



IUMRS-ICEM 2018

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

Session Title	Poster Session II
Date and Time	2018-08-23 / 15:30 - 17:00
Place	Exhibition Hall

ThP1

Parameterization of Dielectric Function of Bi_{1.85}Gd_{0.15}Te₃ as a Function of Temperature

Hoang Tung Nguyen, Tae Jung Kim, Han Gyeol Park, Van Long Le, Xuan Au Nguyen, Min Ji Jeoung, and Young Dong Kim
Kyung Hee Univ., Korea

ThP2

Analysis of Electrical Characteristics of Shield Gate Power MOSFET for Low on Resistance

Ey Goo Kang, Byoungsub Ahn, Hun-Seok Chung, and Myeong Cheol Shin
Far East Univ., Korea

ThP3

The Optimal Design of High Voltage Non Punch through and Field Stop IGBT

Ey Goo Kang, Myeong Cheol Shin, Hun Seok Chung, Se Young Kim, and Byoung Sub Ahn
Far East Univ., Korea

ThP4

Room Temperature Liquefied Petroleum Gas Sensor based on Cu₂SnS₃ /CdS Heterojunction

Abhishek Lokhande and Jin Hyeok Kim
Chonnam Nat'l Univ., Korea

ThP5

Structural and Electrical Properties of Au/Al-Doped ZnO/n-Type GaN MIS Junction

Vallivedu Janardhanam, Inapagundla Jyothi, Hoon-Ki Lee, Han-Soo Chang, and Chel-Jong Choi
Chonbuk Nat'l Univ., Korea

ThP6

Chiroptical Organic Semiconductor Thin Films for Circularly Polarized Light Detector

Na Yeon Kim^{1,2}, Eun Ji Lee³, Byeong Kwon Ju², and Jung Ah Lim¹
¹KIST, Korea, ²Korea Univ., Korea, ³Chungnam Nat'l Univ., Korea



IUMRS-ICEM 2018

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

ThP7

On-Xis 4H-SiC Homoepitaxial Growth With Enhanced Polytype Stability using BTMSM Source

Hyunwoo Kim, Young Seok Kim, Suhyeong Lee, Hongjeon Kang, and Hyeong Joon Kim
Seoul Nat'l Univ., Korea

ThP8

Atomic Layer Deposition of Titanium Telluride and its Application as the Diffusion Barrier for Multi-Level Phase Change Memory Device

Yewon Kim¹, Seongyoon Kim¹, Jaemin Lee¹, Wonyong Koh², and Won-Jun Lee¹
¹Sejong Univ., Korea, ²UP Chemical Co., Ltd., Korea

ThP9

Atomiclayer Deposition of Cobalt Thin Film using Bis(1,4-diisopropyl-1,4-Diazabutadiene)Cobalt

Seongyoon Kim¹, Jaemin Kim¹, Jae-Min Park¹, Jun Hwan Choi², Wonyong Koh², and Won-Jun Lee¹
¹Sejong Univ., Korea, ²UP Chemical Co., Ltd., Korea

ThP10

All-Solution-Processed Metal Oxide/Chalcogenide Hybrid Phototransistors for Full-Color Detection and Fast Photo-Transient Behavior

Sung Woon Cho
Sungkyunkwan Univ., Korea

ThP11

Orthogonal Semiconducting Polymers for Solution Tandem Electronics

Han Wool Park¹, Keun-Yeong Choi², Boseok Kang³, Hee Jun Yoon⁴, Haejung Hwang¹, Kilwon Cho³, Yun-Hi Kim⁴, BongSoo Kim⁵, Kwon Beom Jung⁶, Moon Sung Kang², Hojin Lee², and Do Hwan Kim¹
¹Hanyang Univ., Korea, ²Soongsil Univ., Korea, ³POSTECH, Korea, ⁴Gyeongsang Nat'l Univ., Korea, ⁵Ewha Womans Univ., Korea, ⁶Dongguk Univ., Korea

ThP12

Prediction of Atomic Structure and Electronic Properties of A₂B₂XY(A = Si-Pb, B = Cl-I, and XY = PN and SiS) Inorganic Double Helices from First Principles Calculations

Bijoy T.K.^{1,2}, Murugan P¹, and Vijay Kumar^{2,3}
¹CSIR, India, ²Dr. Vijay Kumar Foundation, India, ³Shiv Nadar Univ., India



IUMRS-ICEM 2018

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

ThP13

Multilevel Resistive Switching Characteristics of ALD HfO_x ReRAM by Plasma Surface Modification

Boncheol Ku, Yawar Abbas, Sohyeon Kim, Andrey Sergeevich Sokolov, Yu-Rim Jeon, and Changhwan Choi
Hanyang Univ., Korea

ThP14

The Effect of Ammonia Pretreatment on Crystal Quality of N-Polar GaN Grown on SiC by MOCVD

Uiho Choi, Kyeongjae Lee, Jaeyeon Han, Taehoon Jang, Yongjun Nam, and Okhyun Nam
Korea Polytechnic Univ., Korea

ThP15

Tuning Charge Carrier Injection and Balance in Solution-Processed Polymer Light-Emitting Diodes using Ultra-Trace Electrochemical Doping Agents

Hao Yan¹, Saurav Limbu¹, Xuhua Wang¹, James Nightingale¹, Iain Hamilton¹, Shengda Xu¹, Sooncheol Kwon^{1,2}, Kwanghee Lee², and Ji-Seon Kim¹
¹Imperial College London, UK, ²GIST, Korea

ThP16

Effect of Zn Doping on Structural, Optical and Electrical Properties of Ba_{1-x}Zn_xTiO₃ Films Prepared by Sol-Gel Spin

Jayakrishnan A R¹, Kevin V Alex¹, Koppole Kamakshi², JPB Silva^{3,4}, KC Sekhar¹, and MJM Gomes³
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ThP17

Glycothermal Synthesis and Characterization of ZnS Powders

Sang-Jun Park, In-Hee Choi, Dae-Young Lim, and Jeong-Hwan Song
Pai Chai Univ., Korea

ThP18

Improvement of Heat Dissipation Characteristic of AlGaIn/GaN HEMT Devices by Changing of Pad Structure?

Jae Min Lee¹, Moon Uk Cho¹, Dong kyu Lee², jae Bong So¹, Yu-jung Cha¹, and Joon Seop Kwak¹
¹Sunchon Univ., Korea ²Dae Gyeong Ace Tech. Co., Ltd, Korea



IUMRS-ICEM 2018

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

ThP19

Study on Flexible GaN-based HFETs for Suppression of Self-Heating Effect by using Metal Substrates

Moon Uk Cho¹, Seungkyu Oh², Tae kyoung Kim¹, and Joon Seop Kwak¹

¹Sunchon Univ., Korea, ²Houston Univ., USA

ThP20

Characterization of Nonstoichiometric BaBiO_{3-δ} Ceramics: Electrical Conductivity, Phase Transitions, and Chemical Diffusivity

Hung Tai Nguyen, Dang Thanh Nguyen, Thuy Linh Pham, and Jong-Sook Lee

Chonnam Nat'l Univ., Korea

ThP21

Study of Photo-Definable Organic-Inorganic Spin-On Dielectric Use for FOWLP Applications

Sarah (Eunkyung) Kim, Changmin Song, and Sungdong Kim

Seoul Nat'l Univ. of Sci. and Tech., Korea

ThP22

Pulsed CF₃I Plasma Characteristics for Etching

Hee Jung Kim, Kyung Chae Yang, Young Hun Choi, Ye Ji Shin, and Geun Young Yeom

Sungkyunkwan Univ., Korea

ThP23

Investigation Concerning Void Free Filling of through Silicon via by Copper Electroplating with Additive And Current Condition

Se-Hee Shin, Tae-Yoo Kim, Jong-Hwan Park, Sun-Woo Kim, Jung-Woo Lee, Young-Il Na, Ho-Jun Choi, Hyun-Jun

Kwon, Dae-Seok Seo, Han-Young Jung, and Su-Jeong Suh

Sungkyunkwan Univ., Korea

ThP24

Atomic Layer Deposition of Tungsten Thin Films using Fluorine-Free Tungsten Precursors

MinYoung Lee, Tae Hyun Kim, and Soo-Hyun Kim

Yeungnam Univ., Korea

ThP25

Low Dark Current Si Photodetectors for Integrated Circuit

Munkhsaikhan Zumuukhorol¹, Zagarzusem Khurelbaatar², Sosorburam Boldbaatar¹, Kyu-Hwan Shim¹, and Chel-Jong Choi¹

¹Chonbuk Nat'l Univ., Korea, ²Mongolian Univ. of Sci. and Tech., Mongolia



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

ThP26

Highly Conductive Silver Paste with Ultra-High Adhesion Strength and Hardness based on Natural Lacquer Sap

