



**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 5/16/19)

Day 1 (Wednesday, September 11, 2019)

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

Room:

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:

Welcome Remarks:

(1 speaker)

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

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

Room:

Plenary Speaker:

(1 speaker)

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

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

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

Room:

Plenary Speaker:

(1 speaker)

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:

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:

Dr. Pei-Wen Li (李佩雯)

Professor, Department of Electronics Engineering
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

Dr. I-Chun Cheng (陳奕君)

Professor, Department of Electrical Engineering
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, National Nano Device Laboratories
Room:

(3 speakers)

“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

Dr. Yuh-Renn Wu (吳育任)

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

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:
Room

Dr. Tin-Chih Toly Chen (陳亭志)

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

Dr. Ta-Hui Lin (林大惠)

Distinguished Professor, Department of Mechanical Engineering and Director, the Research Center for Energy Technology and Strategy
National Cheng Kung 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:

Room:

Dr. Shih-Kang Fan (范士岡)

Professor, Department of Mechanical Engineering
National Taiwan University

Dr. Wei-Ning Lee (李維寧)

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

Dr. Han-Sheng Chuang (Oswald) (莊漢聲)

Associate Professor, Department of Biomedical Engineering
National Cheng Kung University

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:

Room:

Dr. Yu-Ting Cheng (鄭裕庭)

Professor, Department of Electronics Engineering
National Chiao Tung University

Dr. Jiun-Haw Lee (李君浩)

Professor, Graduate Institute of Photonics and Optoelectronics
National Taiwan University

Dr. Yue-ming Hsin (辛裕明)

Professor, Department of Electrical Engineering
National Central 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:

Room:

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:

Room

(3 speakers)

Dr. Shuo-Yan Chou (周碩彥)

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

Dr. I-Lin Wang (王逸琳)

Professor, Department of Industrial & Information Management
National Cheng Kung University

Dr. Alvin Wei-Cheng Wong (翁唯城)

AU Optronics Corporation

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:

Room:

Dr. Hsueh-Fen Juan (阮雪芬)

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

Dr. Gwo Giun (Chris) Lee (李國君)

Professor, Department of Electrical Engineering
National Cheng-Kung University

Dr. Hsi-Pin Ma (馬席彬)

Professor, Department of Electrical Engineering and Institute of Communications Engineering
IC Design Technology Centre, National Tsing Hua 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:

Room:

Dr. Po-Liang Liu (劉柏良)

Professor, Graduate Institute of Precision Engineering
National Chung Hsing University

Dr. Jeng-Da Chai (蔡政達)

Professor, Department of Physics
National Taiwan University

Dr. Hsin-Yi Tiffany Chen (陳馨怡)

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

Room:

Dr. Yu-Bin Chen (陳玉彬)

Professor, Department of Power Mechanical Engineering
National Tsing Hua University

Dr. Shien-Ping Feng (馮憲平)

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

“Photoelectrochemical Tandem Cells for Solar Water Splitting”

Dr. Yi-Hsuan Lai (賴怡璇)

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

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:

Room

(3 speakers)

Dr. Liang-Chia Chen (陳亮嘉)

Distinguished Professor, Department of Mechanical Engineering
National Taiwan University

Dr. Yung-Hui Li (栗永徽)

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

Day 2 (Thursday, September 12, 2019)

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

Room:

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:

Welcome Remarks:

(1 speaker)

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:

Plenary Speaker:

(1 speaker)

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:

Plenary Speaker:

(1 speaker)

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:

Room:

Dr. Ji-Yen Cheng (鄭彛言)

Research Fellow, Research Center for Applied Sciences
Academia Sinica

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:

Room:

Dr. Lee-Yih Wang (王立義)

Professor, Center for Condensed Matter Sciences
National Taiwan University

Dr. Pinghui Sophia Yeh (葉秉慧)

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

Dr. Shih-Hung Lin (林士弘)

Associate Professor, Department of Electrical Engineering
TungHai 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:

Room:

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 Chue (關郁倫)

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

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:

Room:

Dr. Chia-Wen (Kevin) Tsao (曹嘉文)

Professor, Department of Mechanical Engineering
National Central University

Dr. Zong-Hong Lin (林宗宏)

Associate Professor, Institute of Biomedical Engineering
National Tsing Hua University

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:

Room:

“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

Dr. Shih-Kang Lin (林士剛)

Associate Professor, Department of Materials Science and Engineering
National Cheng Kung University

Dr. Chu-Chen Chueh (闕居振)

Assistant Professor, Department of Chemical Engineering
National Taiwan 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:

Room:

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

Dr. Chia-Yu Lin (林家裕)

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:

Room:

Dr. Chihchen Chen (陳致真)

Associate Professor, Department of Power Mechanical Engineering
National Tsing Hua University

“Comparing the Effects of Plasma-activated Medium with Thermal Therapy on Lung Cancer with Malignant Pleural Effusion”

Dr. Yun-Chien Cheng (鄭雲謙)

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

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:

Room:

(3 speakers)

Dr. Jia-Min Shieh (謝嘉民)

Deputy Director General, National Nano Device Laboratories

Dr. You-Chia Chang (張祐嘉)

Assistant Professor, Department of Photonics

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:

Room:

Dr. Chih-Wei Chu (朱治偉)

Deputy Director and Research Fellow, Research Center for Applied Sciences

Academia Sinica

Dr. Yung-Tin (Frank) Pan (潘詠庭)

Assistant Professor, Department of Chemical Engineering

National Tsing Hua University

Dr. Jui-Yung Chang (張瑞永)

Assistant Professor, Department of Mechanical Engineering

National Chiao-Tung University