

Keynote Speech I

11:00-12:00 Chair: Prof. Jwo-Shiun Sun

**PROGRESS AND DEVELOPMENT OF
GAN-BASED
METAL-OXIDE-SEMICONDUCTOR
HIGH-ELECTRON MOBILITY TRANSISTORS**

Prof. Ching-Ting Lee

Yuan Ze University, Taiwan

S1 **Renewable and
Sustainable Energy
Device and Materials**

14:00-15:30

Chair: Prof. Jeng-Shiung Chen

S1-1 (Invited Speaker)

**MONOLAYER-LIKE MAPBI3 FILM WITH
HIGH CHARGE MOBILITY FOR SOLAR CELLS**

Jianjun Tian

University of Science and Technology Beijing, China

S1-2

**RADIO-FREQUENCY ENERGY HARVESTING
CHIP FOR ISM 915 MHZ ANTENNA**

Guo-Ming Sung, Jhen-You Syn, Yu-Jen Lai

National Taipei University of Technology, Taiwan

S1-3

**HIGH TRANSPARENT MAPBBR3
PEROVSKITE QUANTUM DOTS SOLAR
CELLS**

*Lung-Chien Chen, Zong-Liang Tseng, Jia-Ching Lin,
Kuan-Lin Lee*

National Taipei University of Technology, Taiwan

S1-4

**DISTRIBUTION POWER SYSTEMS
MONITORING OF CONNECTING
PHOTOVOLTAIC POWER SYSTEMS BASED
ON IED FUNCTIONS**

*To Cheng Liu, Chih-Ju Chou, Kuo Hsiung Tseng,
Chang Huang Chen*

National Taipei University of Technology, Taiwan;

Tungnan University, Taiwan

S1-5

**AMPLIFIED SPONTANEOUS EMISSION
FROM LEAD HALIDE PEROVSKITE THIN
FILMS**

Kun-Yi Lee, Zong-Liang Tseng, Lung-Chien Chen

China University of Science and Technology, Taiwan;

National Taipei University of Technology, Taiwan

S4 **Integrated Circuits and
Systems**

16:00-17:30

Chair: Prof. Chien-Hung Kuo

S4-1 (Invited Speaker)

**ON THE RF ENERGY HARVESTING BASED
ON CMOS TECHNOLOGY**

Hei Wong, Waiyin Wang, Zehua Chen

City University of Hong Kong, Hong Kong;

Zhejiang University, Hong Kong

S4-2

**A FAST-RESPONSE BUCK CONVERTER WITH
LOAD-CURRENT-EXTRACTED AND AVDE
TECHNIQUES**

*Jiann-Jong Chen, Yuh-Shyan Hwang, Yi-Chen Yeh,
Yi-Tsen Ku*

National Taipei University of Technology, Taiwan

S4-3

**A 10B 160-MS/S DOMINO-SAR ADC IN
90NM CMOS**

Yung-Hui Chung, Hsuan-Chih Yeh, Che-Wei Chang

National Taiwan University of Science and

Technology, Taiwan

S4-4

**A DUAL-MODE FAST-TRANSIENT
AVERAGE-CURRENT-MODE BUCK
CONVERTER WITHOUT
SLOPE-COMPENSATION**

*Jiann-Jong Chen, Yuh-Shyan Hwang, Bo-Han Hwang,
Yan-Chong Jhang, Yi-Tsen Ku*

National Taipei University of Technology, Taiwan

S4-5

**DESIGN OF A 5GS/S 200 MHZ BW 74.8 DB
SNDR CONTINUOUS-TIME SIGMA DELTA
MODULATOR IN 28NM CMOS**

Hongyu Li, Fule Li, Weitao Li, Hanjun Jiang, Zhihua Wang

Tsinghua University, Institute of Microelectronics,
China

S4-6

**CLUSTERING FOR REDUCTION OF POWER
CONSUMPTION AND AREA ON
POST-SILICON DELAY TUNING**

Kota Muroi, Yukihide Kohira

The University of Aizu, Japan

S2**Microelectronic Devices
and Materials**

14:00-15:30

Chair: Prof. Ray-Ming Lin**S2-1****ANALYSIS OF RECONFIGURABLE TUNNEL
FIELD EFFECT TRANSISTOR FOR IMPROVED
CURRENT CHARACTERISTICS***Ranjith R, Suja K. J., Rama S. Komaragiri*Bennett University, India; National Institute of
Technology Calicut, India**S2-2****NEUROMORPHIC BEHAVIOR IN
NANOFLOATING-GATE ORGANIC
FIELD-EFFECT TRANSISTORS***Chang-Hyun Kim, Myung-Han Yoon*Gachon University, Korea; Gwangju Institute of
Science and Technology, Korea**S2-3****IMPACT OF THE GATE STRUCTURE ON ESD
CHARACTERISTIC OF TUNNEL
FIELD-EFFECT TRANSISTORS***Zhaonian Yang, Ningmei Yu, Juin Jei Liou*