Bora Lee¹, Jung Ah Lim¹, Cheolmin Park², Ho Kyu Han¹, Jung Mann Doh¹, and Ho Sun Lim³
¹KIST, Korea, ²Yonsei Univ., Korea, ³Sookmyung Women's Univ., Korea

ThP27

Minor Ge Addition to Effectively Suppress IMC Growth in the Lead-Free Solder Joints with Co Substrate

Ke-Hsing Chen and Chao-hong Wang
Nat'l Chung Cheng Univ., Taiwan

ThP28

Excellent Electromagnetic Interference Shielding Effectiveness of Amorphous Carbon-ZnO Nanorod-NiZn Nanoferrite Composites in the X-Band Frequency

Shivam Gupta and Nyan-Hwa Tai
Nat'l Tsing Hua Univ., Taiwan

ThP29

Study of Plasma Treated Cu Surface for Cu Wafer Bonding Applications

Sarah (Eunkyung) Kim and Haesung Park
Seoul Nat'l Univ., Korea

ThP30

Effect of Electroless-Plating Temperature of Nickel on the Interfacial Microstructure of Sn-Ag-Cu Solder Joint on Electroless Nickel Immersion Gold

Wonil Seo^{1,2}, Junhwan Park¹, Young-Ho Kim², and Sehoon Yoo¹
¹KITECH, Korea, ²Hanyang Univ., Korea

ThP31

High-Speed Synthesis of Copper Dendrites by Galvanic Displacement Reaction and Electrical Properties of Films Containing the Dendrites

Jun Ho Hwang and Jong-Hyun Lee
Seoul Nat'l Univ., Korea

ThP32

Characterization of Die Attach Process through Low-Temperature Reduction of Cu Formate

Choi Woo Lim and Lee Jong-Hyun
Seoul Nat'l Univ. of Sci. and Tech., Korea



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

ThP33

Low Coefficient of Thermal Expansion of Non-Conductive Adhesive with Silane Modified Epoxy Resin

Tae-Young Lee^{1,2}, Juhan Yoon¹, Young-Ho Kim², and Sehoon Yoo¹
¹KITECH, Korea, ²Hanyang Univ., Korea

ThP34

The Effects of NF₃/NH₃ Remote Plasma Dry Cleaning on the Electrical Characteristics of MOS Device on the Highly Trenched Si Substrate

Myeong Gyoon Chae¹, Jin Woo Park², Geun Young Yeom², and Changhwan Choi¹

¹Hanyang Univ., Korea, ²Sungkyunkwan Univ., Korea

ThP35

Pressureless Transient Liquid Phase Sintering Bonding with Ag Nanoparticles and Sn-58Bi Powders for High Temperature Applications

Kyung Deuk Min, Kwang-Ho Jung, Choong-Jae Lee, Haksan Jeong, and Seung-Boo Jung
Sungkyunkwan Univ., Korea

ThP36

A Study of Seed Layers and Rapid Thermal Anneal (RTA) Effect on the Temperature Coefficient of Resistance (TCR) of Ni-Cr Thin Films

Kyeong-Keun Choi and Won-Beom Lee
POSTECH, Korea

ThP37

Comprehensive Study about the Electrical Properties of AZO Films Fabricated by RF-Sputtering

Dong-Cheol Oh
Hoseo Univ., Korea

ThP38

Comparative Study about the Structural and Optical Properties of IGZO Films on Glass, Si, GaAs and Al₂O₃ Substrates

Dong-Cheol Oh
Hoseo Univ., Korea

ThP39

Properties of Protective Films on Various Plastic Substrates using Spray Coating Method

Ho Jung Chang¹, Sang Hee Lee¹, Young Chul Chang², and Jaeho Pyee¹
¹Dankook Univ., Korea, ²Korea Univ., Korea



IUMRS-ICEM 2018

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

ThP40

Three-Dimensional Nickel Cobalt Carbonate Hydroxide Composites on Pyridine Powder as Cathode Electrodes for High-Performance Supercapacitors

Damin Lee and Kwang Ho Kim
Pusan Nat'l Univ., Korea

ThP41

Effect of Annealing Temperature on Properties of Yttrium-doped ZnO Thin Films Grown by Radio-Frequency Magnetron Sputtering

Johngwon Shin and Shinho Cho
Silla Univ., Korea

ThP42

Improvement of Photosensitive Dielectric Material Surface Using Ultra Violet Pretreatment

Jong Young Park^{1,2}, Young Jae Kim^{1,2}, Joo Hyong Noh¹, and Hideo Honma¹
¹Kanto Gakuin Univ., Japan, ²Daeduck Electronics Co. Ltd., Korea

ThP43

Development of Screen Printed Electrode as a Low-Cost Device using MWCNTs-TiO₂ Nanocomposite for Gout Detection

Assareeya Aoboun¹, Pornkamon Sangjuna¹, Akira Thongpro¹, Benya Cherdhirunkorn¹, Nadnudda Rodthongkum², and Chiravoot Pechyen¹
¹Thammasat Univ., Thailand, ²Chulalongkorn Univ., Thailand

ThP44

Deposition of Pd Nanoparticles on MWCNT: Green Approach and Application to Hydrogen Sensing

Il-Han Yoo, Shankara S. Kalanur, and Hyungtak Seo
Ajou Univ., Korea

ThP45

Size-Controllable Monodisperse Microporous Capacitive Pressure Sensor via Microfluidic Assisted Self-Assembly

Se Young Kwon, Jin-Oh Kim, Jun Chang Yang, Jinwon Oh, and Steve Park
KAIST, Korea

ThP46

Highly Durable Cu-based Electrodes from a Printable Nanoparticle Mixture Ink : Flash-Light-Sintered, Kinetically-Controlled Microstructure

Hye Jin Park^{1,2}, Yejin Jo^{1,3}, Min Kyung Cho⁴, Young Woo Jeong⁴, Dojin Kim², Su Yeon Lee¹, Youngmin Choi^{1,3}, and Sunho Jeong^{1,3}
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IUMRS-ICEM 2018

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

ThP47

3D-Printed Origami Electronics based on Foldable Percolative Conductors

Yejin Jo^{1,2}, Du Won Jeong¹, Jeong-O Lee¹, Youngmin Choi^{1,2}, and Sunho Jeong^{1,2}
¹KRICT, Korea, ²Korea Univ. of Sci. and Tech., Korea

ThP48

Bio-Inspired Hierarchical Micro-Structured Adhesive Patches for Flexible And Skin-Attachable Devices

Da Wan Kim, Sangyul Baik, Hyeongho Min, Heon Joon Lee, Suyeon Jeong, and Changhyun Pang
Sungkyunkwan Univ., Korea

ThP49

Octopus-Inspired 3-Dimensional Architectures for Medical Skin-Patches And Wearable Devices

Sangyul Baik, Da Wan Kim, Jiwon Kim, Seung-Hoon Choi, and Changhyun Pang
Sungkyunkwan Univ., Korea

ThP50

Multilayered Interlocked Microdome Structures for Linear And Ultra-Large Dynamic Range Pressure Sensors

Youngoh Lee, Jonghwa Park, and Hyunhyub Ko
UNIST, Korea

ThP51

Sintering of Yttria-Stabilized Zirconia using Nickel Oxide as a Sinteringaid for Limiting Current Sensors

Hye-Won Kim^{1,2}, Ji Haeng Yu^{1,3}, Yoong-Soo Cho², and Dong-Hyun Peck^{1,3}
¹KIET, Korea, ²Yonsei Univ., Korea, ³Univ. of Sci. and Tech., Korea

ThP52

Reducing Dark Current of Organic Photodetectors with Cross-Linked Organic Buffer Layers

Yoonho Eom and Sungkoo Lee
KITECH, Korea

ThP53

Solution-Processed Photodetector using High-Purity Semiconducting Single-Walled Carbon Nanotube/n-Type Polymer Heterojunction

Hyoen-seok Lee and Steve Park
KAIST, Korea



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

ThP54

Alignment of Carbon Nanotubes for Detection of Biomolecular

Minji Kim and Steve Park
KAIST, Korea

ThP55

Pressure Sensor with High-Sensitivity And Low Hysteresis based Porous Pyramid Structure

Jun Chang Yang, Hanul Moon, Jin-Oh Kim, Seunghyup Yoo, and Steve Park
KAIST, Korea

ThP56

High Sensitive Bending Sensor based on Controlled Crack Formation

Serin Lee, Jinwon Oh, Jin-Oh Kim, and Steve Park
KAIST, Korea

ThP57

The Fabrication of Carbon Nano Tube/Nickel Oxide Nanowire Gas Sensor

Yang Haneul¹, Dojin Kim¹, Jeonjoong Kim¹, and Chinh Nguyen Duc²
Chungnam Univ., Korea

ThP58

A Structure of ZnO-Receptor and CNT-Transducer for H₂ Sensing at Room Temperature

Chinh Duc Nguyen, Chunjoong Kim, and Dojin Kim
Chungnam Nat'l Univ., Korea

ThP59

A Flexible Miniaturized Temperature Sensor for Vaccine Cold Chain System

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

ThP60

Selective Patterned Growth of ZnO Nanorods/Nanosheets on Carbon Fabric and Their Wearable Properties

Suhasini Sathiyamoorthy¹, Pandiyarasan Veluswamy², and Hiroya Ikeda²
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IUMRS-ICEM 2018

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

ThP61

Effects of Viscosity on Cu Nanopastes with Various Binder Condition

Choong-Jae Lee, Kyung Deuk Min, Kwang-Ho Jung, Yongil Kim, and Seung-Boo Jung
Sungkyunkwan Univ., Korea

ThP62

Semiconducting Carbon Nanotubes as Charge-Transporting Grain Boundary Protector of Perovskite Solar Cells

Seungju Seo¹, Il Jeon¹, Hao Zhang¹, Takeshi Tanaka², Hiromichi Kataura², Yutaka Matsuo^{1,3}, and Shigeo Maruyama^{1,2}

¹The Univ. of Tokyo, Japan, ²AIST, Japan, ³Univ. of Sci. and Tech. of China, China

ThP63

Actual Space Environment Exposure Behavior of Carbon Nanotube Yarn

Motoyuki Karita¹, Yoku Inoue¹, Yasuhiro Fuchita², Takashi Hitomi², Yoji Ishikawa², and Naoko Baba³

¹Shizuoka Univ., Japan, ²Obayashi Corp., Japan, ³Japan Manned Space Systems Corp., Japan

ThP64

CNT Forest Growth on Fe/Al₂O₃ Support Deposited by Mist CVD Method

Toshiya Kinoshita, Motoyuki Karita, Takayuki Nakano, and Yoku Inoue
Shizuoka Univ., Japan

ThP65

Reducing Contact Resistance of Carbon Nanotubes by Controlling Electric Power in Local Joule Heating

Libao An, Hong Zhang, Shuai Dong, and Wen Li
North China Univ. of Sci. and Tech., China

ThP66

Investigation of N₂-Containing DLC Film Structure based on Electrical Properties for Biological Response by Neutron Reflectance

Naoyuki Tatsumi¹, Tatsuya Mayama¹, Yuichiro Nakazato¹, Noboru Miyata², Tsukasa Miyazaki², Yasuharu Ohgoe¹, Kenji Hirakuri¹, and Akihiko Homma¹

¹Tokyo Denki Univ., Japan, ²CROSS, Japan

ThP67

Effect of Plasma Frequency on Nitrogen-doping DLC Films for Optical Band Gap

Tokuma Kaiho, Keita Fujimoto, Akihiko Homma, Kenji Hirakuri, and Yasuharu Ohgoe
Tokyo Denki Univ., Japan



IUMRS-ICEM 2018

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

ThP68

Effect of Boron Behavior on Electrical Properties of DLC Films Under Thermal Diffusion

Keita Fujimoto¹, Alya Amira¹, Kenji Hirakuri¹, Akihiko Homma¹, and Yasuharu Ohgoe¹
Tokyo Denki Univ., Japan

ThP69

Studies on Electric and Dielectric Properties of Polyimide/Carbon Nanotubes Composites

Jingrong Wang^{1,2}, Haiping Xu^{1,2}, Dandan Yang^{1,2}, and Yi Gu¹
¹Shanghai Polytechnic Univ., China, ²SRIM, China

ThP70

Effects of Oxynitridation Temperature on the Electrical Properties of Sputtered Sm Thin Film based on Si in N₂O Ambient

Yew Hoong Wong and Kian Heng Goh
Univ. of Malaya, Malaysia

ThP71

Fabrication of Suspended MoS₂ Nanosheets for In-Situ Tensile Test

Rakesh Sadanand Sharbidre^{1,2}, Chang Jun Lee^{2,3}, Prashant Hanumant Narute^{2,4}, Seong Gu Hong^{2,4}, and Taik Nam Kim¹
¹Pai Chai Univ., Korea, ²KRISS, Korea, ³Chonnam Nat'l Univ., Korea, ⁴Univ. of Sci. and Tech., Korea

ThP72

Study the Electrochemical Performance of MXene-based Electrode using Different Aqueous Electrolytes for Supercapacitors

Fu Jianjian and Kim Kwang Ho
Pusan Nat'l Univ., Korea

ThP73

Analysis of Linear and Non-Linear Shunt Defects in CIGS Thin-Film Solar Modules

Seung Hoon Lee, Sol Hee Lee, Se Jin Park, Soohyun Bae, Yoonmook Kang, Hae-Seok Lee, and Donghwan Kim
Korea Univ., Korea

ThP74

Nanoscale Magnetic Tunnel Junction

Lyudmila Tikhonova
Siberian Federal Univ., Russia



IUMRS-ICEM 2018

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

ThP75

The Sensitivity Enhancement of Graphene Gas Sensors by Ion Beam Bombardment

Sunmog Yeo, Chanyoung Lee, Dongseok Kim, Yongseok Hwang, Junkyu Park, Myiounghwan Jung, Wonje Jo, Jaesang Lee, and Chorong Kim
KAERI, Korea

ThP76

Simple Process to Fabricate Additive-Free Electrode with Reduce Graphene Oxide by High-Kinetic Spray for Flexible Lithium Ion Batteries

Seong Dae Kim¹, Jong-Gun Lee², Taegun Kim², Kuldeep Rana³, Jong Yeob Jeong¹, Jong Hyeok Park¹, Sam. S Yoon², and Jong-Hyun Ahn¹
¹Yonsei Univ., Korea, ²Korea Univ., Korea, ³Central Power Research Inst., India

ThP77

Flexible MoS₂ Tactile Sensor with Active Matrix Circuitry for Wearable Devices

Yong Ju Park and Jong-Hyun Ahn
Yonsei Univ, Korea

ThP78

Lateral Heterostructure of Graphene Quantum Dots and Hexagonal Boron Nitride

Gwangwoo Kim¹, Jonghyuk Jeon², Kostya S Novoselov³, Byeong-Hyeok Sohn², and Hyeon Suk Shin¹
¹UNIST, Korea, ²Seoul Nat'l Univ., Korea, ³Univ. of Manchester, UK

ThP79

Low-Temperature Growth of Hexagonal Boron Nitride by using Plasma-Enhanced Chemical Vapor Deposition

Seokmo Hong, Kyung Yeol Ma, Seong In Yoon, and Hyeon Suk Shin
UNIST, Korea

ThP80

Mechanical Property of Ultrathin Freestanding Silicon Nano-Membrane using Bulge Tester

Ashwini Ann Davidson and Ahn Jong-Hyun
Yonsei Univ, Korea

ThP81

Rolled-Up Graphene Microtubes and their Strain Analysis

Zhe Ma¹, Ruobing Pan², Yongfeng Mei², and Zengfeng Di¹
¹CAS, China, ²Fudan Univ., China



IUMRS-ICEM 2018

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

ThP82

Polydopamine Assisted Mechanically Reinforcement of Graphene Oxide Fiber from Graphene Oxide Liquid Crystals

Hyun-Tae Hwang, Dongwoo Kang, Seong In Yoon, and Hyeon Suk Shin
UNIST, Korea

ThP83

Experimental Study on Reducing Contact Resistance of Graphene

Libao An, Hong Zhang, Shuai Dong, and Wen Li
North China Univ. of Sci. and Tech., China

ThP84

Graphene-based Conformal Electronics for Epilepsy Electrotherapy

Jejung Kim¹, Sung-Won Park², Sungchil Yang³, Sunggu Yang², and Jong-Hyun Ahn¹
¹Yonsei Univ., Korea, ²Incheon Univ., Korea, ³City Univ. of Hong Kong, China

ThP85

Directly Assembled 3D Molybdenum Disulfide on Silicon Wafer for Efficient Photoelectrochemical Water Reduction

Gangtae Jin^{1,2}, Chang-soo Lee^{1,2}, and Moon-ho Jo^{1,2}
¹POSTECH, Korea, ²IBS, Korea

ThP86

Synthesis of Atomic-Layered, Coupled Superconductor NbS₂-NbSe₂ Heterojunction via Sequential Thermal Vapor Deposition

Kwang Hyun Park¹, Hyoung Kug Kim², Sun-Gyu Park¹, Gangtae Jin², Jun Sung Kim², Tae-Hwan Kim², and Moon-Ho Jo^{1,2}
¹IBS, Korea, ²POSTECH, Korea

ThP87

Patterning of Two-Dimensional Materials for High-Speed Photodetectors

Jung Sang Lee^{1,2}, Jae Hyeon In¹, Hyun Su Ju¹, Sang Sig Kim², and Jeon Kook Lee¹
¹KIST, Korea, ²Korea Univ., Korea

ThP88

Eventual Chemical Transformation of Metals and Chalcogens into Metal Chalcogenide Nanoplates through a Surface Nucleation-Coming Off-Reorganization Mechanism

Gyeongbae Park, Jae Hyun Kim, and Unyong Jeong
POSTECH, Korea



IUMRS-ICEM 2018

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

ThP89

Semiconducting Properties of Doped-Graphene by In-Situ Synthesis at 150 °C

Kyoung-Mun Kim, Min-Woo Nam, Byeong-Ju Park, and Soon-Gil Yoon
Chungnam Nat'l Univ., Korea

ThP90

Graphene-Based Capacitive Temperature Sensor with Heater for Tumor Monitoring and Thermo-therapy

Minpyo Kang and Jong-Hyun Ahn
Yonsei Univ., Korea

ThP91

Self-Powered Stretchable Graphene-based TENG Touch Sensor

Yongjun Lee and Jong Hyun Ahn
Yonsei Univ., Korea

ThP92

Wafer-Scale Homogeneous Growth of Monolayer Tungsten Dichalcogenides using Metal-Organic Chemical Vapor Deposition

Hee Seong Kang and Chul-Ho Lee
Korea Univ., Korea

ThP93

Influences of Molybdenum on MoS₂ Growth via Chemical Vapor Deposition

Healin Im, Jeonghun Kim, Soho Choo, Na Liu, and Sunkook Kim
Sungkyunkwan Univ., Korea

ThP94

Study on the Dielectric Properties of 2-Dmca Nanosheets/Poly(vinylidene fluoride) Nanocomposites

Yumin Goh and Do-Kyun Kwon
Korea Aerospace Univ., Korea

ThP95

Knittable and Wearable Gas Sensors using Reduced Graphene Oxide, Molybdenum Disulfide Covered Carbon Fabrics Decorated with Metal Catalysts for Enhanced Selectivity

Chungwon Lee, Jun Min Suh, and Ho Won Jang
Seoul Nat'l Univ., Korea



IUMRS-ICEM 2018

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

ThP96

Reliable High-Mobility Molybdenum Disulfide Thin Films Deposited by Inhibitor-Utilizing ALD

Woojin Jeon¹, Seong-Jun Jeong², and Ji-Hoon Ahn³

¹Dankook Univ., Korea, ²Soongsil Univ., Korea, ³Korea Maritime and Ocean Univ., Korea

ThP97

The Growth of 2-Dimensional Single Phase SnS₂ by Sulfurization of SnO_x

Jung Joon Pyeon¹, In-Hwan Baek¹, Taek-Mo Chung², Jeong Hwan Han³, Chong-Yun Kang¹, and Seong Keun Kim¹

¹KIST, Korea, ²KRICT, Korea, ³Seoul Nat'l Univ. of Sci. and Tech., Korea

ThP98

Titanium Nitride Thin Films by Plasma Enhanced Atomic Layer Deposition as Bipolar Plate for Proton Exchange Membrane Fuel Cell

WooJae Lee, Eunyong Yun, and Sehun Kwon

Pusan Nat'l Univ., Korea

ThP99

High-Performance Flexible and Transparent Conducting Electrode with Embedded Copper Mesh

Seolhee Han^{1,2}, Ju Young Kim¹, Yejin Jo¹, Beyong-Hwan Ryu¹, Sunho Jeong¹, Jihoon Choi², Youngmin Choi¹, and Su Yeon Lee¹

¹KRICT, Korea, ²Chungnam Nat'l Univ., Korea

ThP100

Fabrication of All-Inkjet-Printed CAP Integrated Ag/PI Hybrid Inductor Coils for Fully Flexible Rx Resonant Inductively Coupled Wireless Power Transfer (ICWPT) Modules

Murali Bissannagari and Jihoon Kim

Kongju Nat'l Univ., Korea

ThP101

Preparation of ZnO Thin Film at Low Temperature by Spin-Spray for Flexible Resistive Random-Access Memory

Cheol Park and Jihoon Kim

Kongju Nat'l Univ., Korea

ThP102

Improvement of Yield Rate of Cobalt-based Powder for Additive Manufacturing by Controlling Gas Atomization Process

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IUMRS-ICEM 2018

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

ThP103

Fabrication of Magnetic Core by Ceramic Free-Forming of NiZn-Ferrite

Taekyu An and Jihoom Kim
Kongju Nat'l Univ., Korea

ThP104

Realization of Highly Flexible Ag-Coil/NiZn-Ferrite Films by AeroJet Dispenser Printing and Laser Annealing for Magnetic Resonant Coupled Wireless Power Transfer

Rajaram Kaveti and Jihoon Kim
Kongju Nat'l Univ., Korea

ThP105

Parametric Study of Selective Laser Melting Process with CoCrMo Alloy Powders

Wan-Tzu Chen¹, Ming-Hua Shiao¹, Jiann-Shiun Kao¹, Chih-Sheng Yu¹, Yi-Chun Chen², Chi-Yun Kuan², Bang-Yen Chou², Ching-Fu Lin², and Chun-Ming Chang¹
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ThP106

Tetrahexcarbon: A 2D Direct Gap Semiconducting Allotrope of Carbon

Ram Babu and Hiroshi Mizuseki
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ThP107

Interfaces of Diamond and Lonsdaleite: Ab Initio Study

Woohyeon Baek¹, Artem Kuklin¹, Kovaleva Evgeniia², and Pavel Avramov¹
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ThP108

Two-Dimensional Lattices of VN: Electronic and Magnetic Properties from First-Principles Calculations

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ThP109

Binding of Lithium Polysulfide with PgCN/C- Separator for The Improved Performance of Lithium-Sulfur Batteries

Deepika - and Kwang-Ryeol Lee
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IUMRS-ICEM 2018

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

ThP110

Intermediates Adsorption Induced Phase Transition on T-phase WS₂ and the Initial Stage of Electrochemical Reduction on Distorted T-Phase WS₂ for Li-Air Batteries

Jungwook Woo, Eun Seob Sim, and Yong-Chae Chung
Hanyang Univ., Korea

ThP111

Optimal Composition of Chalcogenide-based Resistance Switching Materials

Tsz Wai Ko and Nicolas Onofrio
The Hong Kong Polytechnic Univ., China

ThP112

Structural and Dynamic Properties of Melatonin Molecule in Aqueous Solution using Molecular Dynamics Simulation Study

Aksornnarong Ritwiset¹, Michael Smith², Jeffrey Johns³, Sriprajak Kongsuk², and Santi Maensiri²
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ThP113

Influence of Rb/Cs Cation-Exchange on Inorganic Sn Halide Perovskites: From Chemical Structure to Physical Properties

Young-Kwang Jung¹, Jihwan Lee¹, Aron Walsh^{1,2}, and Aloysius Soon¹
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ThP114

Chemical Transformation of Metals and Chalcogens: an Experimental and Theoretical Investigation

Jiwoo Lee¹, Gyeongbae Park², Sungmin Moon², Heeseung Yang¹, Anupam Giri², Junghyeok Kwak², Young-Kwang Jung¹, Unyong Jeong², and Aloysius Soon¹
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ThP115

Exploring Environment-Dependent Shape Evolution in M₂X₃ Nano-Crystallites: a First-Principles Thermodynamics Approach

Jiwoo Lee and Aloysius Soon
Yonsei Univ., Korea

ThP116

Aligning the Band Structures of Polymorphic Molybdenum Oxides and Organic Emitters in Light-Emitting Diodes

Jongmin Yun, Woosun Jang, Taehun Lee, Yonghyuk Lee, and Aloysius Soon
Yonsei Univ., Korea



IUMRS-ICEM 2018

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

ThP117

Ab initio Surface Phase Diagram of Sn/Cu(100): Reconciling Experiments with Theory

Ji-Hwan Lee, Jongmin Yun, Taehun Lee, and Aloysius Soon
Yonsei Univ., Korea

ThP118

Unraveling the Intercalation Chemistry of Hexagonal Tungsten Bronze and its Optical Responses

Yonghyuk Lee, Taehun Lee, Woosun Jang, and Aloysius Soon
Yonsei Univ., Korea

ThP119

Remarkably Low-Energy One-Dimensional Fault Line Defects in Single-Layered Phosphorene

Woosun Jang, Kisung Kang, and Aloysius Soon
Yonsei Univ., Korea

ThP120

Ab Initio Thermodynamics of Surface Oxide Structures under Controlled Growth Conditions

Taehun Lee¹, Younghyuk Lee¹, Simone Piccinin², and Aloysius Soon¹
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ThP121

Systematic Characterization of Metal-Supported Ultrathin Copper Oxide Layers from First-Principles Calculations

Taehun Lee¹, Yonghyuk Lee^{1,2}, Byunghun Lee¹, Krisztián Palotás^{3,4}, and Aloysius Soon¹
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ThP122

Effects of Post-Transition Metal Doping on Atomic and Electronic Structures of Amorphous Ge₂Sb₂Te₅

Dongheon Lee, Gijae Kang, Kyeongpung Lee, and Seungwu Han
Seoul Nat'l Univ., Korea

ThP123

Computational Screening for p-Type Transparent Oxide Semiconductors

Yong Youn, Kanghoon Yim, Miso Lee and Seungwu Han
Seoul Nat'l Univ., Korea



IUMRS-ICEM 2018

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

ThP124

Molecular Dynamics Study on Interface Structure of Vapor-Deposited Organic Thin Film

Dongsun Yoo, Hochul Song, Yong Youn, and Seungwu Han

Seoul Nat'l Univ., Korea

ThP125

Non-Adiabatic Spin-Transfer Torque for Ferromagnetic Domain Wall

Hyeon-Jong Park, Hyewon Go, Jung Hyun Oh, and Kyung-Jin Lee

Korea Univ., Korea

ThP126

Magnetic Skyrmion Motion in the Presence of Defect

Ik-sun Hong and K-J Lee

Korea Univ., Korea

ThP127

Antiferromagnetic Oscillator using Interfacial Spin-Orbit Coupling

Dong-Kyu Lee, Byong-Guk Park, and Kyung-Jin Lee

Korea Univ., Korea

ThP128

Ab Initio Study of Typical III Nitrides Semiconductor Materials

Tiantian Zhou, Guang Zheng and Yuan Tan

Jiangnan Univ., China

ThP129

Microstructure-based Full-Wave Simulation for Powder/Polymer Compositeabsorber

Jinwoo Park, Junghyo Park, Eunkyung Jun, Jiwon Hong, Jungkun Song, Jaeho Choi, and Seungsu Ba

Agency for Defense Development, Korea

ThP130

Influence of Basicity of Glass Frits on Ag Contact and Electrical Properties for Si Solar Cell

Yurian Kim, Dae-Yong Jeong, and Hyungsun Kim

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IUMRS-ICEM 2018

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

ThP131

High Quality Zn(S,O,OH) Thin Film via CBD Treatment

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ThP132

Fabrication of CZTS Absorber Layers by Thermal Co-Evaporation Process

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ThP133

Properties of Cu₂ZnSn(S,se)₄ Thin Film Solar Cells using Passivation Layer

HyeongHo Shin and Jinhyeok Kim

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ThP134

Simulation of the a-Si:H/c-Si Tandem Solar Cells Performance by the Doped nc-Si:H Tunnel Recombination Junction

Sunhwa Lee, Jinjoo Park, Sangho Kim, Youngkuk Kim, Chaehwan Jeong, and Junsin Yi

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ThP135

Study of p-Type Micro Oxide Rear Emitter Engineering for High Efficiency Silicon Heterojunction Cells

Sang Ho Kim, Jinjoo Park, Pham Duy phong, Jonghoon Shin, Sunhwa Lee, Youngkuk Kim, and Junsin Yi

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ThP136

The Bilayer AZO Film Grown by Low-Damage Sputtering for Cu(In,Ga)Se₂ Solar Cell with a CBD-ZnS Buffer Layer

Woo-Jung Lee¹, Dae-Hyung Cho¹, Jae-Hyung Wi¹, Won Seok Han¹, Boo-Kyung Kim², Sang Dae Choi², Ju-Yeoul Baek²,

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ThP137

Parameteric Impedance Spectroscopy on ZnO Single Crystalline Photoanodes vs. by Admittance Spectroscopy on the Bicrystalline Interfaces

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IUMRS-ICEM 2018

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

ThP138

AC Characterization of $\text{Cu}_2\text{ZnSn}(\text{S},\text{Se})_4$ Thin Film Solar Cells

Thi Lan Tran, Hung Tai Nguyen, Dang Thanh Nguyen, Myeng Gil Gang, Jin Hyeok Kim, and Jong-Sook Lee
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ThP139

Interfacial Defect Analysis for Flexible CIGS Thin Film Solar Cells by Deep-Level Transient Spectroscopy

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ThP140

Synthesis and Characterization of the $\text{Cu}_2\text{ZnSn}(\text{S}_x\text{Se}_{1-x})_4$ Thin Film Solar Cell

Myeng Gil Gang and Jin Hyeok Kim
Chonnam Nat'l Univ., Korea

ThP141

Void and Secondary Phase Formation Mechanism in CZTSSe Thin-Film Solar Cells using Sn/Cu/Zn/Mo Metal Stacked Precursor

Se-Yun Kim, Dae-Ho Son, Young-Il Kim, Sang-Ju Lee, Sammi Kim, Kwangseok Ahn, Seunghyun Kim, Dong-Hwan Jeon, Si-Nae Park, Dae-Kue Hwang, Kee-Jeong Yang, Dae-Hwan Kim, and Jin-Kyu Kang
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ThP142

Characterization of Semi-Transparent CIGS Solar Cells with Various Absorber Conditions

Min Jeong Shin, Jae Hoon Jo, Eunseok Jang, Ara Cho, Jae Ho Yun, Jihye Gwak, Kihwan Kim, Seung Kyu Ahn, and Jun Sik Cho
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ThP143

Effect of Recombination Layer Thickness in Chalcopyrite Tandem Solar Cell

Dae-Hyung Cho¹, Jae-Hyung Wi^{1,2}, Won Seok Han¹, Woo-Jung Lee¹, Hye-Jung Yu¹, Chae-Woong Kim³, Chaehwan Jeong³, Jae Ho Yun⁴, Chang-Il Kim², and Yong-Duck Chung^{1,5}
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ThP144

Characterization of Low-Temperature Silicon Nitride Films Produced by PECVD using Novel Plasma Source

Seungchang Lee, Changyun Kim, and Songwhe Herr
SNTEK Co., Korea



IUMRS-ICEM 2018

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

ThP145

ALD of ZrO₂ using CpZr(NMe₂)₃ and H₂O

Sang-Ju Lee, Shi-Joon Sung, Jin-Kyu Kang, and Dae-Hwan Kim
DGIST, Korea

ThP146

The Influence of Window Layer Deposition Conditions on Characteristics of Cuprous Oxide Thin Film Solar Cells

Jae Yu Cho and Jaeyeong Heo
Chonnam Nat'l Univ., Korea

ThP147

TiN-LiAlSiO₄ Composites Activated under Simulated Solar Light

Isaias Juarez Ramirez, Sergio D. Lopez Martinez, and Dwaitt M. Pasillas Aranda
Univ. AUTÓNOMA DE NUEVO LEÓN, Mexico

ThP148

Light Soaking Effect of CIGS Solar Cell with ZnOS Buffer Layer Grown by Solution Method

Hyeon Ji Baek, Yu-jin Song, Ji-A Oh, Da Hee Kim, and Chan-Wook Jeon
Yeungnam Univ., Korea

ThP149

Selenization Behavior of Cu-Zn-Sn Alloys(Pure Metal, Binary System, Ternary System)

Yu-jin Song, Ji-A Oh, Hyeon Ji Baek, Da Hee Kim, and Chan-Wook Jeon
Yeungnam Univ., Korea

ThP150

Device Characterization of High Efficiency Cu₂ZnSn(S,Se)₄ Solar Cell with Different S/(S+Se) Ratios

SeongYeon Kim¹, Tanka R. Rana¹, JunHo Kim¹, Dae-Ho Son², Kee-Jeong Yang², Jin-Kyu Kang², and Dae-Hwan Kim²
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ThP151

Effect of Ge Doping on Cu₂ZnSnSe₄ based Solar Cell

Hyesun Yoo, Jiwon Lee, Gyuhoo Han, SeongYeon Kim, Temujin Enkhbat, and JunHo Kim
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IUMRS-ICEM 2018

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

ThP152

Fabrication of Sputtered CZTSe Solar Cell by using Two-Step Process

Gyuho Han, Jiwon Lee, Hyesun Yoo, Temujin Enkhbat, SeongYeon Kim, and JunHo Kim
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ThP153

Fabrication of CZTSSe Solar Cell with Sputtered (Zn,Sn)O Buffer

Jiwon Lee, Hyesun Yoo, Gyuho Han, SeongYeon Kim, Temujin Enkhbat, and JunHo Kim
Incheon Nat'l Univ. Korea

ThP154

High Efficient $\text{Cu}_2\text{ZnSn}(\text{S}_x\text{Se}_{1-x})_4$ Solar Cells Fabricated by using Chemical Spray Pyrolysis

Temujin Enkhbat, SeongYeon Kim, and JunHo Kim
Incheon Nat'l Univ., Korea

ThP155

Impact of Annealing Temperature on $\text{Cu}_2\text{ZnSn}(\text{S}_x\text{Se}_{1-x})_4$ (CZTSSe)Thin Films Solar Cell

Lee In Jae and Kim Jin Hyeok
Chonnam Nat'l Univ., Korea

ThP156

Effect of Zn Content on Properties of CZTSSe Thin Film Solar Cells on Mo Foil

Eunae Jo and Jinhyeok Kim
Chonnam Nat'l Univ., Korea

ThP157

Effect of Nonstoichiometric SnS Nanocrystals by Mechanochemical Process for Fabrication of Photovoltaic Devices

Bo-In Park^{1,2}, Yoon Hee Jang¹, Hyun Ji Nam¹, Doh-Kwon Lee^{1,3}, and Seung Yong Lee^{1,3}
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ThP158

Studies on the Effects of Sodium Doping on the Electrical Properties of the $\text{Cu}_2\text{ZnSn}(\text{S,Se})_4$ (CZTSSe) Absorber Thin Films Solar Cells

Hongjae Shim and Jinhyeok Kim
Chonnam Nat'l Univ., Korea



IUMRS-ICEM 2018

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

ThP159

Surface Modification of Cu(In,Ga)3Se5(beta-CIGS) Film by Na2S Post Deposition Treatment (PDT) and its Effect on the Device Performance

Huiling Cui, Seung Tae Kim, Ludmila Larina, and Byung Tae Ahn
KAIST, Korea

ThP160

Surface Modification of CIGS Film with a Post Deposition Treatment (PDT) using a KI Solution and its Effect on the CIGS Solar Cell Performance

Jeong Hyun Lee, Nikolai Tsvetkov, Liudmila Larina, and Byung Tae Ahn
KAIST, Korea

ThP161

Improvement of Cu(In,Ga)Se2 Cell Performance by Controlling the Ga distribution in the CIGS Film Prepared from CuGa/In:Se Precursor for Large-Area Production Technology

Sun Hong Moon, Seung Tae Kim, and Byung Tae Ahn
KAIST, Korea

ThP162

Unexpectedly High Energy Density of a Li-Ion Battery by Oxygen Redox in LiNiO₂ Cathode: First-Principles Study

Daehyeon Choi, Joonhee Kang, and Byungchan Han
Yonsei Univ., Korea

ThP163

Effect of Alkali-Site Substitution of Non-Transition Metal on Na_x[Fe_{0.5}Mn_{0.5}]O₂ as Cathode Material for Sodium Ion Batteries

Ji Eun Wang¹, Young Hwa Jung², Woo Hyun Han¹, Kee Joo Chang¹, and Do Kyung Kim¹
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ThP164

Suppressing Polysulfide Dissolution by Interwoven Carbon Nanofibers for High-Areal-Capacity Li-S

Jong Hyuk Yun¹, Joo-Hyung Kim¹, Hyun-Wook Lee², and Do Kyung Kim¹
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ThP165

Aqueous Rechargeable Sodium/Nickel Battery with High Energy Density and Good Cycling Performance

Seungyoung Park, Youngsik Kim, and Hyunhyub Ko
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IUMRS-ICEM 2018

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

ThP166

Metal Oxyhydroxide Composite for Rechargeable Aqueous Zn-Ion Battery Application

Andy Tirta, Insan Akbar Alamsyah, and Muhammad Hilmy Alfaruqi
Sumbawa Univ. of Tech., Indonesia

ThP167

Effects of the Catholyte pH And Flow on The Cell Performance of Hybrid Na-Air Batteries

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ThP168

Graphene Sheets as a Efficient Host for Stable Metallic Lithium Anodes

Brindha Moorthy¹, Joo Hyung Kim¹, Hyun Wook Lee², and Do Kyung Kim¹
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ThP169

Facile Synthesis of Hierarchical 3D Porous Nickel Sulfate/Mxene Composite as Advanced Electrode for High Performance Supercapacitor with High Volumetric Energy Density

Qixun Xia¹, N. M. Shinde¹, Rajaram S. Mane¹, Je Moon Yun¹, and Kwang Ho Kim¹
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ThP170

Metal Oxide Decorated Porous Carbon Nanofiber for High-Performance Energy Storage

Dong-Yo Shin, Bon-Ryul Koo, and Hyo-Jin Ahn
Seoul Nat'l Univ. of Sci. and Tech., Korea

ThP171

Facile Synthesis of Bi₂O₃-MnO₂ Supercapattery-Type Electrode for Synergetic Energy Storage Applications

Saurabh Singh, Kwang Ho Kim, Nanasaheb M. Shinde, Rakesh Kumar Sahoo, Je Moon Yun, and Rajaram S. Mane
Pusan Nat'l Univ., Korea

ThP172

Mixed-Ionic-Electronic Conduction of NASICON Na₃V₂(PO₄)₃ Cathode Material for Sodium Ion Batteries

Tran Thi Huyen Tran, Thuy Linh Pham, Sohyun Park, Jinju Song, Won Bin Im, Jaekook Kim, and Jong-Sook Lee
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IUMRS-ICEM 2018

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

ThP173

Electrical Transport Characteristics of $\text{Li}_3\text{V}_2(\text{PO}_4)_3$ Cathode Material

Tran Thi Huyen Tran, Sohyun Park, Jaekook Kim, and Jong-Sook Lee
Chonnam Nat'l Univ., Korea

ThP174

Applications of Transmission Line Impedance Models in Lithium Ion Batteries

Thuy Linh Pham¹, Tran Thi Huyen Tran¹, Eui-Chol Shin², Jaekook Kim¹, and Jong-Sook Lee¹
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ThP175

The Effect of the Different Types of Separators for Rechargeable Zinc Air Battery

Chanmin Lee¹, Ho Jung Hwang¹, Ohchan Kwon¹, Yong-Gun Shul¹, and Joo-II Park²
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ThP176

High-Rate Performance ZIBs in Custom Geometries for Shape-Conformal Integration of Wearable Electronics

Chanhoon Kim¹, Bok Yeop Ahn², Wontae Whang¹, Yejin Jo³, Sungmook Jeong³, Sunho Jeong³, Youngmin Choi³, Jennifer Lewis², and Il-Doo Kim¹
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ThP177

Si/C Nanocomposite Anode Materials Prepared by High-Energy Mechanical Milling for Lithium-Ion Secondary Batteries

Reddyprakash Maddipatla, Chadraseskhar Loka, Woo Jeong, Young Woong, and Kee-Sun Lee
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ThP178

Synthesis and Electrochemical Properties of Zn-Doped MnCo_2O_4 Nanoparticles

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ThP179

Synthesis of $\text{C-Sb}_2\text{S}_3$ with the Optimal Size of Dopant for High Performance Anode of Pseudocapacitors.

