

### **Using Magnetic Fields to Design and Build Transparent, Conducting and Flexible Graphene-based Composites**

Hortense Le Ferrand

Nanyang Technological Univ., Singapore

Tu-I1-3

11:15 - 11:30

### **Plasma-Assisted Multi-Metallic Oxyhydroxides for Efficient Electrocatalytic Oxygen Evolution Reaction**

Byeong Cheul Moon and Jeung Ku Kang

KAIST, Korea

Tu-I1-4

11:30 - 12:00

### **[Invited] In-Situ Electron Microscopy of Energy Materials**

Jong Min Yuk

KAIST, Korea

Tu-I1-5

12:00 - 12:15

### **3-Dimensional Nanorod & Nano Array Structure using Nano-mold Process**

Je Won Kim

Namseoul Univ., Korea

Tu-I1-6

12:15 - 12:30

### **Pressure-Light Bimodal Sensor based on Long-Term Stable MAPbI<sub>3</sub> Thin Films by CVD**

Ji-Ho Eom<sup>1</sup>, Hye-Jin Kim<sup>2</sup>, and Soon-Gil Yoon<sup>1</sup>

<sup>1</sup>Chungnam Nat'l Univ., Korea, <sup>2</sup>ETRI, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Fuel Cells</b>	<b>Session Code</b>	<b>Tu-J1</b>
<b>Date and Time</b>	<b>2018-08-21 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Tu-J1-1**

**10:30 - 10:45**

### **Experimental Analysis on Operation Conditions of Open Cathode Polymer Electrolyte Fuel Cells**

Beom Jun Kim<sup>1</sup>, Jun-Young Kang<sup>2</sup>, Jeong-Wook Yang<sup>2</sup>, and Young Gi Yoon<sup>1</sup>  
<sup>1</sup>KIER, Korea, <sup>2</sup>Chonbuk Nat'l Univ., Korea

**Tu-J1-2**

**10:45 - 11:15**

### **[Invited] First-Principles Computational and Machine Learning Approach to Design Highly Functional Catalysts Materials for Fuel Cells**

Byungchan Han, Seunghyo Noh, and Jeemin Hwang  
Yonsei Univ., Korea

**Tu-J1-3**

**11:15 - 11:30**

### **Theoretical Insights on the Electrode-Electrolyte Microstructure in the Proton Exchange Membrane Fuel Cells**

Chi-Young Jung, Hyunguk Choi, Suwon Choi, Younggi Yoon, and Tae-Young Kim  
KIER, Korea

**Tu-J1-4**

**11:30 - 11:45**

### **Design of Promotion Effects of CeO<sub>x</sub> on Pt Electrodes in PEFCs**

Toshiyuki Mori<sup>1</sup>, Shipra Chauhan<sup>1</sup>, Akira Suzuki<sup>1</sup>, Shunya Yamamoto<sup>2</sup>, Tomohiro Kobayashi<sup>3</sup>, and Noriko Isaka<sup>1</sup>  
<sup>1</sup>NIMS, Japan, <sup>2</sup>Nat'l Inst. for Quantum and Radiological Sci. and Tech., Japan, <sup>3</sup>RIKEN, Japan

**Tu-J1-5**

**11:45 - 12:15**

### **[Invited] Phase Transformation of Metal Phosphide Nanoparticles for Hydrogen Evolution Reaction Catalysis**

Don-Hyung Ha  
Chung-Ang Univ., Korea

**Tu-J1-6**

**12:15 - 12:30**

### **A Technological and Economic Points of Power to Gas Project**

WONCHUL CHO, HYUN-SEOK CHO, SANG-KYUNG KIM, and CHANG HEE KIM  
KIER, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Safer Batteries</b>	<b>Session Code</b>	<b>Tu-A2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-A2-1

13:30 - 14:00

### **[Invited] Material- and System-Level Studies of Solid-State Batteries**

Shou-Hang Bo  
Shanghai Jiao Tong Univ., China

Tu-A2-2

14:00 - 14:30

### **[Invited] Fire-Extinguishing Organic Electrolytes for Safe Batteries**

Yuki Yamada<sup>1,2</sup>, Jianhui Wang<sup>1</sup>, and Atsuo Yamada<sup>1,2</sup>  
<sup>1</sup>The Univ. of Tokyo, Japan, <sup>2</sup>Kyoto Univ., Japan

Tu-A2-3

14:30 - 14:45

### **Composite Ionic Conductors by Photopolymerization**

Kia Chai Phuah, Ju Yu Yeo, and Stefan Adams  
Nat'l Univ. of Singapore, Singapore

Tu-A2-4

14:45 - 15:00

### **Phase Structure of PEO-PPO-PEO/LiCF<sub>3</sub>SO<sub>3</sub> Polymer Electrolytes Studied by High-Resolution Solid-State NMR**

Ling Wei  
China Univ. of Petroleum, China

Tu-A2-5

15:00 - 15:15

### **High Performance LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Thin Film Cathode Fabricated by RF Reactive Sputtering**

Jong Heon Kim and Hyun-Suk Kim  
Chungnam Nat'l Univ., Korea

Tu-A2-6

15:15 - 15:30

### **High-Performance Supercapacitors using Self-Assembled Multilayers of RGO-MnO<sub>x</sub> Nanohybrids on Surface-Enhanced Nickel Foams**

Hoseong Han and Hyungtak Seo  
Ajou Univ., Korea

Tu-A2-7

15:30 - 15:45

### **Carbon Paper-Supported Nitrogen-Doped Reduced Graphene Oxide Fororganic Electrolyte Supercapacitor**

Sriprachuabwong Chakrit, Adisorn Tuantranont, Nirachawadee Srisamrarn, Jutarat Sudchanham, and Chatwarin Poochai  
Nat'l Sci. and Tech. Development Agency, Thailand



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Energy Related Materials and Phenomena</b>	<b>Session Code</b>	<b>Tu-B2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-B2-1

13:30 - 14:00

## **[Keynote] Giant Thermopower at High Temperatures in SrTiO<sub>3</sub>/Ca<sub>3</sub>Co<sub>4</sub>O<sub>7</sub> Heterostructures**

Hanns-Ulrich Habermeier<sup>1,2</sup>

<sup>1</sup>Max-Planck-Inst. for Solid State Research, Germany, <sup>2</sup>Sci. Consulting Int'l., Germany

Tu-B2-2

14:00 - 14:30

## **[Invited] Oxygen Surface Exchange Properties of (La<sub>0.6</sub>Sr<sub>0.4</sub>)(Co<sub>0.2</sub>Fe<sub>0.8</sub>)O<sub>3-d</sub> Thin Film Cathodes: Microstructure and Thickness Dependence**

Katherine Develos Bagarinao<sup>1</sup>, Jeffrey De Vero<sup>1</sup>, Shu-Sheng Liu<sup>1</sup>, Haruo Kishimoto<sup>1</sup>, Tomohiro Ishiyama<sup>1</sup>, Katsuhiko Yamaji<sup>1</sup>, Teruhisa Horita<sup>1</sup>, and Harumi Yokokawa<sup>1,2</sup>

<sup>1</sup>AIST, Japan, <sup>2</sup>The Univ. of Tokyo, Japan

Tu-B2-3

14:30 - 15:00

## **[Invited] Tuning of the Internal Stress in Magnetostrictive Thin Films and an Evaluation of Its Adhesion Applying Hydrogen Loading Treatment**

Helmut Takahiro Uchida, Masatoshi Inoue, Kengo Yamaguchi, Yoshihito Tsukagoshi, and Yoshihito Matsumura

Tokai Univ., Japan

Tu-B2-4

15:00 - 15:30

## **[Invited] Vibrational Energy Harvesting based on Flexible Polymers**

Takashi Nakajima, Yoichiro Hashizume, and Soichiro Okamura

Tokyo Univ. of Sci., Japan





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Optical Materials and Devices IV</b>	<b>Session Code</b>	<b>Tu-C2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-C2-1

13:30 - 14:00

## **[Invited] Transparent Glass-Ceramics for Wavelength Tunable Light Source**

Shifeng Zhou<sup>1</sup> and Jianrong Qiu<sup>2</sup>

<sup>1</sup>South China Univ. of Tech., China, <sup>2</sup>Zhejiang Univ., China

Tu-C2-2

14:00 - 14:30

## **[Invited] Structural Studies of NaPO<sub>3</sub> based Optical Phosphate Glasses by Solid State NMR**

Jinjun Ren  
CAS, China

Tu-C2-3

14:30 - 14:45

## **$\alpha$ -SiAlON: A New Host-Material for Lanthanide Upconversion in Extreme Environment**

Yuwaraj Kshetri and Soo Wahn Lee  
Sun Moon Univ., Korea

Tu-C2-4

14:45 - 15:00

## **Development of Norbornene-Dicarboximide based Organic Electro-Optic Polymers**

Alisa Bannaron, Andrew Mark Spring, and Shiyoshi Yokoyama  
Kyushu Univ., Japan

Tu-C2-5

15:00 - 15:15

## **High-Q Si<sub>3</sub>N<sub>4</sub> Ring Resonator Fabrication with Low Temperature LSCVD Method**

Xiaoyang Cheng and Shiyoshi Yokoyama  
Kyushu Univ., Japan

Tu-C2-6

15:15 - 15:30

## **Effects of Ga Replacing Ge in Ge-Sb-Se Glass**

Woo Hyung Lee, Jun Ho Lee, Hyum Kim, and Yong Gyu Choi  
Korea Aerospace Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Biointerfacing Nanomaterials</b>	<b>Session Code</b>	<b>Tu-D2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Tu-D2-1**

**13:30 - 14:00**

**[Invited] Artificial Spores: Chemical Sporulation and Germination**

Insung Choi  
KAIST, Korea

**Tu-D2-2**

**14:00 - 14:30**

**[Invited] Cellular Behavior on Nanostructured Surfaces**

Jin Seok Lee  
Sookmyung Women's Univ., Korea

**Tu-D2-3**

**14:30 - 15:00**

**[Invited] Direct Measurements of Inter-Membrane Forces using Surface Forces Apparatus**

Dong Woong Lee  
UNIST, Korea

**Tu-D2-4**

**15:00 - 15:30**

**[Invited] Decoding Top-Down and Bottom-Up Nanofabrication Approaches**

Wooyoung Shim  
Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>2D Materials &amp; Electronic Properties</b>	<b>Session Code</b>	<b>Tu-E2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-E2-1

13:30 - 14:00

**[Invited] Ultrathin 2D Nanosheets for Electron Device Applications**

Seongil Im  
Yonsei Univ., Korea

Tu-E2-2

14:00 - 14:30

**[Invited] Fermi Level Pinning of Two Dimensional Materials**

Won Jong Yoo  
Sungkyunkwan Univ., Korea

Tu-E2-3

14:30 - 15:00

**[Invited] Novel 2D Interface with Silicon, Graphene, Transition Metal Dichalcogenides and Ca<sub>2</sub>N**

Heejun Yang  
Sungkyunkwan Univ., Korea

Tu-E2-4

15:00 - 15:15

**Thickness Dependent Fermi Level De-Pinning of One-Dimensional Edge Contact to MoS<sub>2</sub>**

Changsik Kim, Kwang young Lee, Kwangro Lee, and Won Jong Yoo  
Sungkyunkwan Univ., Korea

Tu-E2-5

15:15 - 15:30

**Improving the Stability of High-Performance Multilayer MoS<sub>2</sub> Field-Effect Transistors by O<sub>2</sub> Plasma Treatment and Al<sub>2</sub>O<sub>3</sub> Passivation**

Na Liu, Jeong Hun Kim, Soo Ho Choo, Naqi Siddiqi, and Sunkook Kim  
Sungkyunkwan Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Stretchable Systems</b>	<b>Session Code</b>	<b>Tu-F2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-F2-1

13:30 - 14:00

## **[Invited] Soft Materials Engineering to Enhance Sensitivity of Stretchable Sensors**

Xiaodong Chen  
Nanyang Technological Univ., Singapore

Tu-F2-2

14:00 - 14:30

## **[Invited] Detecting Mechanical Cues via Soft Material Sensing: Low Cost Technological Solutions and Bioinspired Approaches**

Lucia Beccai  
Istituto Italiano di Tecnologia, Italy

Tu-F2-3

14:30 - 14:45

## **Tailoring Force Sensitivity And Selectivity by The Microstructural Engineering of Multidirectional Electronic Skins**

Jonghwa Park, Jinyoung Kim, Jaehyung Hong, Hochan Lee, Youngoh Lee, Seungse Cho, Sung-Woo Kim, Jae Joon Kim, Sung Youb Kim, and Hyunhyub Ko  
UNIST, Korea

Tu-F2-4

14:45 - 15:00

## **A Skin-Inspired Tactile Sensor for Super E-Skin**

Yuanzhao Wu<sup>1,2</sup>, Yiwei Liu<sup>1</sup>, Jie Shang<sup>1</sup>, and Run-Wei Li<sup>1</sup>  
<sup>1</sup>CAS, China, <sup>2</sup>Univ. of CAS, China

Tu-F2-5

15:00 - 15:15

## **Electrospun Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> MXene Composite Fibers for Wearable Supercapacitor Applications**

Ariana Levitt, Simge Uzun, Mohamed Alhabeb, Genevieve Dion, and Yury Gogotsi  
Drexel Univ., USA

Tu-F2-6

15:15 - 15:30

## **Flexible Thermoelectric Power Generator for Self-Powered Wearable Electrocardiography**

Choong Sun Kim<sup>1</sup>, Hyeong Man Yang<sup>2</sup>, Jinseok Lee<sup>1</sup>, Gyu Soup Lee<sup>1</sup>, Hyeongdo Choi<sup>1</sup>, Yong Jun Kim<sup>1</sup>, Se Hwan Lim<sup>3</sup>  
Seong Hwan Cho<sup>1</sup>, Sang-Gug Lee<sup>1</sup>, and Byung Jin Cho<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>ERC, Korea, <sup>3</sup>Tegway Co. Ltd., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Ferro/Piezo V</b>	<b>Session Code</b>	<b>Tu-G2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-G2-1

13:30 - 14:00

## [Invited] Flexible Ferroelectric Organic Crystals

Magdalena Owczarek<sup>1</sup>, Ryszard Jakubas<sup>2</sup>, Seungbum Hong<sup>3,4</sup>, Vinayak P. Dravid<sup>1</sup>, J. Fraser Stoddart<sup>1</sup>, Karl A. Hujsak<sup>1</sup>, Daniel P. Ferris<sup>1</sup>, Aleksandrs Prokofjevs<sup>1</sup>, Irena Majerz<sup>5</sup>, Przemysław Szklarz<sup>2</sup>, Huacheng Zhang<sup>1</sup>, Amy A. Sarjeant<sup>1</sup>, and Charlotte L. Stern<sup>1</sup>

<sup>1</sup>Northwestern Univ., USA, <sup>2</sup>Univ. of Wrocław, Poland, <sup>3</sup>ANL, USA, <sup>4</sup>KAIST, Korea, <sup>5</sup>Wrocław Medical Univ., Poland

Tu-G2-2

14:00 - 14:30

## [Invited] Thin Film Composite Ferroelectrics for Low-Power Devices

Catherine Dubourdieu<sup>1</sup>, Lucie Mazet<sup>2</sup>, Martin Frank<sup>3</sup>, Eduard Cartier<sup>3</sup>, John Bruley<sup>3</sup>, and Vijay Narayanan<sup>3</sup>

<sup>1</sup>Helmholtz Zentrum Berlin, Germany, <sup>2</sup>CNRS, France, <sup>3</sup>IBM T.J. Watson Research Center, USA

Tu-G2-3

14:30 - 15:00

## [Invited] Bulk Photovoltaic Effect in Lead Free Ferroelectrics

Radhe Agarwal<sup>1</sup>, Yogesh Sharma<sup>2</sup>, Seungbum Hong<sup>3</sup>, James Scott<sup>4</sup>, Jonathan E. Spanier<sup>1</sup>, and Ram S. Katiyar<sup>5</sup>

<sup>1</sup>Drexel Univ., USA, <sup>2</sup>ORNL, USA, <sup>3</sup>KAIST, Korea, <sup>4</sup>Univ. of St. Andrews, UK, <sup>5</sup>Univ. of Puerto Rico, USA

Tu-G2-4

15:00 - 15:15

## Enhanced the Piezoelectric of Polyvinylidene Fluoride Polymer by Combining Flexoelectric Properties of LDHs Nanosheet

Thi Minh Tuoi Nguyen and Soon-Gil Yoon  
Chungnam Nat'l Univ., Korea

Tu-G2-5

15:15 - 15:30

## Dielectric Characteristics of PZT Films Fabricated by Aerosol-Deposition Method

Chunkil Park<sup>1</sup>, Dae-Yong Jeong<sup>1</sup>, Jong-Jin Choi<sup>2</sup>, Jungho Ryu<sup>2</sup>, and Byung-Dong Hahn<sup>2</sup>

<sup>1</sup>Inha Univ. Korea, <sup>2</sup>KIMS, Korea

Tu-G2-6

15:30 - 15:45

## The Observation of Small Polaron Localization in W-Doped CeO<sub>2</sub>

Annawit Tipsawat<sup>1</sup>, Taras Kolodiazhnyi<sup>2</sup>, and Santi Maensiri<sup>1</sup>

<sup>1</sup>Suranaree Univ. of Tech., Thailand, <sup>2</sup>NIMS, Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thermoelectric II</b>	<b>Session Code</b>	<b>Tu-H2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-H2-1

13:30 - 14:00

### **[Invited] Cu-based Thermoelectric Materials**

Xun Shi and Lidong Chen  
Shanghai Inst. of Ceramics, China

Tu-H2-2

14:00 - 14:30

### **[Invited] Chemical Manipulation of Phase Stability and Electronic Behavior in Cu<sub>4-x</sub>Ag<sub>x</sub>Se<sub>2</sub>**

Ferdinand Poudeu, Alan Olvera, Trevor P. Bailey, and Ctirad Uher  
Univ. of Michigan, USA

Tu-H2-3

14:30 - 15:00

### **[Invited] High-Performance Nanostructured Metal Chalcogenide Thermoelectric Materials for Energy Conversion**

Zhigang Chen  
Univ. of Southern Queensland, Australia

Tu-H2-4

15:00 - 15:15

### **Crystallization of Screen-Printed Thermoelectric Materials using Functional Paste with Excessive Tellurium**

Hyeongdo Choi<sup>1</sup>, Yong Jun Kim<sup>1</sup>, Choong Sun Kim<sup>1</sup>, Gysoup Lee<sup>1</sup>, Sung Ho Kim<sup>1</sup>, Hye Rim Hwang<sup>2</sup>, and Byung Jin Cho<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Flexible Thermoelectric Device Tech. Center, Korea

Tu-H2-5

15:15 - 15:30

### **Effects of Sintering Conditions on the Thermoelectric Properties of N-Type Half-Heusler (Hf<sub>0.5</sub>Zr<sub>0.5</sub>)<sub>0.7</sub>Ti<sub>0.3</sub>NiSn<sub>0.998</sub>Sb<sub>0.002</sub>**

Van Du Nguyen<sup>1,2</sup>, Jamil Ur Rahman<sup>1,2</sup>, Weon Ho Shin<sup>1</sup>, Won Seon Seo<sup>1</sup>, Myong Ho Kim<sup>2</sup>, and Soonil Lee<sup>2</sup>  
<sup>1</sup>KICET, Korea, <sup>2</sup>Changwon Nat'l Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Hybrid Materials and Processing Technologies IV</b>	<b>Session Code</b>	<b>Tu-I2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-I2-1

13:30 - 14:00

**[Invited] Strategic Architectures of Silicon Nanolayer-Embedded Graphite Hybrid for High Energy Lithium-Ion Battery Anodes**

Min Sung Ko  
Pukyong Nat'l Univ., Korea

Tu-I2-2

14:00 - 14:15

**Preparation of Titanium Dioxide Hollow Fiber using Electrospinning Technique for Gas Sensor**

Chaturon Nettonglang<sup>1</sup> and Santi Meansiri<sup>1,2</sup>  
<sup>1</sup>Suranaree Univ. of Tech., Thailand, <sup>2</sup>SUT-NANOTECH CoE on Advanced Functional, Thailand

Tu-I2-3

14:15 - 14:45

**[Invited] Hybrid Materials for Efficient Solar-Thermal Energy Storage and Evaporation-based Applications**

Peng Tao, Zhongyong Wang, Qinxian Ye, Zizhao Wang, Yingying Chen, Jinwei Lou, and Tao Deng  
Shanghai Jiao Tong Univ., China

Tu-I2-4

14:45 - 15:00

**Homogeneously Ordered Pseudocapacitive Polymer Chain Anode and Sub-Nanoscale Metal Oxide Cathode for Aqueous Hybrid Capacitors Enabling High Energy and Power Densities along with Long Cycle Life**

Il Woo Ock, Sang Jun Kim, and Jeung Ku Kang  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thin Film SOFCs</b>	<b>Session Code</b>	<b>Tu-J2</b>
<b>Date and Time</b>	<b>2018-08-21 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

Tu-J2-1

13:30 - 14:00

**[Invited] Thin Film Technology for High Performance Low-Temperature Solid Oxide Fuel Cells**

Jihwan An, Seongkook Oh, Hyong June Kim, Jeong Woo Shin, Byung Chan Yang, and Dohyun Go  
Seoul Nat'l Univ. of Sci. and Tech., Korea

Tu-J2-2

14:00 - 14:30

**[Invited] Thin Film Electrode for Intermediate-Temperature Solid Oxide Fuel Cell**

Young-Wan Ju  
Wonkwang Univ., Korea

Tu-J2-3

14:30 - 14:45

**Study on Various Cathode Materials for Low-Temperature Solid Oxide Fuel Cells using Pulsed Laser Deposition**

Donghwan Kim<sup>1,2</sup>, Jung Hoon Park<sup>2</sup>, Joon Hyung Shim<sup>1</sup>, and Ji-Won Son<sup>2,3</sup>  
<sup>1</sup>Korea Univ., Korea, <sup>2</sup>KIST, Korea, <sup>3</sup>Korea Univ. of Sci. and Tech., Korea

Tu-J2-4

14:45 - 15:15

**[Invited] Double Columnar Dense Cathode for Intermediate Temperature Solid Oxide Fuel Cells**

Byeong Su Kang and Tatsumi Ishihara  
Kyushu Univ., Japan

Tu-J2-5

15:15 - 15:30

**Evaluation of Physical and Electrochemical Properties of Low-Temperature SOFC Anode with Improved redox Cycle Stability**

Jung Hoon Park<sup>1,2</sup>, Mansoo Park<sup>1</sup>, Ho-Il Ji<sup>1</sup>, Hyoungchul Kim<sup>1</sup>, Kyung Joong Yoon<sup>1</sup>, Jong-Ho Lee<sup>1,3</sup>,  
Seung Min Han<sup>2</sup>, and Ji-Won Son<sup>1,3</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>KAIST, Korea, <sup>3</sup>Korea Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Characterization tools and anode materials</b>	<b>Session Code</b>	<b>We-A1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-A1-1**

**10:30 - 11:00**

**[Invited]Revealing Spatio-Dynamics of Lithium Battery by Synchrotron-based X-Ray Microscopy**

Jongwoo Lim  
Seoul Nat'l Univ., Korea

**We-A1-2**

**11:00 - 11:15**

**Superior Cycle Life Li-Ion Battery based on SiP<sub>2</sub>/CNT Composite Anode Material**

Byung Hoon Park, Soo Bean Choi, and Kwang Bum Kim  
Yonsei Univ., Korea

**We-A1-3**

**11:15 - 11:30**

**TiO<sub>2</sub>-Coated Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> Composite as Anode Materials for High Performance of Lithium Ion Battery**

Jun Hui Jeong, Byung-Hoon Park, Geon-Woo Lee, and Kwang-Bum Kim  
Yonsei Univ., Korea

**We-A1-4**

**11:30 - 11:45**

**FeSi<sub>4</sub>P<sub>4</sub>: A Superior Anode Material with Exceptionally Reversible Lithium-Ion Storage**

Mahboobeh Nazarian-Samani, Safa Haghghat-Shishavan, Masoud Nazarian-Samani, and Kwang-Bum Kim  
Yonsei Univ., Korea

**We-A1-5**

**11:45 - 12:15**

**[Invited]Direct Visualization of Electrochemical Reactions in Batteries by In-Situ Transmission Electron Microscopy**

Hyun-Wook Lee  
UNIST, Korea

**We-A1-6**

**12:15 - 12:30**

**Uniformly Decorated Graphene Tube @Graphene Microsphere for High Rate Supercapacitors**

Young Hwan Kim and Kwang-Bum Kim  
Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Emerging Advanced Materials I</b>	<b>Session Code</b>	<b>We-B1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-B1-1**

**10:30 - 11:00**

## **[Invited] Modulation of Nanoscale Materials based on Dense Nanopatterns**

Yeon Sik Jung  
KAIST, Korea

**We-B1-2**

**11:00 - 11:30**

## **[Invited] Stabilizing Copper Window Electrodes towards Air Oxidation for Optoelectronic Applications**

Philip Bellchambers, Jaemin Lee, Silvia Varagnolo, Houari Amari, Steven Huband, Marc Walker, and Ross Hatton  
Univ. of Warwick, UK

**We-B1-3**

**11:30 - 11:45**

## **Novel Photon-Excitation Process for Control of C-C Bonds in Nano-carbon Materials by Free Electron Laser Irradiation**

Hiroshi Yamamoto  
Nihon Univ., Japan

**We-B1-4**

**11:45 - 12:00**

## **Fabrication of Isolated Nanocolumnar-Structured Titanium-Nitride Films by Reactive Sputtering**

Yasushi Inoue<sup>1</sup>, Ryusei Takamura<sup>1</sup>, Daiki Sato<sup>1</sup>, Sho Akiyama<sup>1</sup>, and Osamu Takai<sup>2</sup>  
<sup>1</sup>Chiba Inst. of Tech., Japan, <sup>2</sup>Kanto Gakuin Univ., Japan

**We-B1-5**

**12:00 - 12:15**

## **A Glass Capillary-Written and then Vapor Phase-Polymerized PEDOT Conductor with Stability in Water**

Feng Ma<sup>1</sup>, Sangil Choi<sup>1,2</sup>, and Sungsoo Kim<sup>1,2</sup>  
<sup>1</sup>Pai Chai Univ., Korea, <sup>2</sup>Flexolution Corp., Korea

**We-B1-6**

**12:15 - 12:30**

## **Effect of Addition of Zirconia Particles on Gel Strength and Gelation Induction Time in Acrylamide Polymerization**

Yu Ah Son<sup>1</sup>, Nahm Sahn<sup>2</sup>, Hang Kyo Jin<sup>1</sup>, Young Min Choi<sup>1</sup>, Sun Ho Jeong<sup>1</sup>, Su Yeon Lee<sup>1</sup>, Sung Mook Jung<sup>1</sup>, and Beyong Hwan Ryu<sup>1</sup>  
<sup>1</sup>KRICT, Korea, <sup>2</sup>Korea Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bio-inspired Materials and Devices I</b>	<b>Session Code</b>	<b>We-C1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-C1-1**

**10:30 - 11:00**

**[Invited]Brain-Inspired Organic Nanowire Artificial Synapses**

Tae-Woo Lee  
Seoul Nat'l Univ., Korea

**We-C1-2**

**11:00 - 11:30**

**[Invited]Nature-Inspired Sensors and Devices for Soft Electronic Skins**

Benjamin Tee  
Nat'l Univ. of Singapore, Singapore

**We-C1-3**

**11:30 - 12:00**

**[Invited]Biomimetic Flexible Physical Sensors for Wearable Devices**

Hyunhyub Ko  
UNIST, Korea

**We-C1-4**

**12:00 - 12:30**

**[Invited]Bio-Inspired Architectures for Adhesion and Wearable Device**

Changhyun Pang  
Sungkyunkwan Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Physics and Interface engineering of 2D Materials</b>	<b>Session Code</b>	<b>We-E1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-E1-1**

**10:30 - 11:00**

**[Invited]Ferromagnetism in Two-Dimensional Materials**

Euyheon Hwang  
Sungkyunkwan Univ., Korea

**We-E1-2**

**11:00 - 11:30**

**[Invited]Extraordinarily Strong Interlayer Interaction And High-Electron-Mobility in 2D Layered PtX<sub>2</sub>**

Yang Chai  
The Hong Kong Polytechnic Univ., China

**We-E1-3**

**11:30 - 12:00**

**[Invited]Interface Engineering for 2D Layered Semiconductors**

Kosuke Nagashio  
The Univ. of Tokyo, Japan

**We-E1-4**

**12:00 - 12:30**

**[Invited]Band Gap and Interface Engineering of Atomic Layered Semiconductors**

Anlian Pan, Biyuan Zheng, Tiefeng Yang, and Honglai Li  
Hunan Univ., China



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Materials and Devices for Flexible Electronics</b>	<b>Session Code</b>	<b>We-F1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-F1-1**

**10:30 - 11:00**

**[Invited]Inorganic Nanomaterial-based Macroscale Flexible Electronics**

Kuniharu Takei<sup>1,2</sup>

<sup>1</sup>Osaka Prefecture Univ., Japan, <sup>2</sup>JST PRESTO, Japan

**We-F1-2**

**11:00 - 11:30**

**[Invited]Self-Powered Flexible Inorganic Electronic Systems**

Keon Jae Lee

KAIST, Korea

**We-F1-3**

**11:30 - 12:00**

**[Invited]Mechanical Aspects of Metal Oxide Thin-Film Transistors on Flexible Substrates**

Ashutosh Kumar Tripathi

Indian Inst. of Tech. Kanpur, India

**We-F1-4**

**12:00 - 12:30**

**[Invited]Solution-Processed Oxide Thin-Film Devices for Emerging Electronics**

Yong-Hoom Kim

Sungkyunkwan Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Nano Structure/Surface Engineering I</b>	<b>Session Code</b>	<b>We-G1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-G1-1**

**10:30 - 11:00**

**[Invited]Capillarity-Induced Wrinkle-to-Fold Transition of a Thin Film on a Soft Substrate**

So Nagashima  
Osaka Univ., Japan

**We-G1-2**

**11:00 - 11:30**

**[Invited]Polydopamine Coating, the First Material-Independent Surface Chemistry**

Haeshin Lee  
KAIST, Korea

**We-G1-3**

**11:30 - 12:00**

**[Invited]Combined Anticorrosion And Hard Coatings via Nanostructure Tailoring**

Aiyng Wang, Linlin Liu, Lei Li, and Jiahao Weng  
CAS, China

**We-G1-4**

**12:00 - 12:15**

**Arsenic Removal from Drinking Water using Nanosphere Shaped Fe<sub>2</sub>O<sub>3</sub>**

Sunil Babu Eadi Eadi, Sengeragcha Bolortuya, Farkhod Azimov, Ngo Hoang Ngoc, Hee Jun Kim,  
and Sungjin Kim  
Kumoh Nat'l Inst. of Tech., Korea

**We-G1-5**

**12:15 - 12:30**

**Effect of Microwave Irradiation to SnO<sub>2</sub> Thin Films Grown by Atomic Layer Deposition**

Namgue Lee, Hyeongsu Choi, Hyunwoo Park, Minwook Bang, Haewon Cho, Chanwon Jung, and  
Hyeongtag Jeon  
Hanyang Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thermoelectric III</b>	<b>Session Code</b>	<b>We-H1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-H1-1**

**10:30 - 11:00**

### **[Invited]High Thermoelectric Performance of Alpha-MgAgSb for Power Generation**

Jiehe Sui<sup>1</sup>, Zihang Liu<sup>1</sup>, and Zhifeng Ren<sup>2</sup>

<sup>1</sup>Harbin Inst. of Tech., China, <sup>2</sup>Univ. of Houston, USA

**We-H1-2**

**11:00 - 11:30**

### **[Invited]Thermoelectric Properties of Nanostructured Thin Film Oxides**

Paolo Mele<sup>1,2</sup>

<sup>1</sup>Shibaura Inst. of Tech., Japan, <sup>2</sup>Muroran Inst. of Tech., Japan

**We-H1-3**

**11:30 - 11:45**

### **Planar Thin Film Thermoelectric Device**

Haishan Shen<sup>1,2</sup>, Sizin Kim<sup>3</sup>, Hoojeong Lee<sup>2</sup>, and Seungwoo Han<sup>1</sup>

<sup>1</sup>KIMM, Korea, <sup>2</sup>Sungkyunkwan Univ., Korea, <sup>3</sup>Te-tech company, Korea

**We-H1-4**

**11:45 - 12:00**

### **High Temperature Stability of Thermoelectric Silicides**

David Berthebaud

CNRS, Japan

**We-H1-5**

**12:00 - 12:30**

### **[Invited]Thermoelectric Transport in Holey Silicon and Rough Silicon Nanowires**

Jongwoo Im<sup>1</sup> and Peidong Yang<sup>2</sup>

<sup>1</sup>Seoul Nat'l Univ., Korea, <sup>2</sup>Univ. of California, USA



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Mat. Informatics I</b>	<b>Session Code</b>	<b>We-I1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-I1-1**

**10:30 - 11:00**

**[Invited]Combining Deep Learning and High-Throughput Quantum Mechanical Calculations for Materials Design**

Shyue Ping Ong, Chi Chen, Weike Ye, Chen Zheng, Zhenbin Wang, and Zhuoying Zhu  
Univ. of California, San Diego, USA

**We-I1-2**

**11:00 - 11:15**

**High Throughput Experimental Materials Database**

Andriy Zakutayev, Nick Wunder, Marcus Schwarting, John Perkins, Robert White, Kristin Munch, William Tumas, and Caleb Phillips  
Nat'l Renewable Energy Laboratory, USA

**We-I1-3**

**11:15 - 11:45**

**[Invited]Materials Informatics based on Reliable Materials Database**

Yoshiyuki Kawazoe<sup>1,2</sup>  
<sup>1</sup>Tohoku Univ., Japan, <sup>2</sup>SRM Inst. of Sci. and Tech., India

**We-I1-4**

**11:45 - 12:15**

**[Invited]Estimation of Accurate Bandgap of Functionalized MXene using Statistical Learning**

Abhishek Kumar Singh  
Indian Inst. of Sci., India





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>SOFTC &amp; SOEC</b>	<b>Session Code</b>	<b>We-J1</b>
<b>Date and Time</b>	<b>2018-08-22 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-J1-1**

**10:30 - 11:00**

## **[Invited]Unravelling the Oxygen Reduction Mechanism of Fe-N-C Catalysts**

Hyung-Kyu Lim<sup>1</sup>, Chang Hyuck Choi<sup>2</sup>, and Hyungjun Kim<sup>3</sup>  
<sup>1</sup>Kangwon Nat'l Univ., Korea, <sup>2</sup>GIST, Korea, <sup>3</sup>KAIST, Korea

**We-J1-2**

**11:00 - 11:30**

## **[Invited]Oxygen Evolution Reaction on Ni-based Two-Dimensional (2D) Titanate Nanosheets**

Rahul Ramesh and Jinwoo Lee  
POSTECH, Korea

**We-J1-3**

**11:30 - 11:45**

## **Heterogeneous Doping, a Novel in-situ Synthesis of Supported Metal Nanocatalysts**

No Woo Kwak<sup>1</sup>, SeungJin Jeong<sup>1</sup>, WooChul Jung<sup>1</sup>, Pilgyu Byeon<sup>2</sup>, and Sung-Yoon Chung<sup>2</sup>  
<sup>1</sup>KIER, Korea, <sup>2</sup>KAIST, Korea

**We-J1-4**

**11:45 - 12:15**

## **[Invited]Breakthrough Performance and Scalability of Protonic Ceramic Fuel Cells**

Jong-Ho Lee<sup>1</sup>, Byung-Kook Kim<sup>1</sup>, Hae-Weon Lee<sup>1</sup>, Hyegsoon An<sup>1,2</sup>, Ho-Il Ji<sup>1</sup>, Dongwook Shin<sup>2</sup>, Kyung Joong Yoon<sup>1</sup>,  
Mansoo Park<sup>1</sup>, Hyoungchul Kim<sup>1</sup>, and Ji-Won Son<sup>1</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>Hanyang Univ., Korea

**We-J1-5**

**12:15 - 12:30**

## **Effects of Pd Incorporation on Internal Steam Reforming of n-Butane in Thin-Film-based Solid Oxide Fuel Cell at Low Temperatures ( $\leq 600$ °C)**

Cam-Anh Thieu<sup>1,2</sup>, Mansoo Park<sup>1</sup>, Ho-Il Ji<sup>1</sup>, Hyoungchul Kim<sup>1</sup>, Kyung Joong Yoon<sup>1</sup>, Jong-Ho Lee<sup>1,2</sup>,  
and Ji-Won Son<sup>1,2</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>Korea Univ. of Sci. and Tech., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Na-ion Batteries</b>	<b>Session Code</b>	<b>We-A2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-A2-1**

**13:30 - 14:00**

### **[Invited]Improving Stability and Capacity of Sodium-Ion Cathode Materials**

Denis Yu, Jiaolong Zhang, and Bizhe Su  
City Univ. of Hong Kong, China

**We-A2-2**

**14:00 - 14:30**

### **[Invited]Fast Ion Conducting Sulfides for High Rate Performance All-Solid State Na-Ion Batteries**

Stefan Adams  
Nat'l Univ. of Singapore, Singapore

**We-A2-3**

**14:30 - 14:45**

### **Preparation of Hard Carbons Derived from Waste Tea Bag Powder as Anodes for Sodium Ion Battery**

Arenst Andreas Arie<sup>1</sup>, Burak Tekin<sup>2</sup>, and Rezan Demir Cakan<sup>2</sup>  
<sup>1</sup>Parahyangan Catholic Univ., Indonesia, <sup>2</sup>Gebze Technical Univ., Turkey

**We-A2-4**

**14:45 - 15:00**

### **Unfolding the Potassium Ion Storage Mechanism in Anatase TiO<sub>2</sub> Anode Material**

GeonWoo Lee, Young-Hwan Kim, Ha-Kyung Roh, Byung Hun Park, and Kwang Bum Kim  
Yonsei Univ., Korea

**We-A2-5**

**15:00 - 15:15**

### **Facile Synthesis and High Capacitance Performance of Copper Sulfide Nanotubes as Electrode Materials for Symmetric Supercapacitor**

Tingkai Zhao, Wenbo Yang, Xin Zhao, and Tiehu Li  
Northwestern Polytechnical Univ., China

**We-A2-6**

**15:15 - 15:30**

### **Fast Growth of Zn-Fe-C-O Hybrid Nanowires for Electrochemical Supercapacitors**

Yang Liu<sup>1</sup>, Xinyu Zhang<sup>2</sup>, John Xin<sup>3</sup>, and Chao Zhang<sup>1</sup>  
<sup>1</sup>Sun Yat-Sen Univ., China, <sup>2</sup>Auburn Univ., USA, <sup>3</sup>The Hong Kong Polytechnic Univ., China

**We-A2-7**

**15:30 - 15:45**

### **Synthesis of the 3D Porous Carbon-Manganese Oxide Nanocomposite (3D-C@MnO) and It's Supercapacitor Behavior Study**

Rakesh Kumar Sahoo<sup>1</sup>, Arya Das<sup>2</sup>, Saurabh Singh<sup>1</sup>, Saroj K. Singh<sup>2</sup>, Je Moon Yun<sup>1</sup>, Rajaram S. Mane<sup>1</sup>, and Kwang Ho Kim<sup>1</sup>  
<sup>1</sup>Pusan Nat'l Univ., <sup>2</sup>CSIR- Inst. of Minerals and Materials Tech., India



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Emerging Advanced Materials II</b>	<b>Session Code</b>	<b>We-B2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-B2-1**

**13:30 - 14:00**

### **[Invited]Proposal of New Electrochemistry in Mixed Anion Compounds**

Shigeto Hirai<sup>1</sup>, Kazuki Morita<sup>2</sup>, Taizo Shibuya<sup>3</sup>, Yujiro Tojo<sup>2</sup>, Tomoya Ohno<sup>1</sup>, Kenji Yasuoka<sup>2</sup>, Shunsuke Yagi<sup>4</sup>, Yoichi

Kamihara<sup>2</sup>, and Takeshi Matsuda<sup>1</sup>

<sup>1</sup>Kitami Inst. of Tech., Japan, <sup>2</sup>Keio Univ., Japan, <sup>3</sup>NEC Corporation, Japan, <sup>4</sup>The Univ. of Tokyo, Japan

**We-B2-2**

**14:00 - 14:30**

### **[Invited]Ultrasml-in-Nano Approach for Translation of Metal Nanomaterials to Clinics**

Domenico Cassano<sup>1</sup>, Ana-Katrina Mapanao<sup>1</sup>, Salvador Pocovi-Martinez<sup>2</sup>, and Valerio Voliani<sup>1</sup>

<sup>1</sup>Inst. Italiano di Tech., Italy, <sup>2</sup>CNR, Italy

**We-B2-3**

**14:30 - 14:45**

### **Reproducing Natural Architectures using Magnetic Fields**

Hortense Le Ferrand

Nanyang Technological Univ., Singapore

**We-B2-4**

**14:45 - 15:00**

### **Doping of Inorganic Salt for Increasing the Electrical Conductivity of PANI**

Azwar Manaf<sup>1</sup>, Mas Ayu Elita Hafizah<sup>1</sup>, Linda Isnaeniyah<sup>1</sup>, and Andreas Andreas<sup>2</sup>

<sup>1</sup>Universitas Indonesia, Indonesia, <sup>2</sup>Indonesian Inst. of Sci., Indonesia

**We-B2-5**

**15:00 - 15:15**

### **MBTA as a Corrosion Inhibitor to Reduce Organic Defects in Cu CMP**

Samrina Sahir<sup>1</sup>, Byoung-Jun Cho<sup>1</sup>, Jin-Goo Park<sup>1</sup>, Shohei Shima<sup>2</sup>, Satomi Hamada<sup>2</sup>, and Hirokuni Hiyama<sup>2</sup>

<sup>1</sup>Hanyang Univ., Korea, <sup>2</sup>EBARA Corp., Japan

**We-B2-6**

**15:15 - 15:30**

### **Dual Substitutions on Pyrochlore Phase $\text{Li}_x\text{La}_{2-x}\text{Ce}_{1.8}\text{Ru}_{0.2}\text{O}_{7-δ}$ as an Effective Catalyst for Auto-Thermal Steam Reforming of Ethanol**

Ho-Chen Hsieh<sup>1</sup>, Yuan-Chia Chang<sup>1</sup>, Yen-Yu Lin<sup>1</sup>, Jyh-Fu Lee<sup>2</sup>, Hwo-Shuenn Sheu<sup>2</sup>, and Chi-Shen Lee<sup>1</sup>

<sup>1</sup>Nat'l Chiao-Tung Univ., Taiwan, <sup>2</sup>NSRRC, Taiwan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Soft Electronic Materials</b>	<b>Session Code</b>	<b>We-C2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-C2-1**

**13:30 - 14:00**

## **[Invited]Molecular Engineering Approaches for High-Performance Optoelectronic Materials**

Hakan Usta<sup>1</sup>, Gökhan Demirel<sup>2</sup>, and Antonio Facchetti<sup>3</sup>

<sup>1</sup>Abdullah Gül Univ., Turkey, <sup>2</sup>Gazi Univ., Turkey, <sup>3</sup>Northwestern Univ., USA

**We-C2-2**

**14:00 - 14:30**

## **[Invited]Intrinsically Stretchable Healable Semiconducting Polymers for Skin-Inspired Wearable Electronics**

Jin Young Oh

Kyung Hee Univ., Korea,

**We-C2-3**

**14:30 - 15:00**

## **[Invited]Solution-Sheared Polymer based Glucose Sensors with High Sensitivity and Stability**

Myung Hoon Kang, Jeong Sik Na, Yu Been Lim, Dong Ho Lee, and Tae Hoon Lee

Kwangwoon Univ., Korea

**We-C2-4**

**15:00 - 15:15**

## **Resistive- and Capacitive-Type Humidity and Temperature Sensors based on Nickel-4-Benzyl Piperadine**

Muneeb Ur Rahman

Islamia College Peshawar, Pakistan

**We-C2-5**

**15:15 - 15:30**

## **Pressure Insensitive Piezoresistive Strain Sensor based on Porous Carbon Nanotube-Elastomer Composite**

Jinwon Oh, Jun Chang Yang, Jin-Oh Kim, and Steve Park

KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Pervoskite Solar Cells I</b>	<b>Session Code</b>	<b>We-D2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-D2-1**

**13:30 - 14:00**

**[Invited]Efficient Perovskite Solar Cells and Light-Emitting Diodes**

Jingbi You  
CAS, China

**We-D2-2**

**14:00 - 14:30**

**[Invited]Oriented Grains with Preferred Low-Angle Grain Boundaries in Halide Perovskite Films by Pressure-Induced Crystallization**

Jong Hyeok Park  
Yonsei Univ., Korea

**We-D2-3**

**14:30 - 15:00**

**[Invited]Rapid Two Step Sequential Process for Large-Scale High-Performance Perovskite Solar Cells**

Jangwon Seo  
KRICT, Korea

**We-D2-4**

**15:00 - 15:15**

**Ultra Stable MAPbI<sub>3</sub> Films Fabricated by Chemical Vapor Deposition – Stability Studies and Their Applications**

Pammi S.V.N. and Yoon Soon Gil  
Chungnam Nat'l Univ., Korea

**We-D2-5**

**15:15 - 15:30**

**A New Approach towards Fusion Energy Conversion Device: Thermoelectric, Piezoelectric Generator and Solar Cell (TPS) Devices**

Venkatraju Jella and Soon-Gil Yoon  
Chungnam Nat'l Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Device Applications of 2D Materials</b>	<b>Session Code</b>	<b>We-E2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-E2-1**

**13:30 - 14:00**

### **[Invited] Novel Graphene Sensors for Wearable Applications**

Xiao Liu, Yu-Xing Li, Pang Yu<sup>1</sup>, Ning-Qin Deng, Yu-Tao Li, Lu-Qi Tao, Tian He, Yi Yang, and Tian-Ling Ren  
Tsinghua Univ., China

**We-E2-2**

**14:00 - 14:30**

### **[Invited] Graphene and 2D Materials for Display Applications**

Ick-Joon Park, Youngjun Woo, Gi Woong Shim, Woonggi Hong, Sang Yoon Yang, and Sung-Yool Choi  
KAIST, Korea

**We-E2-3**

**14:30 - 15:00**

### **[Invited] High Performance Two Dimensional Materials Transistors**

Lei Liao  
Hunan Univ., China

**We-E2-4**

**15:00 - 15:15**

### **WS<sub>2</sub> Nanosheets-based Gas Sensors**

Jae-Hun Kim, Jae-Hyoung Lee, Jin-Young Kim, and Sang Sub Kim  
Inha Univ., Korea

**We-E2-5**

**15:15 - 15:30**

### **Physically Switchable Graphene Electro-Optic Modulators for Reconfigurable Optical Multicast**

Sungjae Lee<sup>1,2</sup>, Jin Tae Kim<sup>3</sup>, and Yong-Won Song<sup>1,2</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>UST, Korea, <sup>3</sup>ETRI, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Flexible Organic Electronics</b>	<b>Session Code</b>	<b>We-F2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-F2-1**

**13:30 - 14:00**

**[Invited]Low-Voltage, Flexible Thin-Film Transistors by Polymer Electrolytes**

Keun Hyung Lee, Hae Min Yang, Hyun Je Kim, and Kyung Gook Cho  
Inha Univ., Korea

**We-F2-2**

**14:00 - 14:30**

**[Invited]Vapor-Phase Deposited Polymeric Thin Films**

Sung Gap Im  
KAIST, Korea

**We-F2-3**

**14:30 - 14:45**

**Effects of Fluorine Atoms in Triblock-Copolymer based Dielectric Layers on Charge Transporting Characteristics via DPP-based D-A Type Semiconducting Polymer Films**

Yi-Na Moon<sup>1</sup>, Jong-Woon Ha<sup>2</sup>, Jiyoul Lee<sup>1</sup>, and Do-Hoon Hwang<sup>2</sup>  
<sup>1</sup>Pukyong Nat'l Univ., Korea, <sup>2</sup>Pusan Nat'l Univ., Korea

**We-F2-4**

**14:45 - 15:00**

**Influence of Fluoroalkyl Side-Chain on Charge Transporting Properties in DPP-BTZ D-A Type Conjugated Copolymer Films**

Do Hyeon Jeong<sup>1</sup>, Seok-Heon Jung<sup>2</sup>, Jin-Kyun Lee<sup>2</sup>, and Jiyoul Lee<sup>1</sup>  
<sup>1</sup>Pukyong Nat'l Univ., Korea, <sup>2</sup>Inha Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Nano Structure/Surface Engineering II</b>	<b>Session Code</b>	<b>We-G2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-G2-1**

**13:30 - 14:00**

**[Invited]Ultrasensitive Low-Cost Nanoporous Composites with a Wide Pressure Sensing Range for Tactile Sensors**

Sung Hoon Kang, Jing Li, Santiago Orrego, Junjie Pan, and Peisheng He  
Johns Hopkins Univ., USA

**We-G2-2**

**14:00 - 14:30**

**[Invited]Controlling Wave Transport in Periodic and Quasiperiodic Structures**

Kahyun Hur  
KIST, Korea

**We-G2-3**

**14:30 - 14:45**

**Hybridization of Multi-Dimensional Metal-Organic-Frameworks for Heterogeneous Metal Oxide Architectures: Toward Sensitive Chemiresistor**

Ji-Soo Jang, Won-Tae Koo, Dong-Ha Kim, and Il-Doo Kim  
KAIST, Korea

**We-G2-4**

**14:45 - 15:00**

**ZnO-based N-p Composite Nanofibers for Hydrogen Gassensors**

Jae-Hyoung Lee, Jae-Hun Kim, Jin-Young Kim, and Sang Sub Kim  
Inha Univ., Korea

**We-G2-5**

**15:00 - 15:15**

**Surface Phase Diagram of GaAs(001) Considering the Vibrational Thermal Energy by Ab-Initio Calculation**

In Won Yeu<sup>1</sup>, Gyuseung Han<sup>1</sup>, Cheol Seong Hwang<sup>1</sup>, and Jung-Hae Choi<sup>2</sup>  
<sup>1</sup>Seoul Nat'l Univ., Korea, <sup>2</sup>KIST, Korea

**We-G2-6**

**15:15 - 15:30**

**Different Bismuth Oxide Nanostructure Grown on Ni-Foam for Supercapacitor Application**

Nanasaheb Shinde N M  
Pusan Nat'l Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thermoelectric IV</b>	<b>Session Code</b>	<b>We-H2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-H2-1**

**13:30 - 14:00**

### **[Invited]High Performance Thermoelectric Materials and Modules Energy Harvesting**

Ngo Van Nong, Le Thanh Hung, and Safdar Abbas Malik  
Technical Univ. of Denmark, Denmark

**We-H2-2**

**14:00 - 14:30**

### **[Invited]High Performance Shape Engineerable Thermoelectric Pastes**

Son Jae Sung, Fredrick Kim, Seungki Jo, and Seungjun Choo  
UNIST, Korea

**We-H2-3**

**14:30 - 14:45**

### **Design and Fabrication of Thermoelectricpower Generation System for Energy Harvesting from Exhaust Pipe**

HanKi Cho and Seungwoo Han  
KIMM, Korea

**We-H2-4**

**14:45 - 15:00**

### **Optimal Operating Conditions of the Eco-Friendly Thermoelectric Cooler Installed in Automobiles**

Da-Hye Kim<sup>1</sup>, Sijin Kim<sup>2</sup>, and Seungwoo Han<sup>1,3</sup>  
<sup>1</sup>Univ. of Sci. and Tech., Korea, <sup>2</sup>TETech, Korea, <sup>3</sup>KIMM, Korea

**We-H2-5**

**15:00 - 15:15**

### **Material Optimization for Wearable Thermoelectric Generator**

Gyusoup Lee<sup>1</sup>, Garam Choi<sup>2</sup>, Choong Sun Kim<sup>1</sup>, Yong Jun Kim<sup>1</sup>, Hyeongdo Choi<sup>1</sup>, Seongho Kim<sup>1</sup>,  
Hyo Seok Kim<sup>2</sup>, Won Bo Lee<sup>2</sup>, and Byung Jin Cho<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Seoul Nat'l Univ., Korea

**We-H2-6**

**15:15 - 15:30**

### **Wireless Sensor Node Powered by a Flexible Thermoelectric Generator for Industrial Environmental Monitoring**

Yong Jun Kim<sup>1</sup>, Byung Jin Cho<sup>1</sup>, Choong Sun Kim<sup>1</sup>, Hyeongdo Choi<sup>1</sup>, Gyusoup Lee<sup>1</sup>, Seongho Kim<sup>1</sup>,  
Kevin K. Yi<sup>2</sup>, and Sang Gug Lee<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Tegway, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Design of Advanced Materials I</b>	<b>Session Code</b>	<b>We-I2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-I2-1**

**13:30 - 14:00**

### **[Invited]Origin of Dirac Cone Formation in 2D Binary Materials: “Divide-and-Couple” Mechanism**

Yi Liu and Xu-Ming Qin  
Shanghai Univ., China

**We-I2-2**

**14:00 - 14:15**

### **Pressure Induced Topological Phase Transition in Layered Bi<sub>2</sub>S<sub>3</sub>**

Yuan Ping Feng<sup>1</sup>, Ming Yang<sup>2</sup>, Yongzheng Luo<sup>1</sup>, Minggang Zeng<sup>3</sup>, Lei Shen<sup>1</sup>, Yunhao Lu<sup>4</sup>, Jun Zhou<sup>1</sup>, Shijie Wang<sup>2</sup>, and lam Keong Sou<sup>5</sup>  
<sup>1</sup>Nat'l Univ. of Singapore, Singapore, <sup>2</sup>Inst. of Materials Research and Engineering, Singapore, <sup>3</sup>Data Storage Inst., Singapore, <sup>4</sup>Zhejiang Univ., China, <sup>5</sup>The Hong Kong Univ. of Sci. and Tech., China

**We-I2-3**

**14:15 - 14:30**

### **New Structure Prediction of Novel Carbon Phases based on a Multi-Start Local Search Approach**

Hiroshi Mizuseki and Babu Ram  
KIST, Korea

**We-I2-4**

**14:30 - 15:00**

### **[Invited]Triply Degenerate Nodal Point Semimetals**

Hongming WENG  
<sup>1</sup>CAS, China

**We-I2-5**

**15:00 - 15:15**

### **DFT-based Modeling of Crystalline $\gamma$ -Al<sub>2</sub>O<sub>3</sub>/ $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Interface**

Junsung Park and Sung-Min Hong  
GIST, Korea

**We-I2-6**

**15:15 - 15:30**

### **Comparison of Empirical Potentials for Calculating Structural Properties of Amorphous Carbon Films by Molecular Dynamics Simulation**

Xiaowei Li and Kwang-Ryeol Lee  
KIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Advanced Materials for Fuel Cells &amp; Electrolyzers</b>	<b>Session Code</b>	<b>We-J2</b>
<b>Date and Time</b>	<b>2018-08-22 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-J2-1**

**13:30 - 14:00**

**[Invited]New Materials, Structures and Concepts for Solid Oxide Cells**

John Thomas SIRR Irvine  
Univ. of St. Andrews, UK

**We-J2-2**

**14:00 - 14:30**

**[Invited]Excellent Performance and Characteristics of Layered Perovskite Materials for Protonic Ceramic Fuel Cell**

Junyoung Kim and Guntae Kim  
UNIST, Korea

**We-J2-3**

**14:30 - 14:45**

**Protonic Conduction of Layered Structured Metal-Oxides**

Sang Eun Lee and Hee Jung Park  
Deajeon Univ., Korea

**We-J2-4**

**14:45 - 15:15**

**[Invited]Degradation Issues of High Temperature Electrolysis (SOE) and Reversible SOFC (rSOFC)**

Abigail Snowdon, Irving Annan, and Robert Steinberger-Wilckens  
Univ. of Birmingham, UK

**We-J2-5**

**15:15 - 15:30**

**Assessment of Thermally Self-Sustaining Tubular Solid Oxide Fuel Cells**

Jong-Eun Hong, Mushtaq Usman, Tak-Hyoung Lim, Seung-Bok Lee, Jong-Won Lee, and Rak-Hyun Song  
KIER, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Emerging Advanced Materials III</b>	<b>Session Code</b>	<b>We-B3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-B3-1**

**16:00 - 16:30**

## **[Invited]Application of Oxide Eutectic for Environmental Barrier Coating**

Shunkichi Ueno<sup>1</sup>, Naoto Kanno<sup>1</sup>, Kyosuke Seya<sup>1</sup>, Yohei Suzuki<sup>1</sup>, and Byung-Koog Jang<sup>2</sup>  
<sup>1</sup>Nihon Univ., Japan, <sup>2</sup>NIMS, Japan

**We-B3-2**

**16:30 - 17:00**

## **[Invited]Thermo-Corrosive Properties by Chemical Corrosion of Re-Doped Silicate Environmental Barrier Coatings**

Byung-Koog Jang<sup>1</sup>, Shunkichi Ueno<sup>2</sup>, Kee-Sung Lee<sup>3</sup>, Seongwon Kim<sup>4</sup>, Yoon-Suk Oh<sup>4</sup>, and Hyung-Tae Kim<sup>4</sup>  
<sup>1</sup>NIMS, Japan, <sup>2</sup>Nihon Univ., Japan, <sup>3</sup>Kookmin Univ., Korea, <sup>4</sup>KICET, Korea

**We-B3-3**

**17:00 - 17:15**

## **Influence of The Precipitation of Secondary Phase on The Thermal Diffusivity Changes of Al-Mg<sub>2</sub>Si Alloys**

Yu-mi Kim<sup>1</sup>, Se-Weon Choia<sup>1</sup>, Young-chan Kim<sup>1</sup>, Min-kook Moon<sup>1</sup>, and Sung-kil Hong<sup>2</sup>  
<sup>1</sup>KITECH, Korea, <sup>2</sup>Chonnam Nat'l Univ., Korea

**We-B3-4**

**17:15 - 17:30**

## **Preparation and Properties of Negative Thermal Expansion Materials Zr<sub>2</sub>WP<sub>2</sub>O<sub>12</sub> and Zr<sub>2</sub>MoP<sub>2</sub>O<sub>12</sub>**

Toshihiro Isobe, Yuko Hayakawa, Naoto Hotsuki, Takuya Umezome, Sachiko Matsushita, and Akira Nakajima  
Tokyo Inst. of Tech., Japan

**We-B3-5**

**17:30 - 17:45**

## **Effect of Impingement Angle on High Temperature Erosion Behaviour of SiC-WC Composites**

Rohit Malik<sup>1</sup>, Young-Wook Kim<sup>1</sup>, and B. V. Manoj Kumar<sup>2</sup>  
<sup>1</sup>The Univ. of Seoul, Korea, <sup>2</sup>Indian Inst. of Tech., India



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Printed Devices and Sensors</b>	<b>Session Code</b>	<b>We-C3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-C3-1**

**16:00 - 16:30**

**[Invited]R2R Gravure Printed Carbon Nanotube and PBTTT based TFT-Active Matrix for Figital Signage Application**

Gyoujin Cho  
Sunchon Nat'l Univ., Korea

**We-C3-2**

**16:30 - 17:00**

**[Invited]Towards Ideal Printed Organic Transistors**

Liu Chuan  
Sun Yat-Sen Univ., China

**We-C3-3**

**17:00 - 17:15**

**Inkjet Printing MoS<sub>2</sub> Nanosheet Decorated Pd for the Detection of Hydrogen**

Seung-Ik Han<sup>1</sup>, Young-Gyu Nho<sup>1</sup>, Soo-bin Oh<sup>2</sup>, Kye-Si Kwon<sup>2</sup>, and Hyungtak Seo<sup>1</sup>  
<sup>1</sup>Ajou Univ., Korea, <sup>2</sup>Soonchunhyang Univ., Korea

**We-C3-4**

**17:15 - 17:30**

**Inorganic Polymer Micro-Pillar based Solution Shearing of Large-Area Organic Semiconductor Thin Film with Controlled Single-Crystalline Domain and Morphology**

Jeongchan Lee, Steve Park, and Jin-Oh Kim  
KAIST, Korea

**We-C3-5**

**17:30 - 17:45**

**Three-Dimensional Size Controllable Microporous PDMS Sturcture Pressure Sensor via Microfluidic Assisted Self-Assembly**

Jin-Oh Kim, Se Young Kwon, and Steve Park  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Pervoskite Solar Cells II</b>	<b>Session Code</b>	<b>We-D3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-D3-1**

**16:00 - 16:30**

**[Invited] Highly Efficient and Stable Transparent P-I-N Type Perovskite Solar Cells for Tandem Solar Cells**

Ik Jae Park, Min Ah Park, and Jin Young Kim  
Seoul Nat'l Univ., Korea

**We-D3-2**

**16:30 - 17:00**

**[Invited] Understanding of Compositional Mixing in Metal-Halide Perovskites**

Ki-Ha Hong  
Hanbat Nat'l Univ., Korea

**We-D3-3**

**17:00 - 17:15**

**Flexible Lead-Free  $\text{CH}_3\text{NH}_3\text{SnI}_3/\text{PVDF}$  Composite-based Nanogenerator as Piezoelectric Energy Harvester**

Swathi Ippili and Soon-Gil Yoon  
Chungnam Nat'l Univ., Korea

**We-D3-4**

**17:15 - 17:30**

**Surface Oxidation of Titanium Metal Plates for Flexible Perovskite Solar Cells**

Gill Sang Han<sup>1,2</sup>, Seongha Lee<sup>2</sup>, Matthew Duff<sup>2</sup>, Fen Qin<sup>2</sup>, and Jung-Kun Lee<sup>2</sup>  
<sup>1</sup>Sungkyunkwan Univ., Korea, <sup>2</sup>Univ. of Pittsburgh, USA



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Optics and Mechanics of 2D Materials</b>	<b>Session Code</b>	<b>We-E3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-E3-1**

**16:00 - 16:30**

**[Invited]Transport Phenomena Across Porous Graphene**

Hyung Gyu Park  
Swiss Federal Inst. of Tech. (ETH), Switzerland

**We-E3-2**

**16:30 - 17:00**

**[Invited]Mechanical Instability-Driven Architecturing of Atomically-Thin Materials**

SungWoo Nam  
Univ. of Illinois at Urbana-Champaign, USA

**We-E3-3**

**17:00 - 17:30**

**[Invited]Directly Synthesized Nonlinear Graphene on Ultrafast Optical Devices**

Yong-Won Song  
KIST, Korea

**We-E3-4**

**17:30 - 17:45**

**A Quasi-Two-Dimensional Heterojunction of Graphene/ $\beta$ -Ga<sub>2</sub>O<sub>3</sub> for UV Photodetection**

Suhyun Kim, Geonyeop Lee, and Jihyun Kim  
Korea Univ., Korea

**We-E3-5**

**17:45 - 18:00**

**Magnetic Dipole Resonance and Coupling Effects Directly Enhance the Raman Signals of as-Grown Graphene on Copper Foil**

Yi-Chuan Tseng, Tzu-Yao Lin, Yang-Chun Lee, Che-Kuei Ku, Chun-Wei Chen, and Hsuen-Li Chen  
Nat'l Taiwan Univ., Taiwan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Large-Area Flexible Electronics</b>	<b>Session Code</b>	<b>We-F3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-F3-1**

**16:00 - 16:30**

### **[Invited]Flexible Transistor Technology in the Horizon of Large Area Electronics**

Chandra Charu Tripathi, Kapil Bhatt, Sandeep Kumar, Pramod Kumar, and Ankit Kapoor  
Kurukshetra Univ., India

**We-F3-2**

**16:30 - 17:00**

### **[Invited]Metal Oxide and Organic Electronic/Optoelectronic Devices for Next Generation Flexible and Large Area Applications**

Do Kyung Hwang  
KIST, Korea

**We-F3-3**

**17:00 - 17:15**

### **Flexible Substrates in the Horizon of FET's**

Kapil Bhatt<sup>1</sup>, Ankit Kapoor<sup>1</sup>, Pramod Kumar<sup>1</sup>, Sandeep Kumar<sup>1</sup>, Ashutosh Kumar Tripathi<sup>2</sup>, and Chandra Charu Tripathi<sup>1</sup>

<sup>1</sup>Kurukshetra Univ., India, <sup>2</sup>IIT Kanpur, India





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Nano Structure/Surface Engineering III</b>	<b>Session Code</b>	<b>We-G3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-G3-1**

**16:00 - 16:30**

### **[Invited]Roll-based Transfer Technology of CVD-Graphene and its Applications**

Jae-Hyun Kim, Yun Hwangbo, Bongkyun Jang, Kyung-Shik Kim, Seung-Mo Lee, Hyun-Sung Park, Hak-Joo Lee, Byung-Ik Choi, Sang-Rok Lee, Sejeong Won, and Kwang-Seop Kim  
KIMM, Korea

**We-G3-2**

**16:30 - 17:00**

### **[Invited]Nanocrystal based Metamaterials Perfect Absorber for Vis-NIR Wavelength**

Sung-Hoon Hong<sup>1</sup>, Mi-Hyun Kim<sup>1</sup>, Hye-Won Yun<sup>1</sup>, and Soo-Jung Kim<sup>2</sup>  
<sup>1</sup>ETRI, Korea, <sup>2</sup>Korea Univ., Korea

**We-G3-3**

**17:00 - 17:15**

### **Complex-Shaped Niobium Oxide Nanoparticles for Lithium Ion Battery**

Teruaki Fuchigami, Ryosuke Kimata, and Ken-Ichi Kakimoto  
Nagoya Inst. of Tech., Japan

**We-G3-4**

**17:15 - 17:30**

### **Improvement of Low Temperature CO Oxidation Activity by Raspberry-Structure of Co<sub>3</sub>O<sub>4</sub> Nanocrystals**

Ryosuke Kimata, Teruaki Fuchigami, Masaaki Haneda, and Ken-ichi Kakimoto  
Nagoya Inst. of Tech., Japan

**We-G3-5**

**17:30 - 17:45**

### **Magnetic Properties of FeCo Nanoparticles by Chemical Reduction Method**

Jong-Hwan Park, Ho-Jun Choi, Se-Hee Shin, Jung-Woo Lee, Young-il Na, Sun-Woo Kim, Hyun-Jun Kwon, Dae-Seok Seo, Han-Young Jung, and Su-Jeong Suh  
Sungkyunkwan Univ., Korea

**We-G3-6**

**17:45 - 18:00**

### **Chemical and Thermal Modifications for Polyethylene Glycol (PEG) by using Multi Walled Carbon Nanotubes (MWCNTs) as Reinforcement**

Sameer Awad and Eman Khalaf  
Univ. of Anbar, Iraq



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Nanomaterials/Compound Semiconductors</b>	<b>Session Code</b>	<b>We-H3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-H3-1**

**16:00 - 16:30**

**[Invited]Thermoelectric Transport of 1D or 2D Semiconducting Nanomaterials**

Jae Yong Song and Ho Sun Shin  
KRISS, Korea

**We-H3-2**

**16:30 - 17:00**

**[Invited]GaN and SiC FET Power Amplifiers for 5G Wireless Communications**

Eunsoo Nam  
ETRI, Korea

**We-H3-3**

**17:00 - 17:30**

**[Invited]Spin Transport in Low Dimensional Nanostructures**

Joonyeon Chang  
KIST, Korea

**We-H3-4**

**17:30 - 18:00**

**[Invited]In-situ Electrical Characterization of Atomic Layer Deposition (ALD) on 2D Materials**

Jiyoung Kim  
Univ. of Texas at Dallas, USA



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Design of Advanced Materials II</b>	<b>Session Code</b>	<b>We-I3</b>
<b>Date and Time</b>	<b>2018-08-22 / 16:00 - 18:00</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

**We-I3-1**

**16:00 - 16:30**

**[Invited]Atomic-Layer Alignment Tuning of Metalthin-Film Multilayer for Perpendicular Magnetocrystalline Anisotropy and Its Electric Field Modification**

K. Nakamura<sup>1,2</sup>, A. -M. Pradipto<sup>1</sup>, T. Akiyama<sup>1</sup>, T. Ito<sup>1</sup>, and T. Oguch<sup>2,3</sup>  
<sup>1</sup>Mie Univ., Japan, <sup>2</sup>AIST, Japan, <sup>3</sup>Osaka Univ., Japan

**We-I3-2**

**16:30 - 16:45**

**First-Principles Study on Structural and Electronic Properties of Ge-based Hybrid Perovskites**

Narasak Pandech<sup>1,2,3</sup>, Thanundon Kongnok<sup>1,2</sup>, Sukit Limpijumnong<sup>1,2</sup>, and Walter R. L Lambrecht<sup>3</sup>  
<sup>1</sup>Suranaree Univ. of Tech., Thailand, <sup>2</sup>Synchrotron Light Research Inst., Thailand, <sup>3</sup>Case Western Reserve Univ., USA

**We-I3-3**

**16:45 - 17:00**

**Effects of Ligands on the Stability and Electronic Properties of Tin Halide Perovskite Layers: An Ab Initio Study**

Anu Bala<sup>1</sup> and Vijay Kumar<sup>1,2</sup>  
<sup>1</sup>Shiv Nadar Univ., India <sup>2</sup>Dr. Vijay Kumar Foundation, India

**We-I3-4**

**17:00 - 17:30**

**[Invited]Electric-Field Controlled Magnetism Inrare-Earth based Oxide Heterostructures**

Anderson Janotti  
Univ. of Delaware, USA

**We-I3-5**

**17:30 - 17:45**

**Mechanism of Resistance Switching in MAPbI<sub>3</sub>-based Memristor from First-Principles Calculations**

Seong Hun Kim and Donghwa Lee  
POSTECH, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>High Energy Density Electrode Materials</b>	<b>Session Code</b>	<b>Th-A1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-A1-1

10:30 - 11:00

### **[Invited] Layered Oxide Cathode Materials for High Energy Density Lithium-Ion Batteries**

Xiqian Yu<sup>1</sup>, Jue Liu<sup>2</sup>, Enyuan Hu<sup>3</sup>, Jie-Nan Zhang<sup>1</sup>, Hong Li<sup>1</sup>, Xuejie Huang<sup>1</sup>, and Xiao-Qing Yang<sup>3</sup>  
<sup>1</sup>CAS, China, <sup>2</sup>ORNL, USA, <sup>3</sup>Brookhaven Nat'l Laboratory, USA

Th-A1-2

11:00 - 11:30

### **[Invited] Improved Performances of Sulfur-based Cathode Materials via In-Situ Electrochemical Treatments for the Next Generation Secondary Batteries**

Uijin Chang, Hwonki Lee, and KwangSup Eom  
GIST, Korea

Th-A1-3

11:30 - 11:45

### **Understanding Potential Mechanism at 1st Charge in Li<sub>2</sub>S Cathode Material for Rechargeable Li-S Batteries**

Yongjo Jung and Byoungwoo Kang  
POSTECH, Korea

Th-A1-4

11:45 - 12:00

### **Adsorption Behavior of Lithium Polysulfides on Functionalized Surface of Ti<sub>2</sub>C-based MXene**

Eun Seob Sim and Yong-Chae Chung  
Hanyang Univ., Korea

Th-A1-5

12:00 - 12:15

### **Fabrication of SnO<sub>2</sub>/Nanoperforated Graphene (NPG) Microsphere for High Lithium-Ion Storage Performance**

Yeon Jun Choi, Myung Seong Kim, Jun Hui Jeong, Young Hwan Kim, and Kwang-Bum Kim  
Yonsei Univ., Korea

Th-A1-6

12:15 - 12:30

### **High-Performance Black Phosphorus- Multiwall Carbon Nanotube Composite for High-Capacity, Durable Lithium-Ion Batteries**

Safa Haghghat-Shishavan, Mahboobeh Nazarian-Samani, Masoud Nazarian-Samani, and Kwang-Bum Kim  
Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Emerging Advanced Materials IV</b>	<b>Session Code</b>	<b>Th-B1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Th-B1-1**

**10:30 - 11:00**

**[Invited] Electronic Functionality of Superconducting Mixed Anion Layered Compounds (MALCs)**

Yoichi KAMIHARA<sup>1</sup>, Yujiro TOJO<sup>1</sup>, Suguru IWASAKI<sup>1</sup>, Ryosuke SAKAGAMI<sup>1</sup>, Michitaro YAMAGUCHI<sup>1</sup>, Shigeto HIRAI<sup>2</sup>, and Manami NAKANISHI<sup>1</sup>

<sup>1</sup>Keio Univ., Japan, <sup>2</sup>Kitami Inst. of Tech., Japan

**Th-B1-2**

**11:00 - 11:30**

**[Invited] Ferroelectric Response and Switching Behaviour of NaNO<sub>2</sub> -PVA Composite Films Fabricated at Moderate Elevated Temperature**

Lakhbir Singh<sup>1,2</sup>, Tarun Garg<sup>3</sup>, Baljinder kaur<sup>1,2</sup>, Navneet Dabra<sup>4</sup>, and Jasbir Singh Hundal<sup>1</sup>

<sup>1</sup>MRS Punjab Tech. Univ., India, <sup>2</sup>IKG Punjab Tech. Univ., India, <sup>3</sup>Punjabi Univ., India, <sup>4</sup>Mata Sahib Kaur Girls College, India

**Th-B1-3**

**11:30 - 11:45**

**Enhance Piezoelectric Properties by Growing of 0.8(Na<sub>0.5</sub>Bi<sub>0.5</sub>)TiO<sub>3</sub>-0.2Sr<sub>0.7</sub>Ca<sub>0.3</sub>TiO<sub>3</sub> Single Crystal by Solid State Crystal Technique**

Phan Gia Le<sup>1</sup>, Jong Sook Lee<sup>1</sup>, John Gerard Fisher<sup>1</sup>, Hwang-Pil Kim<sup>2</sup>, and Wook Jo<sup>2</sup>

<sup>1</sup>Chonnam Nat'l Univ., Korea, <sup>2</sup>UNIST, Korea

**Th-B1-4**

**11:45 - 12:00**

**Transmission Characteristics for LCP Substrates with Various Seed Layers in High Frequency Bands**

Tomoyuki Ishii<sup>1,2</sup>, Mitsuhiro Watanabe<sup>1</sup>, Joo-Hyong Noh<sup>1</sup>, Hideo Honma<sup>1</sup>, and Osamu Takai<sup>1</sup>

<sup>1</sup>Kanto Gakuin Univ., Japan, <sup>2</sup>Toppan Printing Co., Ltd., Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Piezo-electronic and Sensor Materials</b>	<b>Session Code</b>	<b>Th-C1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Th-C1-1**

**10:30 - 11:00**

**[Invited] Fiber and Fabric-based Piezoelectric P(VDF-TrFE) Energy Harvesters**

Seungbum Hong, Jeongjae Ryu, and Jaegyung Kim  
KAIST, Korea

**Th-C1-2**

**11:00 - 11:30**

**[Invited] Design of Visco-Poroelastic Ion Pump for Multimodal Sensor Skins**

Do Hwan Kim  
Hanyang Univ., Korea

**Th-C1-3**

**11:30 - 12:00**

**[Invited] Soft Micro/Nano-Composite Materials for Physical Sensing**

Inkyu Park  
KAIST, Korea

**Th-C1-4**

**12:00 - 12:15**

**Hydrogen Sensor using Graphene Decorated Pd/Ag Alloy**

Bharat Sharma and Jung Sik Kim  
Univ. of Seoul, Korea

**Th-C1-5**

**12:15 - 12:30**

**Piezoresistive Three-Axis Force Sensor for Medical Applications**

Bogyu Bok<sup>1,2</sup>, Minhoon Park<sup>1,2</sup>, Jong-Hyun Ahn<sup>2</sup>, and Min-seok Kim<sup>1</sup>  
<sup>1</sup>KRISS, Korea, <sup>2</sup>Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bioinspired Materials for Artificial Photosynthesis I</b>	<b>Session Code</b>	<b>Th-D1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-D1-1

10:30 - 11:00

**[Keynote] Human Fibroblasts: Cells for Tissue Engineering**

Karel Smetana  
Charles Univ., Czech

Th-D1-2

11:00 - 11:30

**[Invited] Nanomaterial Structures and Interfaces for Solar Fuel Production**

Shihe Yang  
The Hong Kong Univ. of Sci. and Tech., China

Th-D1-3

11:30 - 12:00

**[Invited] Rational Design of Hierarchical Nanostructures as Electrocatalysts for Highly-Efficient Hydrogen Evolution and Water Oxidation**

Johnny Chung Yin Ho  
City Univ. of Hong Kong, China

Th-D1-4

12:00 - 12:30

**[Invited] Tailoring Bonding Structure of Materials to Develop Solar-Driven Photocatalysts**

Gang Liu  
CAS, China



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Growth of 2D Materials I</b>	<b>Session Code</b>	<b>Th-E1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-E1-1

10:30 - 11:00

### **[Invited] Polymorphism in 2D Transition-Metal Chalcogenides**

Moon-Ho Jo, Seung-Young Seo, Jaehyun Park, Gangtae Jin, and Chang-Soo Lee  
POSTECH, Korea

Th-E1-2

11:00 - 11:30

### **[Invited] CVD WS<sub>2</sub> on Graphene: A Scalable Van Der Waals Heterostack for Optoelectronics**

Camilla Coletti  
Inst. Italiano di Tech., Italy

Th-E1-3

11:30 - 12:00

### **[Invited] One-Step Solution Phase Growth of Transition Metal Chalcogenide Thin Films Directly on Si Substrates**

Unyong Jeong and Anupam Giri  
POSTECH, Korea

Th-E1-4

12:00 - 12:15

### **Two-Dimensional Layered Materials toward Phase-Engineered Hybrid Films**

Yu-Lun Chueh  
Tsing Hua Univ., Taiwan

Th-E1-5

12:15 - 12:30

### **Quasiparticle Interference (QPI) and Collective Modes in Twisted Bilayer Graphene**

Jin Shu Li and Euy Heon Hwang  
Sungkyunkwan Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Organic and Polymeric Materials for Flexible and Stretchable Electronics I</b>	<b>Session Code</b>	<b>Th-F1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-F1-1

10:30 - 11:00

**[Invited] Design of Novel Electron Acceptors for High Performance Organic Solar Cells**

Hongzheng Chen  
Zhejiang Univ., China

Th-F1-2

11:00 - 11:30

**[Invited] Exploiting Reversible  $\pi$ - $\pi$  Stacking for Improvement in Mechanical Properties of Fully-Conjugated Polymers**

Taiho Park  
POSTECH, Korea

Th-F1-3

11:30 - 12:00

**[Invited] Flexible Organic/Organic-Inorganic Hybrid Materials based Optoelectronic Devices using PEDOT:PSS based Composite Layers**

Myoung Hoon Song, Jae Choul Yu, and Eui Dae Jung  
UNIST, Korea

Th-F1-4

12:00 - 12:15

**BZN Paraelectric Ceramic-PVDF Ferroelectric Polymer 1-3 Composite for High Energy Storage Properties**

Ji Ho Lim<sup>1</sup>, Jin Woo Kim<sup>1</sup>, Jungho Ryu<sup>2</sup>, Doo Hyun Choi<sup>3</sup>, and Dae Yong Jeong<sup>1</sup>  
<sup>1</sup>Inha Univ., Korea, <sup>2</sup>Yeungnam Univ., Korea, <sup>3</sup>Agency for Defense Development, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Carbon nanotube electronics</b>	<b>Session Code</b>	<b>Th-G1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Th-G1-1**

**10:30 - 11:00**

**[Keynote] Growth and Characterization of Semiconducting Carbon Nanotubes for Nanoelectronics**

Jiangtao Wang, Kaili Jiang, Xiang Jin, Zebin Liu, Guo Yu, Dongqi Li, Yujun He, Jie Li, Peng Liu, and Yang Wei  
Tsinghua Univ., China

**Th-G1-2**

**11:00 - 11:30**

**[Keynote] Single-Walled Carbon Nanotubes for Perovskite Solar Cells**

Shigeo Maruyama<sup>1,2</sup>  
<sup>1</sup>The Univ. of Tokyo, Japan, <sup>2</sup>AIST, Japan

**Th-G1-3**

**11:30 - 11:45**

**Investigation of Single-Walled Carbon Nanotube Synthesis Yield depending on Substrate Position in a Horizontal Chemical Vapor Deposition Reactor**

Sung-Il Jo and Goo-Hwan Jeong  
Kangwon Nat'l Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Memory&amp;Neuromorphic Devices</b>	<b>Session Code</b>	<b>Th-H1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-H1-1

10:30 - 10:55

**[Invited] SiGe Epitaxial Memory for Neuromorphic Computing with Reproducible High Performance based on Engineered Dislocations**

Jeehwan Kim  
MIT, USA

Th-H1-2

10:55 - 11:10

**The Synaptic Plasticity of Low-Power Diffusion Memristor with Ag/Ta<sub>2</sub>O<sub>5</sub>/HfO<sub>2</sub>/Pt Structure**

Yu-Rim Jeon, Changhwan Choi, Yawar Abbas, Andrey S. Sokolov, Boncheol Ku, and Sohyeon Kim  
Hanyang Univ., Korea

Th-H1-3

11:10 - 11:25

**Enabling the Tantalum Oxide based Memristor for Neuromorphic Applications**

Yawar Abbas, Andrey Sergeevich Sokolov, Yu-Rim Jeon, Sohyeon Kim, Boncheol Ku, and Changhwan Choi  
Hanyang Univ., Korea

Th-H1-4

11:25 - 11:40

**Controlling Metal Filament Formation of Restive Switching Memory Device via Nanomesh Patterning**

Tae Jin Kim, Byoung Kuk You, and Keon Jae Lee  
KAIST, Korea

Th-H1-5

11:40 - 12:05

**[Invited] Design of Dielectric Materials in Charge Trap Memories**

Seung Jae Baik  
Hankyong Nat'l Univ., Korea

Th-H1-6

12:05 - 12:30

**[Invited] Interface Engineering in Flexible Semiconductor Heterojunctions**

Yuan Lin  
Univ. of Electronic Sci. and Tech. of China, China



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Design of Advanced Materials III</b>	<b>Session Code</b>	<b>Th-I1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-I1-1

10:30 - 11:00

### **[Invited] Giant Caloric Effects in Fast-Ion Conductors**

Claudio Cazorla  
UNSW Sydney, Australia

Th-I1-2

11:00 - 11:15

### **First-Principles Investigation on the Electronic Structure and Thermodynamic Properties of Equivalent Cation/Anion Doping II-VI Alloy Semiconductors**

Mingkai Li, Debing Long, Yang Cheng, Minghai Luo, Jiakun Zhu, Dongxue Meng, and Yunbin He  
Hubei Univ., China

Th-I1-3

11:15 - 11:30

### **Significant Suppression of Hydrogen Evolution Reaction in Electrochemical N<sub>2</sub> Reduction using Single-Atom Catalysts**

Changhyeok Choi and Yousung Jung  
KAIST, Korea

Th-I1-4

11:30 - 12:00

### **[Invited] Human vs Machine: Deciphering the Structure of Organic- Inorganic Interfaces**

Patrick Rinke  
Aalto Univ., Finland

Th-I1-5

12:00 - 12:15

### **Evaluating Performance Limits of Methane Storage/Separations of Porous Materials using Artificial Neural Network**

Sangwon Lee, Baekjun Kim, and Jihan Kim  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Microelectronics Packaging Materials and Processing I</b>	<b>Session Code</b>	<b>Th-J1</b>
<b>Date and Time</b>	<b>2018-08-23 / 10:30 - 12:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-J1-1

10:30 - 11:00

### **[Invited] Power Device Bonding Technology for Electric Vehicle Applications**

Jeong-Won Yoon<sup>1,2</sup>

<sup>1</sup>KITECH, Korea, <sup>2</sup>Univ. of Sci. and Tech., Korea

Th-J1-2

11:00 - 11:30

### **[Invited] Thermo-Mechanical Characteristics of Solder Joints with Pillar Bump's Aspect Ratios**

Hee Seon Bang, Han-Sur Bang, and Hyeong-Cheol Kim  
Chosun Univ., Korea

Th-J1-3

11:30 - 11:45

### **Al-Ge Eutectic Bonding for MEMS: Managing The Presence of Native Oxide at the Interface**

Victor Lumineau<sup>1,2</sup>, Frank Fournel<sup>1,3</sup>, and Fiqiri Hodaj<sup>2</sup>

<sup>1</sup>LETI, France, <sup>2</sup>Univ. Grenoble Alpes, France

Th-J1-4

11:45 - 12:00

### **Characteristics of Hi Barrier Film using Polysilazane-Derived Silica Thin Films**

Sunmin Kim<sup>1,2</sup>, EunHae Koo<sup>2</sup>, and Daeho Yun<sup>1</sup>

<sup>1</sup>Sungkyunkwan Univ., Korea, <sup>2</sup>KICET, Korea

Th-J1-5

12:00 - 12:15

### **Development of New Analysis Method with Ultrasonication for Incoming PVA Brush in Post CMP Cleaning Process**

Jun-Kil Hwang<sup>1</sup>, Jung-Hwan Lee<sup>1</sup>, Muthukrishnan Purushothaman<sup>1</sup>, Kwang-Min Han<sup>1</sup>, Shohei Shima<sup>2</sup>, Satomi Hamada<sup>2</sup>, Hirokuni Hiyama<sup>2</sup>, and Jun-Goo Park<sup>1</sup>

<sup>1</sup>Hanyang Univ., Korea, <sup>2</sup>EBARA Corp., Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>New Battery Systems</b>	<b>Session Code</b>	<b>Th-A2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-A2-1

13:30 - 14:00

## **[Invited] Development of Rechargeable Seawater Battery**

Youngsik Kim  
UNIST, Korea

Th-A2-2

14:00 - 14:30

## **[Invited] Mixed Anion Compounds as a New Direction for the Promotion of New Battery Materials Chemistry**

Nobuyuki Zetsu, Dae-wook Kim, Hiromasa Shiiba, and Katsuya Teshima  
Shinshu Univ., Japan

Th-A2-3

14:30 - 14:45

## **High Energy Density Rechargeable Metal-Free Seawater Batteries: a Phosphorus/Carbon Composite as a Promising Anode Material**

Yongil Kim, Soo Min Hwang, Hyein Yu, and Youngsik Kim  
UNIST, Korea

Th-A2-4

14:45 - 15:00

## **Chemical Bath Deposited ZnO/Cu<sub>2</sub>SnS<sub>3</sub> (CTS) Electrocatalysts on the Nickle Foam for the Applications of Zn-Air Batteries**

Yu-Min Chou<sup>1</sup>, Po-Yen Chen<sup>1</sup>, and Kong-Wei Cheng<sup>1,2</sup>  
<sup>1</sup>Chang Gung Univ., Taiwan, <sup>2</sup>Chang Gung Memorial Hospital, Taiwan

Th-A2-5

15:00 - 15:15

## **Chlorination and Dechlorination for Seawater Disinfection during Seawater Battery Operation**

Jeong-Sun Park, JeHee Park, Soo Min Hwang, and Youngsik Kim  
UNIST, Korea

Th-A2-6

15:15 - 15:30

## **Porous Activated Graphene as an Anode Material for High-Performance Sodium-Ion Batteries**

Ha-Kyung Roh, Young Hwan Kim, and Kwang-Bum Kim  
Yonsei Univ., Korea

Th-A2-7

15:30 - 15:45

## **Structural and Electrochemical Changes of Dual Doped Holey Graphene during Heat Treatment at Various Temperatures**

Masoud Nazarian-Samani<sup>1,2</sup>, Safa Haghghat-Shishavan<sup>1</sup>, Mahboobeh Nazarian-Samani<sup>1</sup>, Ha-Kyung Roh<sup>1</sup>, Seyed Farshid Kashani-Bozorg<sup>2</sup>, and Kwang-Bum Kim<sup>1</sup>  
<sup>1</sup>Yonsei Univ., Korea, <sup>2</sup>Univ. of Tehran, Iran



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Emerging Advanced Materials V</b>	<b>Session Code</b>	<b>Th-B2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-B2-1

13:30 - 13:45

### **Multifunctional Core-Shell SiC/TiO<sub>2</sub>, SiC/Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> Microcomposites as Reinforcement in Al Matrix: A Comparative Study on Microstructure, Mechanical and Damping Properties**

Subhash Singh<sup>1</sup> and Kaushik Pal Pal<sup>2</sup>

<sup>1</sup>Nat'l Institute of Tech. Jamshedpur, India, <sup>2</sup>IIT, India

Th-B2-2

13:45 - 14:00

### **Damage Evolution and Fracture Prediction in Plasma Sprayed Coatings Subjected to Bending Fatigue Tests: An Acoustic Emission Method**

Ian-nong Jing<sup>1,2</sup>, Hai-dou Wang<sup>2</sup>, Li-hong Dong<sup>2</sup>, Guo Jin<sup>1</sup>, Yue-lan Di<sup>2</sup>, and Ya-wei Xu<sup>2</sup>

<sup>1</sup>Harbin Engineering Univ., China, <sup>2</sup>Academy of Armored Forces Engineering, China

Th-B2-4

14:15 - 14:30

### **Diluted HF Cleaning Process for Metal and Particle Contamination Removal from Silicon Wafer**

Yu-Jin Lee<sup>1</sup>, Dong-Hwan Lee<sup>1</sup>, Hee-Jin Song<sup>1</sup>, Sung-Hae Jang<sup>1</sup>, Hyun-Tae Kim<sup>1</sup>, Jae-Hwan Lee<sup>2</sup>, Eun-Suck Choi<sup>2</sup>, and Jin-Goo Park<sup>1</sup>

<sup>1</sup>Hanyang Univ., Korea, <sup>2</sup>SK Siltron, Korea

Th-B2-5

14:30 - 14:45

### **A Study on the Reclamation of Silicon Carbide by Re-using Si Safer Sludge with Carbon at High Temperature**

Sakib Tanvir Hossain, Woo-Gwang Jung, and Fatima Tuz Johra

Kookmin Univ., Korea

Th-B2-6

14:45 - 15:00

### **Improvement of Wear Resistance of CVD Diamond Films on WC-Co Alloy**

Yeo-Ho Kim<sup>1</sup>, Myeong-Jun Kim<sup>1</sup>, Heon-Yul Ryu<sup>1</sup>, Jung-Hwan Lee<sup>1</sup>, Ji-Woo Kim<sup>2</sup>, Da-bin Hyun<sup>2</sup>, Hae-geun Jee<sup>2</sup>, and Jin-Goo Park<sup>1</sup>

<sup>1</sup>Hanyang Univ., Korea, <sup>2</sup>SAESOL Diamond Ind. Co. Ltd., Korea

Th-B2-7

15:00 - 15:15

### **Strength-Ductility Balance in Ultrafine-Grained (CoCrMnNi)<sub>50</sub>Fe<sub>50</sub> Medium Entropy Alloy Having Fully Recrystallized Microstructure**

Ibrahim Ondicho and Nokeun Park

Yeungnam Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Inorganic and Hybrid Materials</b>	<b>Session Code</b>	<b>Th-C2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-C2-1

13:30 - 14:00

### **[Invited] Printed and Stretchable Hybrid Electronics Platform Technology**

Yongtaek Hong, Junghwan Byun, Eunho Oh, Byoungmoon Lee, Jaeyoung Yoon, Hyunjong Kim, Sungdae Choi, Hyun Cho, Daesik Kim, and Taehoon Kim  
Seoul Nat'l Univ., Korea

Th-C2-2

14:00 - 14:30

### **[Invited] Sol-Gel Derived Metal Oxide Inks for Printed Devices**

Jaewon Jang  
Kyungpook Nat'l Univ., Korea

Th-C2-3

14:30 - 15:00

### **[Invited] Solution Processing of High-Performance and Scalable Metal-Chalcogenide Semiconductors**

Myung-Gil Kim<sup>1</sup>, SungKyu Park<sup>1</sup>, and Tobin Marks<sup>2</sup>  
<sup>1</sup>Chung-Ang Univ., Korea, <sup>2</sup>Northwestern Univ., USA

Th-C2-4

15:00 - 15:15

### **Flexible 1 Schottky Diode-1 Phase Change Memory on Plastics**

Do Hyun Kim, Han Eol Lee, and Keon Jae Lee  
KAIST, Korea

Th-C2-5

15:15 - 15:30

### **Zinc and Tin Co-Doped Ternary Indium Oxide as a Transparent Conducting Oxide Developed through Combustible Precursor with a Minimal Thermal Investment**

Pavan Pujar<sup>1,2</sup>, Kartick Tarafder<sup>1</sup>, Dipti Gupta<sup>2</sup>, Yong-Young Noh<sup>3</sup>, and Saumen Mandal<sup>1</sup>  
<sup>1</sup>NITK, India, <sup>2</sup>Indian Inst. of Tech. Bombay, India, <sup>3</sup>Dongguk Univ., Korea

Th-C2-6

15:30 - 15:45

### **Organic-Inorganic Hybrid Transparent Conductive Electrode for Flexible Electronics**

Minh Nhut Le, Byung Doo Choi, and Myung Gil Kim  
Chung-Ang Univ., Korea





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bioinspired Materials for Artificial Photosynthesis II</b>	<b>Session Code</b>	<b>Th-D2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-D2-1

13:30 - 14:00

**[Invited] Protein-Like Inorganic Nanoparticles for Orbital Controlled Electrocatalysis and Chiral Plasmonics**

Ki Tae Nam  
Seoul Nat'l Univ., Korea

Th-D2-2

14:00 - 14:30

**[Invited] Bismuth-based Nanostructures for Electrocatalytic and Solar Conversion of CO<sub>2</sub> to Formate**

Yanguang Li  
Soochow Univ., China

Th-D2-3

14:30 - 15:00

**[Invited] Prospects for Multi-Site Catalysis in Electrochemical CO<sub>2</sub> Reduction**

Joel W. Ager<sup>1,2</sup>  
<sup>1</sup>Univ. of California Berkeley, USA, <sup>2</sup>Lawrence Berkeley Nat'l Laboratory, USA

Th-D2-4

15:00 - 15:15

**A Novel Photoelectrode Architecture Decoupling its Optical and Electrochemical Properties for Highly Efficient Solar-Driven Water Splitting**

Seungtaeg Oh, Hakhyeon Song, and Jihun Oh  
KAIST, Korea

Th-D2-5

15:15 - 15:30

**Enhancing CO Selectivity by Adsorbed CN and Cl on Polycrystalline Au Electrode Surface**

Minhyung Cho, Jun Tae Song, Seoin Back, Yousung Jung, and Jihun Oh  
KAIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Growth of 2D Materials II</b>	<b>Session Code</b>	<b>Th-E2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-E2-1

13:30 - 14:00

**[Invited] Controlled Synthesis of High-Quality 2D Materials for Electronic and Photonic Applications**

Hiroki Ago  
Kyushu Univ., Japan

Th-E2-2

14:00 - 14:30

**[Invited] Wafer-Scale Synthesis of Monolayer WS<sub>2</sub> by Enhanced Chemical Vapor Deposition for High-Performance Flexible Photodetectors**

Changyong Lan and Johnny Chung Yin Ho  
City Univ. of Hong Kong, China

Th-E2-3

14:30 - 15:00

**[Invited] Arrays of Size-Controlled Uniform Graphene Quantum Dots Embedded in Monolayer Hexagonal Boron Nitride**

Hyeon Suk Shin  
UNIST, Korea

Th-E2-4

15:00 - 15:15

**Water-Assisted Direct Transfer of Molybdenum Di-Sulfide for Large-Area Flexible Devices**

Sachin Maruti Shinde, Tanmoy Das, Anh Tuan Hoang, and Jong-Hyun Ahn  
Yonsei Univ., Korea

Th-E2-5

15:15 - 15:30

**Defect-Free Graphene Synthesized Directly at 150°C via Chemical Vapor Deposition without Transfer**

Byeong-Ju Park and Soon-Gil Yoon  
Chungnam Nat'l Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Organic and Polymeric Materials for Flexible and Stretchable Electronics II</b>	<b>Session Code</b>	<b>Th-F2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-F2-1

13:30 - 14:00

### **[Invited] Deformable Organic Nanowire Transistors**

Tae-Woo Lee  
Seoul Nat'l Univ., Korea

Th-F2-2

14:00 - 14:30

### **[Invited] Organic Thin-Film Transistors for Flexible Analog Electronics**

Vincenzo Pecunia  
Soochow Univ., China

Th-F2-3

14:30 - 14:45

### **Investigation on Charge Transfer Properties of Cyclopentadithiophene-based D-A Type Semiconducting Copolymers**

Jiyoul Lee  
Pukyong Nat'l Univ., Korea

Th-F2-4

14:45 - 15:00

### **Room-Temperature, Solution-Processed Polyimide Gate Dielectrics for Reliable Organic Field-Effect Transistors**

Hyunjin Park<sup>1</sup>, Sungmi Yoo<sup>2</sup>, Yoon Ho Kim<sup>2</sup>, and Sungjune June<sup>1</sup>  
<sup>1</sup>POSTECH, Korea, <sup>2</sup>KRICT, Korea

Th-F2-5

15:00 - 15:15

### **DC Compact Model for Low-Voltage Flexible Organic Field-Effect Transistors**

Jung Sungyeop<sup>1</sup>, Yvan Bonnasieux<sup>2</sup>, Gilles Horowitz<sup>2</sup>, and Sungjune Jung<sup>1</sup>  
<sup>1</sup>POSTECH, Korea, <sup>2</sup>Ecole polytechnique, France

Th-F2-6

15:15 - 15:30

### **Effect of Nitrogen Incorporation in Indium Gallium Zinc Oxide (IGZO) Sputtering Target for High Performance Thin Film Transistors (TFTs)**

Yeo Ryang Lee<sup>1</sup>, Jung Joon Kim<sup>1</sup>, Dae Yung Kim<sup>1</sup>, Hyun Joo Choi<sup>1</sup>, In Chan Hwang<sup>2</sup>, and Mi Jung Lee<sup>1</sup>  
<sup>1</sup>Kookmin Univ., Korea, <sup>2</sup>Kwangwoon Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Deposition and modification methods for carbon materials</b>	<b>Session Code</b>	<b>Th-G2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-G2-1

13:30 - 14:00

### **[Invited] Functional Modification of Graphene**

Martin Kalbac<sup>1</sup>, Petr Kovaricek<sup>1</sup>, Zdenek Bastl<sup>1</sup>, Karolina Drogowska<sup>1</sup>, Zuzana Malnikova-Kominkova<sup>1</sup>, Michaela Fridrichova<sup>1</sup>, Timotheus Verhagen<sup>2</sup>, and Jana Vejpravova<sup>2</sup>

<sup>1</sup>J. Heyrovsky Inst. of Physical Chemistry, Czech, <sup>2</sup>Charles Univ., Czech

Th-G2-2

14:00 - 14:30

### **[Keynote] New Methods for Direct Growth of Graphene on Insulator ~ Paper, Pencil, Carbon Dioxide ~**

Satoru Kaneko<sup>1</sup>, Shigeo Yasuhara<sup>2</sup>, Tamio Endo<sup>3</sup>, Rieko Sudo<sup>3</sup>, Takashi Tokumasu<sup>4</sup>, Kazuo Satoh<sup>5</sup>, Masahito Kurouchi<sup>1</sup>, Manabu Yasui<sup>1</sup>, Takeshi Rachi<sup>1</sup>, Satomi Tanaka<sup>1</sup>, Chihiro Kato<sup>1</sup>, Akifumi Matsuda<sup>6</sup>, Mamoru Yoshimoto<sup>6</sup>, and Hirifumi Takikawa<sup>7</sup>

<sup>1</sup>Kanagawa Inst. of Industrial Sci. and Tech., Japan, <sup>2</sup>Japan Advanced Chemicals, Japan, <sup>3</sup>Sagamihara Surface Laboratory., Japan, <sup>4</sup>Tohoku Univ., Japan, <sup>5</sup>Osaka Research Inst. of Industrial Sci. and Tech., Japan, <sup>6</sup>Tokyo Inst. of Tech., Japan, <sup>7</sup>Toyohashi Univ.

Th-G2-3

14:30 - 15:00

### **[Invited] Self-Supporting ta-C Film Consisting of Laminated Layers Prepared using T-shape Filtered Arc Deposition**

Toru Harigai<sup>1</sup>, Masafumi Yamano<sup>1</sup>, Yuki Kondo<sup>1</sup>, Fuminori Yoda<sup>1</sup>, Satoshi Degai<sup>1</sup>, Tsuyoshi Tanimoto<sup>1</sup>, Yoshiyuki Suda<sup>1</sup>, Hirofumi Takikawa<sup>1</sup>, Mamiko Nishiuchi<sup>2</sup>, Hironao Sakaki<sup>2</sup>, Kiminori Kondo<sup>2</sup>, Satoru Kaneko<sup>3</sup>, and Shinsuke Kunitsugu<sup>4</sup>

<sup>1</sup>Toyohashi Univ. of Tech., Japan, <sup>2</sup>Nat'l Inst. for Quantum and Radiological Sci. and Tech., Japan, <sup>3</sup>Kanagawa Inst. of Industrial Sci. and Tech., Japan, <sup>4</sup>Industrial Tech. Center of Okayama Prefecture, Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Nanoscale Materials Engineering</b>	<b>Session Code</b>	<b>Th-H2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Th-H2-1**

**13:30 - 14:00**

**[Invited] Fully CMOS-Compatible Synthesis and Photodetector-Integration of Ultrathin, Parallel-Aligned ZnO Nanowire Arrays by Infiltration Synthesis**

Chang-Yong Nam  
Brookhaven Nat'l Laboratory, USA

**Th-H2-2**

**14:00 - 14:30**

**[Invited] Self-Assembled Molecular Monolayer Doping for Single Atom Control**

Yaping Dan  
Shanghai Jiao Tong Univ., China

**Th-H2-3**

**14:30 - 15:00**

**[Invited] Electronic Device Applications of Graphene for Future Semiconductor Technology**

Byoung Hun Lee, Yunji Kim, Taejin Yoo, Soyoung Kim, Hyunjune Hwang, and Sangkyung Lee  
GIST, Korea

**Th-H2-4**

**15:00 - 15:30**

**[Invited] Hybridization of Multiple Device Functions using Monolithic 3-Dimensional Integration**

Rino Choi  
Inha Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Device Materials Modeling</b>	<b>Session Code</b>	<b>Th-I2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room I</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-I2-1

13:30 - 14:00

**[Invited] Quantum Transport Device Simulation based on Real-Space Density Functional Theory and Non-Equilibrium Green's Function Method**

Nobuya Mori<sup>1</sup>, Gennady Mil'nikov<sup>1</sup>, Jun-Ichi Iwata<sup>2</sup>, and Atsushi Oshiyama<sup>2</sup>  
<sup>1</sup>Osaka Univ., Japan, <sup>2</sup>Univ. of Tokyo, Japan

Th-I2-2

14:00 - 14:30

**[Invited] Magnon-Phonon Interaction in YIG and Effective Spin Pumping through the YIG-Metal Interfaces**

Ke Xia  
Beijing Normal Univ., China

Th-I2-3

14:30 - 14:45

**Dispersion Dynamics in HiTc**

Antony J. Bourdillon  
UHRL, USA

Th-I2-4

14:45 - 15:00

**Spin Circuit Model for Materials with Spin-Momentum Locking**

S. Hong<sup>1</sup>, S. Sayed<sup>2</sup>, and S. Datta<sup>2</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>Purdue Univ., Korea

Th-I2-5

15:00 - 15:15

**Origin of Negative Differential Resistance in Graphene-based Vertical Tunneling Devices: an ab Initio Study**

Han Seul Kim<sup>1,2</sup> and Yong-Hoon Kim<sup>2</sup>  
<sup>1</sup>KISTI, Korea, <sup>2</sup>KAIST, Korea

Th-I2-6

15:15 - 15:45

**[Invited] Atomic Engineering and Atomistic Modelling of Donor-based Silicon Devices**

Bent Weber<sup>1,2,3</sup>  
<sup>1</sup>Nanyang Tech. Univ., Singapore, <sup>2</sup>ARC Centre of Excellence for Quantum Computation and Communication Tech., Australia, <sup>3</sup>Univ. of New South Wales, Australia



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Microelectronics Packaging Materials and Processing II</b>	<b>Session Code</b>	<b>Th-J2</b>
<b>Date and Time</b>	<b>2018-08-23 / 13:30 - 15:30</b>		
<b>Place</b>	<b>Room J</b>		
<b>Session Chair</b>	<b>TBA</b>		

Th-J2-1

13:30 - 14:00

**[Invited] Various Applications of Laser based Interconnection Technology including 3D TSV Stacking Process and Flexible Modules**

Kwang-Seong Choi, Leeseul Jeong, Keon-Soo Jang, Seok Hwan Moon, Hyun-Cheol Bae, and Yong-Sung Eom  
ETRI, Korea

Th-J2-2

14:00 - 14:30

**[Invited] Carbon-based Nanocomposites for Electronic Packaging Applications**

Kwang-Seok Kim  
KITECH, Korea

Th-J2-3

14:30 - 14:45

**Waste Heat Recovery using Interfacial Electrical Double Layers from Oscillating Heat Pipes**

Qingchen Shen, Chao Chang, Peng Tao, Ziyang Ning, Shujian Rong, Yanming Liu, Chengyi Song, Jianbo Wu, Wen Shang, and Tao Deng  
Shanghai Jiao Tong Univ., China

Th-J2-4

14:45 - 15:00

**Characterization of Cu-Inhibitor Complex Layer with AFM and Fluidics Chip System**

Yeonah Jeong<sup>1</sup>, Heon-Yul Ryu<sup>1</sup>, Byoung-Jun Cho<sup>1</sup>, Kwang-Min Han<sup>1</sup>, Shohei Shima<sup>2</sup>, Satomi Hamada<sup>2</sup>, Hirokuni Hiyama<sup>2</sup>, Tae-Gon Kim<sup>3</sup>, and Jin-Goo Park<sup>1</sup>  
<sup>1</sup>Hanyang Univ., Korea, <sup>2</sup>EBARA Corporation, Japan, <sup>3</sup>IMEC, Belgium



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Meta-air Batteries</b>	<b>Session Code</b>	<b>Fr-A1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-A1-1

8:30 - 9:00

**[Invited]Towards Controlling of  $\text{Li}_2\text{O}_2$  Structures for Improvement of Charging Overpotential in Lithium-Oxygen Batteries**

Hye Ryung Byon  
KAIST, Korea

Fr-A1-2

9:00 - 9:30

**[Invited]Toward High-Energy-Density Redox-Flow Batteries: Redox Processes and Design Strategies**

Yi-Chun Lu, Guangtao Cong, and Zhejun Li  
The Chinese Univ. of Hong Kong, China

Fr-A1-3

9:30 - 9:45

**Synthesis and Characterization of ZnSe/Silver Nano-Composites Air Cathode in The Zn-Air Batteries**

Yi-Ying Chung<sup>1</sup>, Po-Yen Chen<sup>1</sup>, and Kong-Wei Cheng<sup>1,2</sup>  
<sup>1</sup>Chang Gung Univ., Taiwan, <sup>2</sup>Chang Gung Memorial Hospital, Taiwan

Fr-A1-4

9:45 - 10:00

**MOF-Derived Ultrasmall Iridium Oxide Nanoparticles Encapsulated  $\text{Co}_3\text{O}_4$  Nanosheets with High Activity for Electrocatalytic Oxygen Evolution**

Seokwon Song, Su-Ho Cho, Won-Tae Koo, Ki-Ro Yoon, Ji-Won Jung, and Il-Doo Kim  
KAIST, Korea

Fr-A1-5

10:00 - 10:15

**Efficient Photoelectrochemical Hydrogen Generation using Molybdenum Disulfide Film on Black Si Photocathode via Wafer-Scale Atomic Layer Deposition**

Dae Woong Kim, Dae Hyun Kim, and Tae Joo Park  
Hanyang Univ., Korea

Fr-A1-6

10:15 - 10:30

**The Influences of the Amounts of  $\text{Ag}_8\text{SnS}_6$  Electrocatalyst at the ZnO Nano-arrays Air Cathode of Zn-Air Batteries.**

Yun-Chen Wu<sup>1</sup>, Pei-Jung Wu<sup>1</sup>, and Kong-Wei Cheng<sup>1,2</sup>  
<sup>1</sup>Chang Gung Univ., Taiwan, <sup>2</sup>Chang Gung Memorial Hospital, Taiwan





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Topological Insulators : Materials, electronic structure, and transport properties I</b>	<b>Session Code</b>	<b>Fr-B1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-B1-1

8:30 - 9:00

## **[Invited]Towards Topological Electronics: Epitaxial Thin Films of Topological Dirac Semimetal Na<sub>3</sub>Bi**

Michael Fuhrer<sup>1,2,3</sup>

<sup>1</sup>Future Low-Energy Electronics Tech., Australia, <sup>2</sup>Monash Centre for Atomically Thin Materials, Australia, <sup>3</sup>Monash Univ., Australia

Fr-B1-2

9:00 - 9:30

## **[Invited]What Are Unique Transport Signatures of Topological Insulators?**

Yong Chen<sup>1,2</sup>

<sup>1</sup>Purdue Univ, USA, <sup>2</sup>Tohoku Univ., Japan

Fr-B1-3

9:30 - 9:45

## **Quasiparticle Interference of The Nodal Line Dirac Semimetal ZrS<sub>2</sub>**

Bent Weber

Nanyang Technological Univ., Singapore

Fr-B1-4

9:45 - 10:00

## **Experimental Realization of Stable Topological Insulator by Ion Beam Irradiation**

Jun Kue Park, Chan Young Lee, and Chorong Kim  
KAERI, Korea

Fr-B1-5

10:00 - 10:15

## **Anisotropic Magnetoresistance Coupling in a NiFe/Ca-Bi<sub>2</sub>Se<sub>3</sub> Hybrid Structure**

Sung Jong Kim<sup>1,2</sup>, Youn Ho Park<sup>2</sup>, Chaun Jang<sup>2</sup>, Andrzej Hruban<sup>3</sup>, Stanislaw Strzelecka<sup>4</sup>, Andrzej Materna<sup>4</sup>, and Hyun Cheol Koo<sup>1,2</sup>

<sup>1</sup>KU-KIST Graduate School, Korea, <sup>2</sup>KIST, Korea, <sup>3</sup>Inst. of Physics Polish Academy of Sci., Poland, <sup>4</sup>Inst. of Electronic Materials Tech., Poland



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Atomic Layer Deposition for Emerging Applications I</b>	<b>Session Code</b>	<b>Fr-C1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-C1-1

8:30 - 9:00

### **[Invited]Atomic Layer Deposition of 2D-WS<sub>2</sub> for High Performance Gas Sensor**

Jusang Park  
Yonsei Univ., Korea

Fr-C1-2

9:00 - 9:30

### **[Invited]Carbon/Oxide Coated/Wrapped Porous Silicon from Metallothermic Reactions for Lithium Ion Battery Applications**

Zhihao Bao, Peibo Gao, and Xi Huang  
Tongji Univ., China

Fr-C1-3

9:30 - 10:00

### **[Invited]Atomic Layer Deposition for Emerging Display Applications: From Functional Materials to Flexible Devices**

Jin-Seong Park, Jiazhen Sheng, Seunghwan Lee, Taehyun Hong, Wanho Choi, and Gunho Ba  
Hanyang Univ., Korea

Fr-C1-4

10:00 - 10:15

### **Damage-Reduced Bi-Layer Structure of Gate Dielectric for Improved MoS<sub>2</sub> FET Characteristics**

Whang Je Woo, Il-Kwon Oh, Jeong-Gyu Song, Hanearl Jung, Bo-Eun Park, Jongseo Park, Kyunam Park, and  
Hyungjun Kim  
Yonsei Univ., Korea

Fr-C1-5

10:15 - 10:30

### **Improvement of Electrical Properties of ZrO<sub>2</sub> by Ta Incorporation for Emerging Higher-K Material**

Bo-Eun Park, Il-Kwon Oh, Jong Seo Park, Seunggi Seo, and Hyungjun Kim  
Yonsei Univ., Korea

Fr-C1-6

10:30 - 10:45

### **Effect of Oxidants on Atomic Layer Deposition of Al<sub>2</sub>O<sub>3</sub>: A DFT Study**

Seunggi Seo<sup>1</sup>, Taewook Nam<sup>1</sup>, Han-Bo-Ram Lee<sup>2</sup>, Hyungjun Kim<sup>1</sup>, and Bonggeun Shong<sup>3</sup>  
<sup>1</sup>Yonsei Univ., Korea, <sup>2</sup>Incheon Nat'l Univ., Korea, <sup>3</sup>Hongik Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bioinspired Materials for Artificial Photosynthesis III</b>	<b>Session Code</b>	<b>Fr-D1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-D1-2

9:00 - 9:30

**[Invited]Controlled, Room-Temperature Electrochemical Conversion of Metal-Organic Frameworks into Porous Metal Sulfides with Tailored Composition and Electrocatalytic Water Splitting Activity**

Wenhui He, Raya Ifraemov, Arik Raslin, and Idan Hod  
Ben-Gurion Univ., Israel

Fr-D1-3

9:30 - 9:45

**Electrocatalytic Biomass Value-Addition on Transition Metal Oxide Nanoparticles at Neutral pH**

Seungwoo Choi and Ki Tae Nam  
Seoul Nat'l Univ., Korea

Fr-D1-4

9:45 - 10:00

**Controlled Phase Segregation of Binary Alloy for Efficient Electrochemical CO<sub>2</sub> to C<sub>2</sub>H<sub>4</sub> Conversion**

Sang Won Im, Ki Dong Yang, Jun Ho Jang, and Ki Tae Nam  
Seoul Nat'l Univ., Korea

Fr-D1-5

10:00 - 10:15

**Investigation on the Nano Size Effect of Ultra-Small Manganese Oxide Nanoparticles**

Kang Hee Cho, Hong Min Seo, Kang Gyu Lee, Yoon Ho Lee, and Ki Tae Nam  
Seoul Nat'l Univ., Korea

Fr-D1-6

10:15 - 10:30

**Impedance Analysis in Film-Type Water Oxidation Electrocatalysts using Circuit Model with Havriliak-Negami Function**

Hongmin Seo<sup>1</sup>, Kyoungsuk Jin<sup>1</sup>, Kang Hee Cho<sup>1</sup>, Kang-Gyu Lee<sup>1</sup>, Dang Thanh Nguyen<sup>2</sup>, Jong Sook Lee<sup>2</sup>, and Ki Tae Nam<sup>1</sup>

<sup>1</sup>Seoul Nat'l Univ., Korea, <sup>2</sup>Chonnam Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Growth and Properties of 2D Materials</b>	<b>Session Code</b>	<b>Fr-E1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room E</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-E1-1

8:30 - 9:00

## **[Invited]Growth of Graphene on Elemental Semiconductor and its Applications**

Jaehyun Lee  
Ajou Univ., Korea

Fr-E1-2

9:00 - 9:15

## **Surface Treatment of Black Phosphorus and its Derivative**

Jong-Young Lee, Jong Hun Kim, and Gwan-Hyoung Lee  
Yonsei Univ., Korea

Fr-E1-3

9:15 - 9:30

## **Effect of Vacuum Annealing on The Performance of Black Phosphorus Field-Effect Transistors**

Park Hyunik, Janghyuk Kim, Geonyeop Lee, Suhyun Kim, and Jihyun Kim  
Korea Univ., Korea

Fr-E1-4

9:30 - 9:45

## **Quasiparticle Properties of the Black Phosphorene**

I.V. Sankar and Euyheon Hwang  
Sungkyunkwan Univ., Korea

Fr-E1-5

9:45 - 10:00

## **Ultrathin Active-Matrix Organic-Light Emitting Diode Display Enabled by High Performance Al<sub>2</sub>O<sub>3</sub> Capped MoS<sub>2</sub> Field Effect Transistors**

Minwoo Choi and Jong-Hyun Ahn  
Yonsei Univ, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Organic and Polymeric Materials for Flexible and Stretchable Electronics III</b>	<b>Session Code</b>	<b>Fr-F1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-F1-1

8:30 - 9:00

**[Invited]Control of Nucleation and Growth Processes by Surface Energy Modification for Efficient Perovskite Solar Cells**

Inchan Hwang  
Kwangwoon Univ., Korea

Fr-F1-2

9:00 - 9:30

**[Invited]Stretchable and Waterproof Organic Solar Cells**

Kenjiro Fukuda and Takao Someya  
Thin-Film Device Laboratory, Japan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Advanced and Highly Efficient Inorganic Photovoltaics Materials and Structures I</b>	<b>Session Code</b>	<b>Fr-G1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room G</b>		
<b>Session Chair</b>	<b>TBA</b>		

**Fr-G1-1**

**8:30 - 8:55**

**[Invited]Effects of Alkali Metals in Cu(In,Ga)Se<sub>2</sub> Thin Films and Solar Cells**

Shogo Ishizuka  
AIST, Japan

**Fr-G1-2**

**8:55 - 9:20**

**[Invited]Influence of Na Accumulation at the Localized Grain-Boundary in CIGS Absorbers**

JinWoo Lee<sup>1</sup>, Ryan Kaczynski<sup>1</sup>, Jane Van Alsburg<sup>1</sup>, Yejiao Wang<sup>1</sup>, Bo Sang<sup>1</sup>, Jeffrey Bitt<sup>1</sup>, and Daniel Goran<sup>2</sup>

<sup>1</sup>Global Solar Energy Inc., USA, <sup>2</sup>Bruker Nano GmbH, Germany

**Fr-G1-3**

**9:20 - 9:45**

**[Invited]Study of Defects in Cu(In,Ga)(S,Se)<sub>2</sub>-based Solar Cells**

Takeaki Sakurai and Katsuhiro Akimoto  
Univ. of Tsukuba, Japan

**Fr-G1-4**

**9:45 - 10:10**

**[Invited]Micro- and Nanometer Scale Cu(In,Ga)Se<sub>2</sub> for Photovoltaic Devices**

Sascha Sadewasser  
INL, Portugal

**Fr-G1-5**

**10:10 - 10:35**

**[Invited]Above 19% cell efficiency in Cu(In,Ga)Se<sub>2</sub> solar cell by employing a alkaline post deposition treatment (PDT) with Na<sub>2</sub>S as a alkaline source**

Seung Tae Kim<sup>1</sup>, Byung Tae Ahn<sup>1</sup>, Ki Hwan Kim<sup>2</sup>, and Jae Ho Yun<sup>2</sup>

<sup>1</sup>KAIST, Korea, <sup>2</sup>KIER, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Thin-Film Transistors</b>	<b>Session Code</b>	<b>Fr-H1</b>
<b>Date and Time</b>	<b>2018-08-24 / 8:30 - 10:30</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-H1-1

8:30 - 9:00

## **[Invited]Improvement in Performance of Metal Oxide Thin-Film Transistors by Modifying a Channel Composition and Structure**

Jae Kyeong Jeong  
Hanyang Univ., Korea

Fr-H1-2

9:00 - 9:15

## **Characterization of the Self-Heating Effect in IGZO Thin Film Transistors using Pulse Measurements**

Manh-Cuong Nguyen<sup>1</sup>, Sang-woo Kim<sup>1</sup>, Jaekyeong Jeong<sup>2</sup>, Rino Choi<sup>1</sup>, Nuri On<sup>2</sup>, Hyungmin Ji<sup>1</sup>, Hoang-Thuy-An Nguyen<sup>1</sup>, Sujin Choi<sup>1</sup>, Jonggyu Cheon<sup>1</sup>, Kyoung-Mun Yu<sup>1</sup>, Seong-Yeong Cho<sup>1</sup>, and Jin-Hyun Kim<sup>1</sup>  
<sup>1</sup>Inha Univ., Korea, <sup>2</sup>Hanyang Univ., Korea

Fr-H1-3

9:15 - 9:30

## **A New Solution-Processable BODIPY-Acetylene Semiconductor for N-Channel Organic Field-Effect Transistors**

Dongil Ho and Choongik Kim  
Sogang Univ., Korea

Fr-H1-4

9:30 - 9:45

## **Influence of High Doping Concentration on Contact Resistivity Measurement with Transmission Line Model and Circular Transmission Line Model**

Hyunsu Shin, Seran Park, Eunjung Ko, and Dae-Hong Ko  
Yonsei Univ, Korea

Fr-H1-5

9:45 - 10:00

## **Effect of Oxygen Content on the Stability of Nitrogen-Doped P-Type ZnO Films Fabricated by Reactive Magnetron Sputtering**

Faizan Husian, Jian-yuan Chen, and Jyh-Shiarn Cherng  
Ming Chi Univ. of Tech., Taiwan



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Catalyst Materials for Super Capacitors</b>	<b>Session Code</b>	<b>Fr-A2</b>
<b>Date and Time</b>	<b>2018-08-24 / 10:45 - 12:45</b>		
<b>Place</b>	<b>Room A</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-A2-1

10:45 - 11:15

## **[Invited] Nature-Inspired Biomolecules as Oxygen Evolving Catalysts for Sustainable and Efficient Lithium-Oxygen Batteries**

Won-Hee Ryu  
Sookmyung Women's Univ., Korea

Fr-A2-2

11:15 - 11:30

## **Atomically Distributed, Oxygen-Deficient Ge-Zn Hybrid Nanofibers for Excellent High Rate Cyclability**

Jun Young Cheong<sup>1</sup>, Gyujin Song<sup>2</sup>, Chihyun Hwang<sup>2</sup>, Jaegeon Ryu<sup>2</sup>, Sungho Choi<sup>2</sup>, Chanhon Kim<sup>1</sup>, Sungho Kim<sup>2</sup>, Hyun-Kon Song<sup>2</sup>, Chongmin Wang<sup>3</sup>, Il-Doo Kim<sup>1</sup>, and Soojin Park<sup>2</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>UNIST, Korea, <sup>3</sup>Pacific Northwest Nat'l Laboratory, Korea

Fr-A2-3

11:30 - 11:45

## **BiMn<sub>2</sub>O<sub>8</sub>/Activated Carbon Nanocomposite Materials for High Performance Supercapacitors**

Benjaporn Yotburut<sup>1,2</sup>, Worawat Meevasana<sup>1,2</sup>, and Santi Maensiri<sup>1</sup>  
<sup>1</sup>Suranaree Univ. of Tech., Thailand, <sup>2</sup>Chiang Mai Univ., Thailand

Fr-A2-4

11:45 - 12:00

## **Morphology - Conserved Metal Organic Framework-Derived Porous Carbons/CNT Composites for High Performance Supercapacitor**

Songgue Choi and Kwang-Bum Kim  
Yonsei Univ., Korea

Fr-A2-5

12:00 - 12:15

## **Improved Electrochemical Performance and Density of ZIF-8/graphene Composites for EDLCs**

Hun Seok Choi and Kwang-Bum Kim  
Yonsei Univ., Korea

Fr-A2-6

12:15 - 12:30

## **Sulfonated-Poly(Aniline-co-p-Phenylenediamine) Nanofiber-Decorated Nitrogen-Doped Reduced Graphene Oxide with Fe(CN)<sub>6</sub><sup>4+</sup>/Fe(CN)<sub>6</sub><sup>3+</sup> in Sulfuric Acid for High Performance Supercapacitor**

Chatwarin Poochai<sup>1,2</sup>, Chakrit Sriprachubwong<sup>1,2</sup>, Nirachawadee Srisamrarn<sup>1,2</sup>, Jutarat Sudchanham<sup>1,2</sup>, and Adisorn Tuantranont<sup>1,2</sup>  
<sup>1</sup>NECTEC, Thailand, <sup>2</sup>NSTDA, Thailand

Fr-A2-7

12:30 - 12:45

## **Ni<sub>3</sub>(VO<sub>4</sub>)<sub>2</sub> Nanosheet Arrays on Aminated r-GO Sheets for Supercapacitor Applications**

Prabhakar Rai, Rudra Kumar, and Ashutosh Sharma  
IIT Kanpur, India





# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Topological Insulators : Materials, electronic structure, and transport properties II</b>	<b>Session Code</b>	<b>Fr-B2</b>
<b>Date and Time</b>	<b>2018-08-24 / 10:45 - 12:45</b>		
<b>Place</b>	<b>Room B</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-B2-1

10:45 - 11:15

**[Invited]Fermi-Level Dependent Ultrafast Terahertz Dynamics in the Topological Insulator  $\text{Bi}_2\text{Se}_3$**

Hyunyoung Choi<sup>1</sup>, Seungmin Lee<sup>1</sup>, Sangwan Sim<sup>2</sup>, Jisoo Moon<sup>3</sup>, Soonyoung Cha<sup>1</sup>, Hoseung Shin<sup>1</sup>, Suhyun Park<sup>1</sup>, Woonsun Jang<sup>1</sup>, Myungwoo Son<sup>4</sup>, Hyunseung Jung<sup>5</sup>, Seung Young Seo<sup>6</sup>, Aloysius Soon<sup>1</sup>, Moon-Ho Ham<sup>4</sup>, Hojin Lee<sup>5</sup>, Moon-Ho Jo<sup>6</sup>, and Seongshik Oh<sup>3</sup>

<sup>1</sup>Yonsei Univ., Korea, <sup>2</sup>Los Alamos Nat'l Lab, USA, <sup>3</sup>The State Univ. of New Jersey, USA, <sup>4</sup>GIST, Korea, <sup>5</sup>Soongsil Univ., Korea, <sup>6</sup>POSTECH, Korea

Fr-B2-2

11:15 - 11:30

**Non-Zero Berry Phase and Anomaly in Hall Resistivity on  $\text{GdB}_4$  : A New Type of a Magnetic Semimetal with Nontrivial Topology**

Wonhyuk Shon<sup>1</sup>, Dong-Chun Rhyu<sup>2</sup>, Kyoo Kim<sup>2</sup>, Heon-Jung Kim<sup>3</sup>, Jong-Soo Rhyee<sup>1</sup>, Byungil Min<sup>2</sup>, Boyoun Kang<sup>4</sup>, and Beongki Cho<sup>4</sup>

<sup>1</sup>Kyunghee Univ., Korea, <sup>2</sup>POSTECH, Korea, <sup>3</sup>Daegu Univ., Korea, <sup>4</sup>GIST, Korea

Fr-B2-3

11:30 - 11:45

**Transverse Thermoelectric Properties and Fermi Surface Investigation on  $\text{Bi}_{0.97}\text{Sb}_{0.03}$  Single Crystal**

Gareoung Kim<sup>1</sup>, Jae-Hyun Yun<sup>1</sup>, Heon-jung Kim<sup>2</sup>, Won Hyuk Shon<sup>1</sup>, and Jong-oo Rhyee<sup>1</sup>

<sup>1</sup>Kyung Hee Univ., Korea, <sup>2</sup>Daegu Univ., Korea



<b>Session Title</b>	<b>Atomic Layer Deposition for Emerging Applications II</b>	<b>Session Code</b>	<b>Fr-C2</b>
<b>Date and Time</b>	<b>2018-08-24 / 10:45 - 12:45</b>		
<b>Place</b>	<b>Room C</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-C2-1

10:45 - 11:15

**[Invited]Atomic Layer Deposition for Solar Fuels**

Jihun Oh  
KAIST, Korea

Fr-C2-2

11:15 - 11:45

**[Invited]Two-Dimensional Electron Gas at Oxide Heterostructures using Atomic Layer Deposition**

Sang Woon Lee  
Ajou Univ., Korea

Fr-C2-3

11:45 - 12:15

**[Invited]Atomic Layer Deposition; A Few Prospective Applications Aiming Mass-Production after Si-based Semiconductor Process Era**

Tae Joo Park  
Hanyang Univ., Korea

Fr-C2-4

12:15 - 12:30

**Atomic Layer Deposited Transition Metal Sulfide and Nitride for Energy Storage Application**

Dip K. Nandi<sup>1</sup>, Tae Hyun Kim<sup>1</sup>, M. Zahid Ansari<sup>1</sup>, Seungmin Yeo<sup>2</sup>, Hyungjun Kim<sup>2</sup>, and Soo-Hyun Kim<sup>2</sup>  
<sup>1</sup>Yeungnam Univ., Korea, <sup>2</sup>Yonsei Univ., Korea

Fr-C2-5

12:30 - 12:45

**Low-Temperature ALD Cobalt Sulfide for Efficient Hydrogen Evolution Reaction Catalyst based on Textiles**

Hyungjun Kim, Donghyun Kim, and Jusang Park  
Yonsei Univ., Korea

Fr-C2-6

12:45 - 13:00

***In-Situ* Synthesis of Vertically Stacked Heterostructure WSe<sub>2</sub>/WS<sub>2</sub> for Photovoltaic Self-Powered Gas Sensor**

Sangyoon Lee, KyungYong Ko, Jusang Park, and Hyungjun Kim  
Yonsei Univ., Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Bioinspired Materials for Artificial Photosynthesis IV</b>	<b>Session Code</b>	<b>Fr-D2</b>
<b>Date and Time</b>	<b>2018-08-24 / 10:45 - 12:45</b>		
<b>Place</b>	<b>Room D</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-D2-1

10:45 - 11:15

**[Invited]Morphology and Interface Control of Catalysts for Efficient Chemical Conversion**

Min Hyung Lee  
Kyung Hee Univ., Korea

Fr-D2-2

11:15 - 11:45

**[Invited]Low Dimensional Catalysts for Sustainable Energy Production by Electrochemical Method**

Sim Uk  
Chonnam Nat'l Univ., Korea

Fr-D2-3

11:45 - 12:00

**Mechanistic Investigation of  $\text{Co}_3\text{O}_4$  Nanocatalysts for Highly Selective Active Chlorine Generation at Neutral pH**

Heonjin Ha and Ki Tae Nam  
Seoul Nat'l Univ., Korea

Fr-D2-4

12:00 - 12:15

**Ordered Cu-Mesostructure for Selective  $\text{C}_2$  Product Formation from Electrochemical  $\text{CO}_2$  Reduction**

Hakhyeon Song<sup>1</sup>, Youngkook Kwon<sup>2</sup>, and Jihun Oh<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>KRICT, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Organic and Polymeric Materials for Flexible and Stretchable Electronics IV</b>	<b>Session Code</b>	<b>Fr-F2</b>
<b>Date and Time</b>	<b>2018-08-24 / 10:45 - 12:45</b>		
<b>Place</b>	<b>Room F</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-F2-1

10:45 - 11:15

### **[Invited]Flexible and Stretchable Devices based on Ionic Conductors**

Pooi See Lee  
Nanyang Technological Univ., Singapore

Fr-F2-2

11:15 - 11:45

### **[Invited]Self-Assembly based Nanostructures for Stretchable Electrodes**

Jeong Gon Son  
KIST, Korea

Fr-F2-3

11:45 - 12:15

### **[Invited]Printable Fabrication of Wearable Self-Powered Smart Sensor System on Plastic Substrates**

Zhiyong Fan and Yuanjing Lin  
Hong Kong Univ. of Sci. and Tech., China

Fr-F2-4

12:15 - 12:30

### **Inverse Coaxial Thermoelectric Polymer Foam for Self-Powered Pressure Sensors**

Jinwoo Oh<sup>1,2</sup>, Jong Chan Lee<sup>2</sup>, and Jeong Gon Son<sup>1</sup>  
<sup>1</sup>KIST, Korea, <sup>2</sup>Seoul Nat'l Univ., Korea

Fr-F2-5

12:30 - 12:45

### **Skin-Inspired Hierarchical Polymer Architectures for Ultra-Flexible Triboelectric Sensors**

Minjeong Ha, Seongdong Lim, Youngoh Lee, Sangyun Na, and Hyunhyub Ko  
UNIST, Korea



# IUMRS-ICEM 2018

AUGUST 19(SUN.) - 24(FRI.), 2018 / DAEJEON, KOREA

<b>Session Title</b>	<b>Advanced and Highly Efficient Inorganic Photovoltaics Materials and Structures II</b>	<b>Session Code</b>	<b>Fr-G2</b>
<b>Date and Time</b>	2018-08-24 / 10:45 - 12:45		
<b>Place</b>	Room G		
<b>Session Chair</b>	TBA		

Fr-G2-1

10:45 - 11:10

**[Invited]Unraveling Recombination Processes and Charge Carrier Transport in Compound Semiconductors**

Thomas Unold  
Helmholtz Zentrum Berlin für Materialien und Energie, Germany

Fr-G2-2

11:10 - 11:35

**[Invited]Heterojunction Engineering for Beyond 10% Efficiency CZTS Solar Cells**

Xiaojing Hao  
UNSW, Australia

Fr-G2-3

11:35 - 12:00

**[Invited]Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> : From Materials Synthesis to Solar Cell**

Yi Zhang<sup>1</sup>, Li Wu<sup>1</sup>, and Jianjun Li<sup>1,2</sup>  
<sup>1</sup>Nankai Univ., China, <sup>2</sup>Jinan Univ., China

Fr-G2-4

12:00 - 12:15

**Novel Planar ZnO<sub>1-x</sub>S<sub>x</sub> based Transparent Solar Cells**

Jian Chen<sup>1</sup>, Qingfeng Zhang<sup>1</sup>, Wuzhong Zhang<sup>1</sup>, Mingkai Li<sup>1</sup>, Yinmei Lu<sup>1</sup>, and Yunbin He<sup>1</sup>  
Hubei Univ., China

Fr-G2-5

12:15 - 12:30

**TiO<sub>2</sub>/ Carbon Nanotube Mesoporous Scaffold - The Effective Electron Collector for TCO Electrode-Free Perovskite Solar**

Van Dang Tran and Soon-Gil Yoon  
Chungnam Nat'l Univ., Korea



<b>Session Title</b>	<b>Interface Engineering/Epitaxy</b>	<b>Session Code</b>	<b>Fr-H2</b>
<b>Date and Time</b>	<b>2018-08-24 / 10:45 - 12:45</b>		
<b>Place</b>	<b>Room H</b>		
<b>Session Chair</b>	<b>TBA</b>		

Fr-H2-1

10:45 - 11:00

### **Two-Dimensional Electron Gas Characteristics of AlGaN/GaN HEMTs with AlN Insert Layer on 4H-SiC Grown by MOCVD**

Jaeyeon Han, Kyeongjae Lee, Uiho Choi, Yongjun Nam, Taehoon Jang, and Okhyun Nam  
Korea Polytechnic Univ., Korea

Fr-H2-2

11:00 - 11:15

### **Selective Silicon Epitaxy via Plasma-Enhanced Chemical Vapor Deposition at Atmospheric Pressure**

Hwayeon Ryu<sup>1</sup>, Changhun Song<sup>1</sup>, Hyunsu Shin<sup>1</sup>, Seran Park<sup>1</sup>, Won Ki Cho<sup>2</sup>, Seung Jae Baik<sup>2</sup>, Hoonjung Oh<sup>1</sup>, and Dae-Hong Ko<sup>1</sup>  
<sup>1</sup>Yonsei Univ., Korea, <sup>2</sup>Hankyong Nat'l Univ., Korea

Fr-H2-3

11:15 - 11:30

### **BeCaZnO Quaternary Alloys: Epitaxial Film Growth and Ultraviolet Photodetector Fabrication**

Teng Zhang, Mingkai Li, Yang Cheng, Wuzhong Zhang, Yinmei Lu, and Yunbin He  
Hubei Univ., China

Fr-H2-4

11:30 - 11:45

### **The Properties of $Zr_xSn_{1-x}O_2$ Semiconductor Alloy Epitaxial Thin Film and its Application in Ultraviolet Photodetector**

Yang Cheng, Mingkai Li, Debing Long, Jian Chen, Teng Zhang, Dongxue Meng, Yinmei Lu, and Yunbin He  
Hubei Univ., China

Fr-H2-5

11:45 - 12:00

### **UV Detectors based on High-Quality $BexZn_{1-x}O_{1-y}S_y$ Alloy Films**

Wuzhong Zhang, Mingkai Li, Yinmei Lu, Ronghuizi Yang, Teng Zhang, and Yunbin He  
Hubei Univ., China

Fr-H2-6

12:00 - 12:15

### **Study of Atomic Arrangements and Charge Distribution on Si(001) Surfaces with the Adsorption of One Ge Atom by DFTB Calculations**

Lin Zhang<sup>1</sup> and Lijun Wu<sup>2</sup>  
<sup>1</sup>Northeastern Univ., China, <sup>2</sup>Shenyang Ligong Univ., China

Fr-H2-7

12:15 - 12:30

### **Luminescence and Photo-Transport Properties of GaN Nanowires**

Shivesh Yadav, Swarup Deb, Kantimay D. Gupta, and Subhabrata Dhar  
Indian Inst. of Tech. Bombay, India