Xi'an University of Technology, China

S2-4**OFF-STATE DRAIN CURRENT
CHARACTERISTICS OF P-TYPE
MULTI-CHANNEL FINFETS IMPACTED WITH
DIFFERENT VT IMPLANTATION ENERGY***Wen-Yang Huang, Tsai-Sheng Cheng, Ming-Jin Hong,
Wen-Shiang Liao, Chi-Hao Lo, Mu-Chun Wang,
Wen-How Lan*Minghsin University of Science and Technology,
Taiwan; National University of Kaohsiung, Taiwan**S2-5****2×VDD-TOLERANT ESD DETECTION
CIRCUIT IN A 90-NM LOW-VOLTAGE CMOS
PROCESS***Zhaonian Yang, Ningmei Yu, Juin Jei Liou
Xi'an University of Technology, China***S5****Microelectronic Devices
and Materials**

16:00-17:30

Chair: Prof. Ray-Ming Lin**S5-1****AN UPGRADE OF ESD-RELIABILITY IN HV
60-V NLD MOS-SCR DEVICES BY THE
DISCRETE ANODE***Shen-Li Chen, Yu-Lin Lin, Yi-Cih Wu, Yi-Hao Chao,
Yi-Hao Chiu, Pei-Lin Wu, Yu-Lin Jhou, Chun-Ting Kuo,
Jen-Hao Lo*National United University, Taiwan; Peking
University, China**S5-2****TUNNELING LEAKAGE CURRENT
REDUCTION IN JUNCTIONLESS
TRANSISTORS USING A LIGHTLY DOPED
REGION NEAR DRAIN***Wenjie Chen, Xian Wu, Renrong Liang, Jing Wang, Jun Xu*Tsinghua University, Institute of Microelectronics,
China**S5-3****ENHANCEMENT OF OPTOELECTRONIC
PROPERTIES ON AL-DOPED ZNO
ULTRA-THIN FILM BY USING A MULTIPLE
BUFFER LAYERS PROCESS IN NITROGEN
ATMOSPHERE***Zhaofang Li, Shih-Chen Yen, James Tai Yong Chow,
Yun-Qin Lin, Yen-Sheng Lin*

I-Shou University, Taiwan

S5-4**PIEZORESISTANCE MODEL AND STRESS
ANALYSIS FOR 3D TRANSISTOR***Tzu-Ling Hung, Min-Hsin Hsieh, Yu-Yan Qiu, Ren-Yu He,
Kuan-Ting Chen, Shu-Tong Chang*National Chung Hsing University, Taiwan; National
Taiwan Normal University, Taiwan; United
Microelectronics Corporation, Taiwan

S3

RF and Microwave Circuits

14:00-15:30

Chair: Dr. Chao-Hsiang Liao

S3-1

INTEGRATED ANTENNA WITH BALUN DESIGN FOR MIRACAST

Wen-Cheng Lai

National Taiwan University of Science and Technology, Taiwan

S3-2

MEASURED NEAR FIELD COMMUNICATION ANTENNA FOR FINTECH INNOVATION

Wen-Cheng Lai

National Taiwan University of Science and Technology, Taiwan

S3-3

WIRELESS CHARGING PLATFORM FOR DUAL-BAND MAGNETIC RESONANCE

Chia-Hao Wu, Jwo-Shiun Sun, Yuan-Ting Lee, Hung-Jui Hsu

National Taipei University of Technology, Taiwan

S3-4

A SINGLE GAN HEMT OSCILLATOR WITH FOUR-PATH INDUCTORS

Sheng-Lyang Jang, Yung-Han Chang, Ji-Shin Chiou, Wen-Cheng Lai

National Taiwan University of Science and Technology, Taiwan

S3-5

DIVIDE-BY-2 INJECTION-LOCKED FREQUENCY DIVIDER USING DISTRIBUTED SPIRAL RESONATOR

Sheng-Lyang Jang, Chien-Hsing Lu, Yung-Han Chang

National Taiwan University of Science and Technology, Taiwan

S3-6

SPURS AND LINEARITY CONSIDERATION FOR ALIASING-FREE PULSE-MODULATED POLAR TRANSMITTERS UNDER FEWER HARMONICS IN DUAL-PHASE OPERATION

Jun-Jie Wang, Hao-Shun Yang

National Taipei University of Technology, Taiwan

S6

Sensors, Packaging Technologies, and Novel Applications in Science and Technology

16:00-17:30

Chair: Prof. Bohr-Ran Huang

S6-1

ONE-DIMENSIONAL MAGFET DEVICE WITH A POLYSILICON CROSS-SHAPED HALL PLATE

Guo-Ming Sung, Te-Chang Lee, Te-Chia Fan

National Taipei University of Technology, Taiwan

S6-2

STUDY OF THE PROCESS IN GALLIUM DOPED ZNO THIN FILM TO APPLY ON PLUS SENSOR

Yu-Jen Chen, Chen-Yuan Kao, Yu-Xin Kao,

Jing-Jie Huang, Yen-Sheng Lin

I-Shou University, Taiwan

S6-3

**THE DESIGN OF AN AUTOMATIC SAFETY
VALVE TESTING SYSTEM**

Ming-Sen Hu

Air Force Institute of Technology, Taiwan

S6-4

**FAST RELIABILITY SCHEDULING
ALGORITHM FOR THE STATIC SEGMENT OF
FLEXRAY FOR VEHICLE NETWORK**

Trong-Yen Lee, Jun-Jie Wang, I-An Lin, Ju-Tse Tsai

National Taipei University of Technology, Taiwan

S6-5

**PERFORMANCE ANALYSIS OF MICRO
HOTPLATE BASED METAL OXIDE
NANOWIRE GAS SENSOR**

Lekshmi M S, Pamula B Ravi, Akella Kartik, Suja K J

National Institute of Technology Calicut, India

Keynote Speech II

09:30-10:30 Chair: Prof. Lung-Chien Chen

RECENT PROGRESS OF GAN BASED MICROLED AND VCSEL FOR MICRO-DISPLAY APPLICATION

Prof. Hao-Chung Kuo
National Chiao Tung University, Taiwan

S7 Compound Semiconductor Materials, and Optoelectronic Devices

Chair: Prof. Yu-Chieh Cheng

S7-1 (Invited Speaker)

OPTICAL COHERENCE TOMOGRAPHY-FROM MICRON TO NANOMETER RESOLUTION

Y. Y. Li, R. Soundararajan, C. K. Chang, T. I Yang, Sheng-Lung Huang, Yin-Wen Lee
National Taipei University of Technology, Taiwan;
National Taiwan University, Taiwan

S7-2

LINEAR-CAVITY MODE-LOCKED LASER USING THULIUM-DOPED NANOENGINEERED YTTRIUM-ALUMINA SILICA FIBER

Jih-Yu Chen, Chia-Ching Lin, Tuan-Yun Chang, Shyamal Das, Anirban Dhar, Mukul Chandra Paul, Yin-Wen Lee
Central Glass and Ceramic Research Institute, India;
National Taipei University of Technology, Taiwan

S7-3

THEORETICAL INVESTIGATION OF THE SIGNAL GAIN IN HEAVILY HO₃⁺-DOPED SILICATE FIBER

Hao-Wen Hsiao, Yi-Chang Lan, Wei-Fan Chen, Yin-Wen Lee
National Taipei University of Technology, Taiwan

S7-4

DROPLET EPITAXY AND ITS POSSIBILITIES IN NANO-ELECTRONICS

Ákos Nemcsics, Antal Ürmös, Lajos Tóth
MTA-EK-MFA, Hungary; Óbuda University, Hungary

S10 Power and Control Engineering

14:00-15:30

Chair: Prof. Kuo-Ing Hwu

S10-1 (Invited Speaker)

AN ACTIVE GATE DRIVER FOR IMPROVING SWITCHING PERFORMANCE OF SIC MOSFET

Yuan Yang, Yan Wang, Yang Wen
Xi'an University of Technology, China

S10-2

A DIGITALLY VARIABLE ON-TIME CONTROLLED PFC FLYBACK CONVERTER WITH PRIMARY-SIDE REGULATION

Heng Ci Lin, Wei Ming Chu, Chien Hung Tsai, Wei Cheng Su
Leadtrend Technology Corporation, Taiwan;
National Cheng Kung University, Taiwan

S10-3

DIGITAL COMPENSATOR DESIGN FOR HIGH-FREQUENCY HYBRID RESONANT BUCK CONVERTER

Wen-Zhuang Jiang, Jih-Sheng Lai, Kuo-Ing Hwu
National Taipei University of Technology, Taiwan;
Virginia Polytechnic Institute and State University, United States

S10-4

MULTIPLE FREQUENCY PWM MOTOR DRIVE

Keng Yuan Chen, Longder Chen, Steiphan Peng, Jwu-Sheng Hu, Jau-Nan Lin
Industrial Technology Research Institute, Taiwan;
National Chiao Tung University, Taiwan; Yuan Ze University, Taiwan

S13

Bioelectronics

16:00-17:30

Chair: Prof. Hung-Wei Chiu

S13-1

DETECTION OF LOW WALL MOTION AND COMPARISON STUDY WITH SCAR TISSUE USING 4D LEFT VENTRICLE CARDIAC IMAGES

ChienYi Lee, Yashbir Singh, Weichih Hu

Chung Yuan Christian University, India; Chung Yuan Christian University, Taiwan

S13-2

P16INK4A DETECTION USING AN ULTRA-SENSITIVE SILICON NANOWIRE FIELD EFFECT TRANSISTOR

Jia-Yang Hung, Yankuba B. Manga, Yu-Ju Chen, Haw-Ming Huang, Wen-Luh Yang, Chi-Chang Wu

Feng Chia University, Taiwan; Taipei Medical University, Graduate Institute of Nanomedicine and Medical Engineering, Taiwan

S13-3

THE WEATHER DETECTION AND ANALYSIS SYSTEM BASED ON VISUAL MACHINE

Ko-Feng Lee, Hong-Yi Liang, Yen-Lin Chen, Chao-Wei Yu, Yuan-Chun Chen

Hua-chuang Automobile Information Technical Center, Taiwan; National Taipei University of Technology, Taiwan

S13-4

VISION-BASED ALL-WEATHER SURROUNDING NIGHTTIME VEHICLE DETECTION

Xiu Zhi Chen, Kuan Kai Liao, Yen Lin Chan, Chao Wei Yu, Che Wang

Hua-chuang Automobile Information Technical Center, Taiwan; National Taipei University of Technology, Taiwan

S13-5

APPLICATION OF A MINIMIZED WEARABLE DEVICE COMBINED WITH SPO2 AND ECG SENSORS TO DETECT STENOSIS OR OCCLUSION OF ARTERIOVENOUS FISTULA/GRAFT, PROGRESSION OF ARTERIOSCLEROSIS AND ARRHYTHMIA

Chin-Kun Tseng, Shu-Hung Chao, Yuh-Shyan Hwang, Lih-Jen Kau, Chun-Ling Lin, Kuan-Chun Chen, San-Fu Wang, Yi-Xiang Chen

Cheng Hsin General Hospital, Taiwan; Ming Chi University of Technology, Taiwan; National Taipei University of Technology, Taiwan

S8

**Novel Applications in
Electrical Engineering
and Photonic Devices**

11:00-12:30

Chair: Dr. Chun-Nien Liu

S8-1

**FPGA REALIZATION OF ACTIVATION
FUNCTION FOR NEURAL NETWORK**

*Shang-Ping Pan, Zhaofang Li, Yu-Jung Huang,
Wei-Cheng Lin*

E-DA Hospital, Taiwan; I-Shou University, Taiwan

S8-2

**FRICIONAL CONTACT ANALYSIS OF
MICROSWITCH**

Shu-Ling Cheng, Chun-Hsu Ko, Wei-Chun Chen

Far East University, Taiwan; I-Shou University,
Taiwan

S8-3

THE FIBER GRATING RAIN GAUGE

*Chan-Yu Kuo, Sih-Yuan Chen, Hung-Ying Chang,
Wen-Fung Liu*

Feng Chia University, Taiwan

S8-4

**COLOR STABILITY ENHANCEMENT OF
WHITE ORGANIC LIGHT-EMITTING DIODES**

Zhang De Xue, Shui-Hsiang Su, Cheng-Ta Tsai

I-Shou University, Taiwan

S8-5

**ANALYSIS OF PERIODIC DIELECTRIC
WAVEGUIDE FOR TM MODES**

Nai-Hsiang Sun, Yi-Zhi Chen

I-Shou University, Taiwan

S8-6

**PERFORMANCE ENHANCEMENT OF
ORGANIC PHOTOTRANSISTORS WITH A
HYBRID GATE DIELECTRIC**

I-Jou Hsieh, Shui-Hsiang Su, Jin-Yi Huang

I-Shou University, Taiwan

S11

**Novel Applications in
Electrical Engineering
and Photonic Devices**

14:00-15:30

Chair: Prof. Yu-Jung Huang

S11-1

**MEASUREMENT OF GRATING REGION IN
FIBER BRAGG GRATINGS**

Nai-Hsiang Sun, