



**The 2019 EITA Conference on New Materials,  
Nanotechnology, Healthcare, New Energy and  
Sustainable Smart Manufacturing  
(EITA-New Materials 2019)**

**"Recent Research Advances in New Materials,  
Nanotechnology, Healthcare, New Energy and  
Sustainable Smart Manufacturing: Challenges,  
Opportunities and Future Directions"**

**National Chiao-Tung University  
Hsinchu, Republic of China (Taiwan)**

**Wednesday-Thursday, September 11 and 12, 2019**

## **Program**

**(Draft as of 9/9/19)**

***Day 1 (Wednesday, September 11, 2019)***

**9/11 (Wed) 9:00 am - 5:00 pm: Registration**

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**9/11 (Wed) 9:30 am - 9:50 am: Opening Session**

**Chairs:**

**Dr. Fang-Chung Chen (陳方中)**, Professor and Deputy Director, Department of Photonics,  
National Chiao-Tung University

**Dr. Tsung Sheng Kao (高宗聖)**, Assistant Professor, Department of Photonics, National Chiao-  
Tung University

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**Welcome Remarks:**

**Dr. Edward Yi Chang (張翼)**

Senior Vice President  
National Chiao-Tung University

**9/11 (Wed) 9:50 am - 10:40 am: Plenary Session (I):**

**Chair: Dr. Tien-Chang Lu (盧廷昌)**, Chairman of Tin Ka Ping Photonic Center, National Chiao-  
Tung University

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**Plenary Speaker:**

“New frontiers of GaN optoelectronic research”

**Dr. Jung Han**

William Norton Professor in Technological Innovation  
Professor, Department of Electrical Engineering  
Yale University

**9/11 (Wed) 10:40 am - 10:50 am: Break**

**9/11 (Wed) 10:50 am – 11:40 am: Plenary Session (II):**

**Chair: Dr. Fang-Chung Chen (陳方中)**, Professor and Deputy Director, Department of Photonics, National Chiao-Tung University

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**Plenary Speaker:**

“Nanoscale interface engendering for functional hetero-junction”

**Dr. Kazuhito Tsukagoshi (塚越 一仁)**

Group Leader of Pi-electron electronics group  
Principle Investigator, WPI-MANA, NIMS

**9/11 (Wed) 11:40 am – 1:00 pm: Student Poster Competition: Presentations**

**Chair: Dr. Fang-Chung Chen (陳方中)**, Professor and Deputy Director, Department of Photonics, National Chiao-Tung University

**Co-chair: Dr. Tsung Sheng Kao (高宗聖)**, Assistant Professor, Department of Photonics, National Chiao-Tung University

**Room:** CPT Building 1F (交映樓1F)

**9/11 (Wed) 11:40 am - 1:00 pm: Lunch**

**Parallel Sessions:**

**9/11 (Wed) 1:00 pm – 2:30 pm: Technical Session D1-W1-T1:Emerging Technologies and Applications in Materials for Healthcare and Medicine: Bio-Materials, Bio-SoC, Bio-Nanotech, Bio-NEMS/Bio-MEMS, Biomedical Optics and Imaging, Biomedical Engineering and Systems, Biomedical Informatics, Mobile Health, Virtual Reality (VR) in Healthcare**

**Chair: Dr. Chi-Kuang Sun (孫啟光)**, Life Distinguished Professor, Graduate Institute of Photonics and Optoelectronics and Chief Director, Molecular Imaging Center, National Taiwan University

**Room:** Conference Hall, CPT Building 1F

“Mining Perturbed Gene Expression Patterns for Drug Discovery”

**Dr. Hsuan-Cheng Huang (黃宣誠)**

Director and Professor, Institute of Biomedical Informatics  
National Yang Ming University

“Design and Implementation of Wearable Eye Tracker”

**Dr. Chih-Peng Fan (范志鵬)**

Professor, Department of Electrical Engineering  
National Chung Hsing University

**Dr. Chih-Ting Lin (林致廷)**

Associate Professor, Department of Electrical Engineering  
National Taiwan University

**9/11 (Wed) 1:00 pm – 2:30 pm: Technical Session D1-W2-T1: Emerging Technologies and Applications in Electronic, Photonic, and Magnetic Materials, Ceramic Materials, Metallurgy and Materials, Organic Polymer, Soft Materials, and Computational Materials**

**Chair:** Dr. Chih-Wei Chu (朱治偉), Deputy Director and Research Fellow, Research Center for Applied Sciences, Academia Sinica

**Room:** R201, CPT Building

“Exquisite Ge/Si/O interactions enabled self-organized heterostructures of Ge nanodot/SiO<sub>2</sub>/SiGe-recess channel for Si electronic/photonic integrated circuits”

**Dr. Pei-Wen Li (李佩雯)**

Professor, Institute of Electronics  
Director, Nano Facility Center  
National Chiao Tung University

“Contact Engineering for 2D Field-effect Transistors”

**Dr. Po-Wen Chiu (邱博文)**

Professor, Department of Electrical Engineering  
Director, Center for Nanotechnology, Materials Science, and Microsystem  
National Tsing Hua University

“P-Channel SnO TFTs for Oxide-Semiconductor-Based CMOS Technology”

**Dr. I-Chun Cheng (陳奕君)**

Professor, Department of Electrical Engineering & Graduate Institute of Photonics and Optoelectronics  
National Taiwan University

**9/11 (Wed) 1:00 pm – 2:30 pm: Technical Session D1-W3-T1: Emerging Technologies and Applications in New Energy Materials and Devices, Perovskite, Power Electronics, Smart Energy Systems and Technologies (SEST), Smart Homes, Smart Buildings, and Smart Communities, Energy Storage and Utilization, Clean/Intelligent Vehicle Technologies, and Artificial Intelligence (AI) Applications in New Materials and Energy**

**Chair:** Dr. Jia-Min Shieh (謝嘉民), Deputy Director General, Taiwan Semiconductor Research Institute (TSRI)

**Room:** R202, CPT Building

“ZnO-based Hybrid-structures for Optoelectronic and Sensing Devices”

**Dr. Bohr-Ran Huang (黃柏仁)**

Distinguished Professor, Graduate Institute of Electro-Optical Engineering and Department of Electronic Engineering  
National Taiwan University of Science and Technology

“A Concept of applying the surface defect band from MoS<sub>2</sub> 2D nanoribbons for photon ratchet intermediate band solar cells”

**Dr. Yuh-Renn Wu (吳育任)**

Professor, Institute of Photonics and Optoelectronics and  
Department of Electrical Engineering  
National Taiwan University

“Asymmetric Thermo-electrochemical Cell for Low-Grade-Heat-to-Electricity Conversion”

**Dr. Shien-Ping Feng (馮憲平)**

Associate Professor, Department of Mechanical Engineering  
The University of Hong Kong

**9/11 (Wed) 1:00 pm – 2:30 pm: Technical Session D1-W4-T1: Smart Tools and Smart Services, Smart Machines, and Sustainable Smart Manufacturing for the Future: Vision, Strategies, and Implementation (Big Data and Intelligence, Advanced Sensors, Autonomous Robots, Robotic Process Automation, Smart Machines (Devices), Simulation, Horizontal and Vertical System Integration, Smart Cities, Smart Supply Chain Management and Logistics 4.0, 5G Wireless Mobile Technology, Internet of Things (IoT), Cyber-Physical Systems, Cybersecurity, Additive and Advanced Manufacturing, Digital Manufacturing, Augmented Reality and Cloud Technologies)**

**Chair: Dr. Liang-Chia Chen (陳亮嘉)**, Distinguished Professor, Department of Mechanical Engineering, National Taiwan University

**Room:** R203, CPT Building

“Quality Control Problems in Three-dimensional Printing-based Mass Production”

**Dr. Tin-Chih Toly Chen (陳亭志)**

Distinguished Professor, Department of Industrial Engineering and Management  
National Chiao Tung University

**Dr. Chun-Yeon Lin (林峻永)**

Assistant Professor, Department of Mechanical Engineering  
National Taiwan University

**9/11 (Wed) 2:30 pm - 2:40 pm: Break**

**Parallel Sessions:**

**9/11 (Wed) 2:40 pm – 4:20 pm: Technical Session D1-W1-T2: Emerging Technologies and Applications in Materials for Healthcare and Medicine: Bio-Materials, Bio-SoC, Bio-Nanotech, Bio-NEMS/Bio-MEMS, Biomedical Optics and Imaging, Biomedical Engineering and Systems, Biomedical Informatics, Mobile Health, Virtual Reality (VR) in Healthcare**

**Chair: Dr. Hsueh-Fen Juan (阮雪芬)**, Professor, Department of Life Science; Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University

**Room:** Conference Hall, CPT Building 1F

**Dr. Chi-Kuang Sun (孫啟光)**

Life Distinguished Professor, Graduate Institute of Photonics and Optoelectronics and  
Chief Director, Molecular Imaging Center  
National Taiwan University

“Ultrafast Ultrasound Imaging of the Heart”

**Dr. Wei-Ning Lee (李維寧)**

Associate Professor, Department of Electrical and Electronic Engineering  
The University of Hong Kong

**9/11 (Wed) 2:40 pm – 4:10 pm: Technical Session D1-W2-T2: Emerging Technologies and Applications in Electronic, Photonic, and Magnetic Materials, Ceramic Materials, Metallurgy and Materials, Organic Polymer, Soft Materials, and Computational Materials**

**Chair: Dr. Pei-Wen Li (李佩雯)**, Professor, Institute of Electronics, Director, Nano Facility Center, National Chiao Tung University

**Room:** R201, CPT Building

“An Inkjet Printing Technique for the Fabrication of Scalable Flexible Microsystems”

**Dr. Yu-Ting Cheng (鄭裕庭)**

Professor, Department of Electronics Engineering  
National Chiao Tung University

“Efficiency Enhancement and Lifetime Elongation of Blue Organic Light-emitting Diodes”

**Dr. Jiun-Haw Lee (李君浩) and Dr. Tien-Lung Chiu (邱天隆)**

Professor, Graduate Institute of Photonics and Optoelectronics  
National Taiwan University

“Non-Destructive Metrology Technology in PV Industry”

**Dr. Shih-Hung Lin (林士弘)**

Associate Professor, Department of Electrical Engineering  
TungHai University

**9/11 (Wed) 2:40 pm – 4:10 pm: Technical Session D1-W3-T2: Emerging Technologies and Applications in New Energy Materials and Devices, Perovskite, Power Electronics, Smart Energy Systems and Technologies (SEST), Smart Homes, Smart Buildings, and Smart Communities, Energy Storage and Utilization, Clean/Intelligent Vehicle Technologies, and Artificial Intelligence (AI) Applications in New Materials and Energy**

**Chair: Dr. Bohr-Ran Huang (黃柏仁)**, Distinguished Professor, Graduate Institute of Electro-Optical Engineering and Department of Electronic Engineering, National Taiwan University of Science and Technology

**Room:** R202, CPT Building

**Dr. Jin-shyr Yang (楊金石)**

Deputy General Manager  
Taiwan Power Research Institute

**Dr. Ming-Yuan Cho (卓明遠)**

Professor, Department of Electrical Engineering,  
National Kaohsiung University of Applied Sciences

**Dr. Yu-Ting Wu (吳毓庭)**

Assistant Professor, Department of Engineering Science  
National Cheng Kung University

**9/11 (Wed) 2:40 pm – 4:10 pm: Technical Session D1-W4-T2: Smart Tools and Smart Services, Smart Machines, and Sustainable Smart Manufacturing for the Future: Vision, Strategies, and Implementation (Big Data and Intelligence, Advanced Sensors, Autonomous Robots, Robotic Process Automation, Smart Machines (Devices), Simulation, Horizontal and Vertical System Integration, Smart Cities, Smart Supply Chain Management and Logistics 4.0, 5G Wireless Mobile Technology, Internet of Things (IoT), Cyber-Physical Systems, Cybersecurity, Additive and Advanced Manufacturing, Digital Manufacturing, Augmented Reality and Cloud Technologies)**

**Chair:** Dr. Liang-Chia Chen (陳亮嘉), Distinguished Professor, Department of Mechanical Engineering, National Taiwan University

**Room:** R203, CPT Building

**Dr. Yung-Hui Li (栗永徽)**

Associate Professor, Department of Computer Science and Information Engineering  
National Central University

"Digital Fusion and Smart City"

**Mr. Yonathan Joe (李金輝)**

Research Fellow, The Center for IoT Innovation  
National Taiwan University of Science and Technology

**Dr. Shuo-Yan Chou (周碩彥)**

Distinguished Professor, Department of Industrial Management  
National Taiwan University of Science and Technology

**9/11 (Wed) 4:10 pm – 4:20 pm: Break**

**Parallel Sessions:**

**9/11 (Wed) 4:20 pm – 5:50 pm: Technical Session D1-W1-T3: Emerging Technologies and Applications in Materials for Healthcare and Medicine: Bio-Materials, Bio-SoC, Bio-Nanotech, Bio-NEMS/Bio-MEMS, Biomedical Optics and Imaging, Biomedical Engineering and Systems, Biomedical Informatics, Mobile Health, Virtual Reality (VR) in Healthcare**

**Chair:** Dr. Hsuan-Cheng Huang (黃宣誠), Director and Professor, Institute of Biomedical Informatics, National Yang Ming University

**Room:** Conference Hall, CPT Building 1F

"A CHF Detection System with ECG Signals"

**Dr. Hsi-Pin Ma (馬席彬)**

Professor, Department of Electrical Engineering  
Vice Dean, College of Electrical Engineering and Computer Science  
Director, IC Design Technology Center  
National Tsing Hua University

"Imaging Mitochondria Dynamics"

**Dr. Hsueh-Fen Juan (阮雪芬)**

Professor, Department of Life Science; Graduate Institute of Biomedical Electronics and Bioinformatics  
National Taiwan University

**Dr. Han-Sheng Chuang (Oswald) (莊漢聲)**

Associate Professor, Department of Biomedical Engineering  
National Cheng Kung University

**9/11 (Wed) 4:20 pm – 5:50 pm: Technical Session D1-W2-T3: Emerging Technologies and Applications in Electronic, Photonic, and Magnetic Materials, Ceramic Materials, Metallurgy and Materials, Organic Polymer, Soft Materials, and Computational Materials**

**Chair: Dr. I-Chun Cheng (陳奕君)**, Professor, Department of Electrical Engineering & Graduate Institute of Photonics and Optoelectronics, National Taiwan University

**Room:** R201, CPT Building

"TAO-DFT and Its Applications to Nanomaterials with Radical Nature"

**Dr. Jeng-Da Chai (蔡政達)**

Professor, Department of Physics  
National Taiwan University

"Hydrogen Adsorption, Dissociation And Spillover On Supported Metal Clusters"

**Dr. Hsin-Yi Tiffany Chen (陳馨怡)**

Assistant Professor, Department of Engineering and System Science  
National Tsing Hua University

**Dr. Tsung Sheng Kao (高宗聖)**

Assistant Professor, Department of Photonics  
National Chiao-Tung University

**9/11 (Wed) 4:20 pm – 5:50 pm: Technical Session D1-W3-T3: Emerging Technologies and Applications in New Energy Materials and Devices, Perovskite, Power Electronics, Smart Energy Systems and Technologies (SEST), Smart Homes, Smart Buildings, and Smart Communities, Energy Storage and Utilization, Clean/Intelligent Vehicle Technologies, and Artificial Intelligence (AI) Applications in New Materials and Energy**

**Chair: Dr. Ming-Yuan Cho (卓明遠)**, Professor, Department of Electrical Engineering, National Kaohsiung University of Applied Sciences

**Room:** R202, CPT Building

**Dr. Yu-Bin Chen (陳玉彬)**

Professor, Department of Power Mechanical Engineering  
National Tsing Hua University

“Synchrotron-based X-ray spectroscopy in energy materials”

**Dr. Yan-Gu Lin (林彥谷)**

Associate Research Scientist  
National Synchrotron Radiation Research Center

“Developing High Performance Perovskite Film and Universal Electrode Buffer Layers for Organic and Perovskite Optoelectronics”

**Dr. Wei-Ting Wang (王瑋婷)**

Postdoc Fellow, Department of Mechanical Engineering

**Dr. Shien-Ping Feng (馮憲平)**

Associate Professor, Department of Mechanical Engineering  
The University of Hong Kong

**9/11 (Wed) 4:20 pm – 5:50 pm: Technical Session D1-W4-T3: Smart Tools and Smart Services, Smart Machines, and Sustainable Smart Manufacturing for the Future: Vision, Strategies, and Implementation (Big Data and Intelligence, Advanced Sensors, Autonomous Robots, Robotic Process Automation, Smart Machines (Devices), Simulation, Horizontal and Vertical System Integration, Smart Cities, Smart Supply Chain Management and Logistics 4.0, 5G Wireless Mobile Technology, Internet of Things (IoT), Cyber-Physical Systems, Cybersecurity, Additive and Advanced Manufacturing, Digital Manufacturing, Augmented Reality and Cloud Technologies)**

**Chair: Dr. Tin-Chih Toly Chen (陳亭志)**, Distinguished Professor, Department of Industrial Engineering and Management, National Chiao Tung University

**Room:** R203, CPT Building

**Dr. Liang-Chia Chen (陳亮嘉)**

Distinguished Professor, Department of Mechanical Engineering  
National Taiwan University

“Off-grid Photovoltaics for Smart Applications”

**Dr. Fang-Chung Chen (陳方中)**

Professor, Department of Photonics, College of Electrical and Computer Engineering and Center for Emergent Functional Matter Science  
National Chiao Tung University



**Day 2 (Thursday, September 12, 2019)**

**9/12 (Thu) 9:00 am - 5:00 pm: Registration**

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**9/12 (Thu) 9:30 am - 9:50 am: Opening Session**

**Chair: Dr. Fang-Chung Chen (陳方中)**, Professor and Deputy Director, Department of Photonics, National Chiao-Tung University

**Dr. Tsung Sheng Kao (高宗聖)**, Assistant Professor, Department of Photonics, National Chiao-Tung University

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**9/12 (Thu) 9:50 am - 10:40 am: Plenary Session (III):**

**Chair: Dr. Fang-Chung Chen (陳方中)**, Professor, Department of Photonics, National Chiao-Tung University

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**Plenary Speaker:**

“VLS growth of 2D Metal Chalcogenides and their Application in Artificial Photosynthesis”

**Dr. Kuei-Hsien Chen (陳貴賢)**

Distinguished Research Fellow & Director  
Institute of Atomic & Molecular Sciences  
Academia Sinica

**9/12 (Thu) 10:40 am - 10:50 am: Break**

**9/12 (Thu) 10:50 am – 11:40 am: Plenary Session (IV):**

**Chair: Dr. Tsung Sheng Kao (高宗聖)**, Assistant Professor, Department of Photonics, National Chiao-Tung University

**Room:** Conference Hall, CPT Building 1F (交映樓1F國際會議廳)

**Plenary Speaker:**

“Novel two dimensional material systems for photo-to-energy conversion and optoelectronics applications”

**Dr. Chun-Wei Chen (陳俊維)**

Distinguished Professor, Department of Materials Science and Engineering  
National Taiwan University

**9/12 (Thu) 11:40 am – 1:00 pm: Student Poster Competition: Award Ceremony**

**Chair: Dr. Fang-Chung Chen (陳方中)**, Professor and Deputy Director, Department of Photonics, National Chiao-Tung University

**Co-chair: Dr. Tsung Sheng Kao (高宗聖)**, Assistant Professor, Department of Photonics, National Chiao-Tung University

**Room:** CPT Building 1F (交映樓1F)

**9/12 (Thu) 11:40 am - 1:00 pm: Lunch**

**Parallel Sessions:**

**9/12 (Thu) 1:00 pm – 2:30 pm: Technical Session D2-W1-T1: Emerging Technologies and Applications in Materials for Healthcare and Medicine: Bio-Materials, Bio-SoC, Bio-Nanotech, Bio-NEMS/Bio-MEMS, Biomedical Optics and Imaging, Biomedical Engineering and Systems, Biomedical Informatics, Mobile Health, Virtual Reality (VR) in Healthcare**

**Chair: Dr. Chi-Kuang Sun (孫啟光)**, Life Distinguished Professor, Graduate Institute of Photonics and Optoelectronics and Chief Director, Molecular Imaging Center, National Taiwan University

**Room:** Conference Hall, CPT Building 1F

“Detection of urinary miRNA biomarkers by transmission surface plasmon resonance”

**Dr. Ji-Yen Cheng (鄭鄧言)**

Research Fellow, Research Center for Applied Sciences  
Academia Sinica

“Application of Cross-linked Polypeptide Multilayer Films for Stem Cell Differentiation”

**Dr. Chun-Min Lo (羅俊民)**

Associate Professor, Department of Biomedical Engineering  
National Yang-Ming University

**Dr. Tzu-En Lin (林子恩)**

Assistant Professor, Institute of Biomedical Engineering  
National Chiao-Tung University

**9/12 (Thu) 1:00 pm – 2:30 pm: Technical Session D2-W2-T1: Emerging Technologies and Applications in Electronic, Photonic, and Magnetic Materials, Ceramic Materials, Metallurgy and Materials, Organic Polymer, Soft Materials, and Computational Materials**

**Chair: Dr. Jia-Min Shieh (謝嘉民)**, Deputy Director General, Taiwan Semiconductor Research Institute (TSRI)

**Room:** R201, CPT Building

**Dr. Po-Liang Liu (劉柏良)**

Professor and Chairman, Graduate Institute of Precision Engineering  
National Chung Hsing University

“High-Performance GaN-based Ultraviolet Detectors”

**Dr. Pinghui Sophia Yeh (葉秉慧)**

Associate Professor, Department of Electronic and Computer Engineering  
National Taiwan University of Science and Technology

“Development of Highly Stable Solution Processable Solar Cells”

**Dr. Rathinam Raja**

Postdoc Research Fellow, Center for Condensed Matter Sciences  
National Taiwan University

**Dr. Lee-Yih Wang (王立義)**

Professor, Center for Condensed Matter Sciences  
National Taiwan University

**9/12 (Thu) 1:00 pm – 2:30 pm: Technical Session D2-W3-T1: Emerging Technologies and Applications in New Energy Materials and Devices, Perovskite, Power Electronics, Smart Energy Systems and Technologies (SEST), Smart Homes, Smart Buildings, and Smart Communities, Energy Storage and Utilization, Clean/Intelligent Vehicle Technologies, and Artificial Intelligence (AI) Applications in New Materials and Energy**

**Chair: Dr. Chih-Wei Chu (朱治偉)**, Deputy Director and Research Fellow, Research Center for Applied Sciences, Academia Sinica

**Room:** R202, CPT Building

“Photovoltaics and Optical characteristics of Low-dimensional Perovskites”

**Dr. Chao-Yu (Peter) Chen (陳昭宇)**

Professor, Department of Photonics  
Hierarchical Green-Energy Materials (Hi-GEM) Research Center,  
National Cheng Kung University

**Dr. Yu-Lun Chueh (關郁倫)**

Professor, Department of Materials Science and Engineering  
National Tsing Hua University

“Carbon-based counter electrodes for dye-sensitized solar cells”

**Dr. Chih-Liang Wang (王致曉)**

Assistant Professor, Graduate Institute of Precision Engineering  
National Chung Hsing University

**9/12 (Thu) 2:30 pm – 2:40 pm: Break**

**Parallel Sessions:**

**9/12 (Thu) 2:40 pm – 4:10 pm: Technical Session D2-W1-T2: Emerging Technologies and Applications in Materials for Healthcare and Medicine: Bio-Materials, Bio-SoC, Bio-Nanotech, Bio-NEMS/Bio-MEMS, Biomedical Optics and Imaging, Biomedical Engineering and Systems, Biomedical Informatics, Mobile Health, Virtual Reality (VR) in Healthcare**

**Chair: Dr. Ji-Yen Cheng (鄭致言)**, Research Fellow, Research Center for Applied Sciences  
Academia Sinica

**Room:** Conference Hall, CPT Building 1F

“2.5D polymer multilayer micromodel for geographic investigations”

**Dr. Chia-Wen (Kevin) Tsao (曹嘉文)**

Professor, Department of Mechanical Engineering  
National Central University

“Triboelectrification as an Efficient Tool for the Development of Self-Powered Sensors and Systems”

**Dr. Zong-Hong Lin (林宗宏)**

Associate Professor, Institute of Biomedical Engineering, Department of Power Mechanical Engineering, Frontier Research Center on Fundamental and Applied Sciences of Matters, National Tsing Hua University

“Microfluidic Analytical Systems for Point-of-Care Diagnosis”

**Dr. Chien-Fu Steve Chen (陳建甫)**

Associate Professor, Institute of Applied Mechanics  
Division Director, Nano-Electro-Mechanical-System Research Center  
National Taiwan University

**9/12 (Thu) 2:40 pm – 4:10 pm: Technical Session D2-W2-T2: Emerging Technologies and Applications in Electronic, Photonic, and Magnetic Materials, Ceramic Materials, Metallurgy and Materials, Organic Polymer, Soft Materials, and Computational Materials**

**Chair: Dr. Po-Liang Liu (劉柏良)**, Professor and Chairman, Graduate Institute of Precision Engineering, National Chung Hsing University

**Room:** R201, CPT Building

“MICAtronics: A New Platform for Flexible Electronics”

**Dr. Ying-Hao Eddie Chu (朱英豪)**

Distinguished Professor, Department Of Materials Science And Engineering  
National Chiao Tung University

“*Ab initio* phase stability and electronic conductivity of the doped-Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> anode for Li-ion batteries”

**Dr. Shih-Kang Lin (林士剛)**

Associate Professor, Department of Materials Science and Engineering  
Vice Director, Hierarchical Green-Energy Materials (Hi-GEM) Research Center  
Vice Director, Research & Services Headquarters (RSH)  
National Cheng Kung University

“Self-powered GaN-based Nanowire LEDs”

**Dr. Chih-Yen Chen (陳智彥)**

Assistant Professor, Department of Materials and Optoelectronic Science  
National Sun Yat-sen University

**9/12 (Thu) 2:40 pm – 4:10 pm: Technical Session D2-W3-T2: Emerging Technologies and Applications in New Energy Materials and Devices, Perovskite, Power Electronics, Smart Energy Systems and Technologies (SEST), Smart Homes, Smart Buildings, and Smart Communities, Energy Storage and Utilization, Clean/Intelligent Vehicle Technologies, and Artificial Intelligence (AI) Applications in New Materials and Energy**

**Chair: Dr. Chao-Yu (Peter) Chen (陳昭宇)**, Professor, Department of Photonics, Hierarchical Green-Energy Materials (Hi-GEM) Research Center, National Cheng Kung University

**Room:** R202, CPT Building

“A facile, scalable and ecofriendly approach for the fabrication of high performance flexible all-solid-state supercapacitors”

**Dr. Rong-Ho Lee (李榮和)**

Professor, Department of Chemical Engineering  
National Chung Hsing University

“Investigating an All-organic Battery Using Polyisothianaphthene as a Redox-active Bipolar Electrode Material”

**Dr. Fu-Ming Wang (王復民)**

Professor, Graduate Institute of Applied Science and Technology  
National Taiwan University of Science and Technology

“Rendering Stable Metal–Organic Framework-Based Materials Electrochemically Active”

Dr. Chung-Wei Kung (龔仲偉)

Assistant Professor, Department of Chemical Engineering  
National Cheng Kung University

**9/12 (Thu) 4:10 pm – 4:20 pm: Break**

**Parallel Sessions:**

**9/12 (Thu) 4:20 pm – 5:50 pm: Technical Session D2-W1-T3: Emerging Technologies and Applications in Materials for Healthcare and Medicine: Bio-Materials, Bio-SoC, Bio-Nanotech, Bio-NEMS/Bio-MEMS, Biomedical Optics and Imaging, Biomedical Engineering and Systems, Biomedical Informatics, Mobile Health, Virtual Reality (VR) in Healthcare**

**Chair: Dr. Chia-Wen (Kevin) Tsao (曹嘉文)**, Professor, Department of Mechanical Engineering  
National Central University

**Room:** Conference Hall, CPT Building 1F

“Enriching Extracellular Vesicles from Small Samples”

**Dr. Chihchen Chen (陳致真)**

Associate Professor, Department of Power Mechanical Engineering,  
Associate professor, Institute of Nanoengineering and Microsystems,  
Department of Power Mechanical Engineering  
National Tsing Hua University

“Clinical Feasibility and Mechanism Discussion of Plasma-activated Medium as Adjuvant Therapy on Malignant Pleural Effusion”

**Dr. Yun-Chien Cheng (鄭雲謙)**

Associate Professor, Department of Mechanical Engineering  
National Chiao-Tung University

“Development of a Novel Targeted Drug Delivery System for Liver Tissue Regeneration”

**Dr. Yung-Te Hou (侯詠德)**

Assistant Professor, Department of Bio-Industrial Mechantronics Engineering  
National Taiwan University

**9/12 (Thu) 4:20 pm – 5:50 pm: Technical Session D2-W2-T3: Emerging Technologies and Applications in Electronic, Photonic, and Magnetic Materials, Ceramic Materials, Metallurgy and Materials, Organic Polymer, Soft Materials, and Computational Materials**

**Chair: Dr. Ying-Hao Eddie Chu (朱英豪)**, Distinguished Professor, Department Of Materials Science And Engineering, National Chiao Tung University

**Room:** R201, CPT Building

“Monolithic 3D-IC with Heterogeneous Integration of Light-energy Harvesters for Internet of Things”

**Dr. Chang-Hong Shen (沈昌宏)**

Researcher Fellow & Division Director of Planning and Promotion Division  
Taiwan Semiconductor Research Institute (TSRI)

“Enhanced Near-Infrared Photoresponse of Inverted Perovskite Solar Cells Through Rational Design of Bulk-Heterojunction Electron-Transporting Layers”

**Dr. Chu-Chen Chueh (闕居振)**

Assistant Professor, Department of Chemical Engineering  
National Taiwan University

“Scalable low-power silicon photonic platform for all-solid-state beam steering”

**Dr. You-Chia Chang (張祐嘉)**

Assistant Professor, Department of Photonics and Institute of Electro-Optical Engineering,  
National Chiao-Tung University

**9/12 (Thu) 4:20 pm – 5:50 pm: Technical Session D2-W3-T3: Emerging Technologies and Applications in New Energy Materials and Devices, Perovskite, Power Electronics, Smart Energy Systems and Technologies (SEST), Smart Homes, Smart Buildings, and Smart Communities, Energy Storage and Utilization, Clean/Intelligent Vehicle Technologies, and Artificial Intelligence (AI) Applications in New Materials and Energy**

**Chair: Dr. Rong-Ho Lee (李榮和)**, Professor, Department of Chemical Engineering, National Chung Hsing University

**Room:** R202, CPT Building

“Transfer Printing of Active Layers from controlled Swelling/De-Swelling of PDMS for realizing multilayer Polymer/Perovskite Solar Cells”

**Dr. Chih-Wei Chu (朱治偉)**

Deputy Director and Research Fellow, Research Center for Applied Sciences  
Academia Sinica

“Dispersion Control Through Crystal Ordering: The Case of L11 Ag-Pt”

**Dr. Yung-Tin (Frank) Pan (潘詠庭)**

Assistant Professor, Department of Chemical Engineering  
National Tsing Hua University

“Realization of Eco-Friendly and Scalable Radiative Cooling for Metal Substrates”

**Dr. Jui-Yung Chang (張瑞永)**

Assistant Professor, Department of Mechanical Engineering  
National Chiao-Tung University