Seongwoo Jeong
Pusan Nat'l Univ., Korea



IUMRS-ICEM 2018

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

ThP180

Atomic Force Microscopy for Understanding Surface Film Formation on a Si Electrode in Lithium Secondary Batteries

Soon-Ki Jeong and Sung-Soo Kim
Soonchunhyang Univ., Korea

ThP181

Facile Synthesis of Co/Mnco-Incorporated Carbon Nanofibers as Electrocatalysts for Enhanced Oxygen Reduction Reaction

Jun Young Cheong¹, Ki Ro Yoon², Su-Ho Cho¹, Seok Won Song¹, and Il-Doo Kim¹
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ThP182

NiSb Alloy Nanoparticles Anchored in 3D Carbon Nanosheet Networks with Super Performance as Lithium-Ion Battery Anodes

Litao Yu, Liguozhang, Jianjian Fu, and Kwang Ho Kim
Pusan Nat'l Univ., Korea

ThP183

High-Performance Li₄Ti₅O₁₂ Thin Film Anode for All-Solid-State Lithium Batteries

Chengfan Xiao and Hyun-Suk Kim
Chungnam Nat'l Univ., Korea

ThP184

Uniform Amorphous FePO₄ Nanospheres as Cathode for Sodium Ion Batteries

Liguozhang, Litao Yu, Jianjian Fu, and Kwang Ho Kim
Pusan Nat'l Univ., Korea

ThP185

Fe, N-Codoped Hollow Carbon Nanofibers as ORR Electrocatalysts for Zinc-Air Batteries

Su-ho Cho, Ki Ro Yoon, Ji-Won Jung, Chanhoon Kim, Jun Young Cheong, Doo-Young Youn, Hye-Yeon Jang, Seok-Won Song, and Il-Doo Kim
KAIST, Korea

ThP186

Improving Electrochemical Behavior of Lithium Sulfur Battery Coating the Polythiophene through Vapor Phase Polymerization Method

Sung Ho Cho and Young Yoon Woo
Korea Univ., Korea



IUMRS-ICEM 2018

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

ThP187

Well-Developed Porous Carbon Derived Ginkgo Leaves for Electric Double-Layer Capacitors

Dasol Jeong and Kwang-ho Kim
Pusan Nat'l Univ., Korea

ThP188

Correlation Analysis between Surface and Electrical Properties of Ni-Material Array and Urea Content as Positive Electrode for High-Performance Supercapacitors

Damin Lee and Kwang Ho Kim
Pusan Nat'l Univ., Korea

ThP189

A Study on the Recovery of Valuable Materials from Cathodic Electrode of Spent Lithium Ion Battery

Jei Pil Wang¹, Shun Myung Shin², Sung Ho Joo², and Dong Ju Shin²
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ThP190

Energy Storage Properties of Nano-Crystalline $\text{Bi}_{1.5}\text{ZnNb}_{1.5}\text{O}_7$ Thick Films Fabricated on Flexible Metal Foil

Jin-Woo Kim¹, Ji-Ho Lim¹, Seung-Hyun Kim², Chang Young Koo³, SeungHee Lee¹, Dae-Yong Jeong¹, and Jungho Ryu⁴
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ThP191

Mechanistic Investigation of Water Oxidation Catalyzed by Partially Oxidized MnO Nanoparticles

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ThP192

CoSe Coated on p-Si as an Efficient Photocathode for Photoelectrochemical Hydrogen Production

Byeolee Moon, Jude John, Tae-Yong An, Dong-Kyu Lee, and Uk Sim
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ThP193

Design and Synthesis of Cu Binary Alloys for Electrochemical CO_2 Conversion

Ki Tae Nam, Jun Ho Jang, Ki Dong Yang, and Sang Won Im
Seoul Nat'l Univ., Korea



IUMRS-ICEM 2018

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

ThP194

Enhanced Solar Photoelectrochemical Water Splitting using Mo:BiVO₄/WO₃

Jae Ryeol Jeong and Min Hyung Lee
Kyung Hee Univ., Korea

ThP195

Water Oxidation Catalytic Properties of Mn-Ni Layered Double Hydroxides

Jae Kyeom Kim and Min Hyung Lee
Kyung Hee Univ., Korea

ThP196

Morphology-Controlled Cu Nanorods and its Effect on CO₂ Reduction Products

Dang Tru Nguyen and Min Huyng Lee
Kyung Hee Univ., Korea

ThP197

Highly Efficient Mo₂C Hydrogen Production Catalysts by Heteroatom Incorporation

Tae-Yong An¹, Jude John¹, Byeolee Moon¹, Dong Kyu Lee¹, Sang Min Ha², Hye-Mi Jo³, and Uk Sim¹
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ThP198

Long-Time Oxidation of Ti₃(Al,Si)C₂ Carbides at 400 and 800°C

Dong Bok Lee
Sungkyunkwan Univ., Korea

ThP199

Phase Change and Physical Properties of Fe²⁺, Fe³⁺, Er³⁺ for 3 mol% -Zirconia according to Additive Variables

Ji Cheol Byen, Seung Min Park, Yoon Ho Kim, Hyun Chul Lee, and Taik Nam Kim
PaiChai Univ., Korea

ThP200

Modified Analytical Model for Predicting Growth Kinetics of Protective MoSi₂ Layer on the Mo-Si-B System

Kwangsu Choi¹, Kyungho Baek², Seong Lee³, and Joon Sik Park¹
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IUMRS-ICEM 2018

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

ThP201

The Effect of Boron on Formation of Coating Layers in Mo-Si-B Alloys during Si Pack Cementation Coatings

Kwangsu Choi¹, Wonchul Yang¹, Sunjin Kim¹, Jihyeon Jeong¹, Min Kyu Kim¹, Jong Won Lee¹, Kyungho Baek², Seong Lee³, and Joon Sik Park¹

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ThP202

Understanding the Properties of Poly-Para-Phenylene from First-Principles

Yunfei Fu, Tiantian Zhou, Yu Fu, Zhipeng Mao, Di Zhou, Xiaolong Zhu, Yu Tian, and Guang Zheng
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ThP203

Development and Characterization of Poly(Lactic Acid) and Poly(Butylene Succinate) Electrospun Fibers Face Mask Material with Zinc Oxide

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ThP204

Effect of 93% Fe₂O₃ Cotent Waste Iron on Physical, Mechanical and Micro-Structure Properties of Ceramic Tiles

Sonjida Mustaf
BCSIR, Bangladesh

ThP205

Developing a Solid Colorimetric Sensor based on Rhodamine-Derivative-Modified Cellulose Acetate: Selectivity and Sensitivity toward Cu²⁺ Ions

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ThP206

Tantalum Carbide Powder Carburized by Vacuum-Evaporated Activated-Carbon of Magnesiothermic Reduced Metallic Tantalum Powder

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ThP207

High Surface Area and Ultralight Aerogels from Anisotropic Nanomaterials

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IUMRS-ICEM 2018

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

ThP208

Spin Density Wave and Unconventional Magnetic and Thermal Transport Properties in $Sr_{2-x}(PbCl_2)_xCu(BO_3)_2$ Compounds

Bora Won, Dianta Ginting, and Jong-Soo Rhyee
Kyung Hee Univ., Korea

ThP209

Effect of Low-Temperature Annealing on the Mechanical Properties of Manganese Steel

Dwi Ayu Nurcahyaningsih and Nokeun Park
Yeungnam Univ., Korea

ThP210

Investigation of Various Manganese Steels about the Mechanical Properties for Bearing Steel Application

Dwi Ayu Nurcahyaningsih and Nokeun Park
Yeungnam Univ., Korea

ThP211

Optical and Mechanical Properties of Y_2O_3 -MgO Nanocomposites Fabricated by Spark Plasma Sintering

Seok-Min Yong, Doo Hyun Choi, Kisu Lee, Seok-Young Ko, and Dong-Ik Cheong
Agency for Defense Development, Korea

ThP212

Strain Hardening Behavior of $(CoCrMnNi)_{50}Fe_{50}$ Medium Entropy Alloy

Ibrahim Ondicho and Nokeun Park
Yeungnam Univ., Korea

ThP213

Effect of Different Types of Fluxing Agent on the Development of Mechanical Properties of Fired Clay Ceramic

Umme Sarmeen Akhtar and Md. Sagirul Islam
BCSIR, Bangladesh

ThP214

Investigation on Thermal Conductive And Mechanical Properties of Pressureless Sintered Silicon Nitride Ceramics

Jung Hoon Kong, Wook Ki Jung, Ho Jin Ma, and Do Kyung Kim
KAIST, Korea



IUMRS-ICEM 2018

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

ThP215

Effect of Processing Variables on The Mechanical And Dielectric Properties of Silica-based Ceramic Matrix Composites

Lee Seung Jun, Yong Seok-Min, Ko Seok-Young, and Baek Seungsu
Agency for Defense Development, Korea

ThP216

Vertically Grown BaTiO₃ Nanotube Arrays for Piezoelectric Energy Harvester

Hyeonbin Park, Dong Yeol Hyeon, and Kwi-Il Park
Gyeongnam Nat'l Univ. of Sci. and Tech., Korea

ThP217

Chromium Removal by Polyethylenimine(PEI)-SiO₂ Nanoparticles

JinHyeong Lee, Jin Ock Park, HyoBin Nam, So-hye Cho, Jae-Woo Choi, and Seung Yong Lee
KIST, Korea

ThP218

Numerical Analysis of Complex Dielectric Properties on Ceramic-Matrix Composite

Jinwoo Park, Seungjun Lee, Sukmin Yong, Jungkun Song, and Seungsu Ba다
Agency for Defense Development, Korea

ThP219

Characterization of Microstructure and Tensile Property of Al-Mg-Mn Alloys Containing a Trace of Ca

Seong-Ho Ha¹, Won-Min Do¹, Shah Abdul Wahid¹, Bong-Hwan Kim¹, Young-Ok Yoon¹, Shae K. Kim¹, and Se-Joon Hwang²

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ThP220

Effect of Transition Elements based Silicides on Microstructure and Tensile Properties of Al-Si-(Mg) Alloys

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ThP221

Influences of Sn And Cu Additions on Microstructure and Tensile Property of Al-Mg-(Si) Alloys

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IUMRS-ICEM 2018

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

ThP222

Combined Effects of Zr and Ca on Microstructure And Tensile Property of Al-Mg Alloys

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ThP223

Effect of Grain Size on The Mechanical Properties And Phase Transformation in Ti-10V-2Fe-3Al Beta Titanium

Min Ku Choi and Nokeun Park

Yeungnam Univ., Korea

ThP224

Transformed-Induced Plasticity (TRIP) Phenomenon in Medium-Entropy Alloy

Eka Bobby Saputra and Nokeun Park

Yeungnam Univ., Korea

ThP225

Effect of Aluminum Addition on The Microstructure and Mechanical Properties of CoCrNi-Medium Entropy Alloy

Maya Putri Agustianingrum and Park Nokeun

Yeungnam Univ., Korea

ThP226

Effect of Fineaustenite on Corrosion Behavior of Super Duplex Stainless Steel UNS S 32750

Byung-Hyun Shin¹, Taemin Cha², Myungwon Hwang¹, and Wonsub Chung¹

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ThP227

Effect of Austenite Morphology on Electrochemical Properties and Mechanical Properties of Superduplex Stainless Steel UNS S 32750

Byung-Hyun Shin¹, Taemin Cha², Dohyung Kim¹, and Wonsub Chung¹

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ThP228

Rapid Thermal Annealing Effects on Structural, Optical and Electrical Properties of Au/CuPc/n-Si Schottky Diode

Reddi Sekhar Reddy Pothala¹, Janardhanam V¹, Jyothi I¹, Shim-hoon YuK¹, Rajagopal Reddy V², and Chel-Jong Choi¹

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IUMRS-ICEM 2018

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

ThP229

Formulation and Evaluation of Aqueous Glass-Ceramic Ink for Digital Ink-Jet Printing

Jongwoo Kwon^{1,2}, Jongheun Lee², Kwangtaek Hwang¹, Jinho Kim¹, and Kyusung Han¹
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ThP230

Ferroelectric Properties of PZT based Composite Film Fabricated by Aerosol Deposition Method

Dong Kyun Kang¹, Han Bo Jung¹, Jin Woo Kim¹, Ji Ho Lim¹, Chun Kil Park¹, Mahesh Peddigari², Jung Ho Ryu³, and Dae Yong Jeong¹
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ThP231

Synthesis and Characterization of a Light Curing Al₂O₃ Suspension

Kuk Hyeon Ryu^{1,2}, Ungsoo Kim², Woo Seok Cho², and Jong Heun Lee¹
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ThP232

Electrical Conduction in Hot-Pressed BiFeO₃-PVDF Composite Films

Baljinder Kaur^{1,2}, Lakhbir Singh^{1,2}, Tarun Garg^{1,2}, Navneet Dabra³, and Jasbir Singh Hundal¹
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ThP233

Fabrication and Analysis of C/SiC Composites by CVI-PIP Process using CFD Simulation

Kyeongmi Kim^{1,2}, kyoon Choi¹, and Jong Heun Lee²
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ThP234

Preparation and Properties of Silicon-Backbone based Inorganic Binders for Ceramic Wool Insulation Applications

Hyunseok Ko and Hyung Mi Lim
KICET, Korea

ThP235

Fabrication of Dense C/SiC Composites by SiC Slurry and Liquid Silicon Infiltrations

Young-Seok Jeong^{1,2}, Kyoon Choi¹, and Ho Gyu Yoon²
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IUMRS-ICEM 2018

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

ThP236

Epitaxial Growth of ZnSnN₂ Films on (0001) Al₂O₃ Substrates by using a ZnO Buffer

Duc (Duy) Le, Trong (Si) Ngo, Jeongkuk Lee, and Soon-Ku Hong
Chungnam Nat'l Univ., Korea

ThP237

Effects of Growth Temperature on Structural Characteristics of Ga₂O₃ Films Grown on a-plane Sapphire Substrates by Plasma-Assisted Molecular Beam Epitaxy

Si Trong Ngo, Duy Duc Le, Jeongkuk Lee, and Soon-Ku Hong
Chungnam Nat'l Univ., Korea

ThP238

Effect of Various Sizing Conditions on the Properties of Ceramic Fiber Reinforced Epoxy Composite

So Youn Mun, Doojin Lee, and Hyung Mi Lim
KICET, Korea

ThP239

Correlation between Oxidation Resistance and Graphitization Effect in Grey Cast Iron Containing Al

Dong-Hyuk Kim¹, Jong-Hyoung Kim¹, Si-Geun Choi¹, and Byung-Joon Ye²
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ThP240

Effect of CeO₂ Addition and Mol Change of TZP on Characteristics of ZrO₂

Jihun Chae¹, Junwoo Park², Bolang Kim³, Bumrae Cho², and Jian Hou²
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ThP241

Reduced Graphene Oxide(rGO) Patterning by Selective Deposition of Electrostatic Spray Fabrication

Hoi Sub Shin and Do-Kyun Kwon
Korea Aerospace Univ., Korea

ThP242

Photocatalytic Degradation of Volatile Organic Compounds via the Composite of Silver Nanoparticle Anchored Porous Semiconductors with Wide Band Gap

Hyunseoung Jo, Hyun Jeong Bae, and Do-Kyun Kwon
Korea Aerospace Univ., Korea



IUMRS-ICEM 2018

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

ThP243

Shape and Size Control in Synthesis of Magnesium Carbonate using $Mg(OH)_2$ Originated from Seawater

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ThP244

Preparation and Characterization of Solvothermal Treated Silica Nanofluids

Choi Im Joo¹, Jung Dae Soo¹, Ahn Hyo Jun², and Lim Hyung Mi¹
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ThP245

Sintering Properties of 3Y-ZrO₂ Synthesized by Forced Hydrolysis / Co-Precipitation Method

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ThP246

Effect of Thermal Oxidation on the Joining Strength of Carbon Fiber Reinforced Plastic to AZ31 Mg Alloy by Laser Joining Technique

Andrews Nsiah Ashong¹, Jeoung Han Kim², Barton Mensah Arkhurst¹, Jae Bok Seol³, and Mok-Young lee⁴
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ThP247

Study and Characterization of Multilayered Organic Devices for Field-Effect Transistors

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ThP248

Porous Core-Shell Fe₃O₄/SnO₂ Nanocomposites as High-Performance Microwave Absorbers

Rambabu Kuchi, Viet Dongquoc, Phuoc Cao Van, Srivathsava Surabhi, Jihoon Choi, and Jong-Ryul Jeong
Chungnam Nat'l Univ., Korea

ThP249

Microstructure Analysis of Ti-Al-X Nano-Multilayer Thin Film using Electron Back Scatter Diffraction

Yoon Kee Kim¹, Hayoung Rue¹, and Kyoung Il Moon²
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ThP250

Effect of UV Irradiation Conditions on Conductivity of Solution-Processed Zinc Oxide Film

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IUMRS-ICEM 2018

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

ThP251

Rectifying Characteristics of Thermally-Treated Mo-SiC Schottky Contact

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ThP252

A Combined FDTD and FEM Method to Precisely Determine the Temperature Gradients in Laser-Irradiated Ultrathin Magnetic Layers for the Analysis of Thermal Generation of Spin Current

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ThP253

Influence of Functional Groups and Altering the Metalunits on the MOFs Properties; a Review

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ThP254

Morphological Mapping and Magnetically Driven Robust Polarization in (1-x)BiFeO₃-xPbTiO₃ Multiferroics

Shahid Atiq, M Sufyan, S Kumail Abbas, Saira Riaz, and Shahzad Naseem
Univ. of the Punjab, Pakistan

ThP255

Modification on the ABS resin by Acidic Ozonated Fine Bubble Water

Yuki Nakabayashi, Shun Tsuzino, Yasushi Umeda, Katsuhiko Tashiro, Hideo Honma, and Hiroaki Kouzai
Kanto-gakuin Univ., Japan

ThP256

Crystal Structure Control of Electroless Gold plating using a Tiopronin-Aucomplex Bath

YOHEI SUZUKI, CHRISTPHER E.J. CORDONIER, JOO-HYONG NOH, HIDEO HONMA, and OSAMU TAKAI
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ThP257

A Study on Properties of AR-Glass Fibers Produced using Refused Coal Ore in Continues Fiber Spinning Conditions

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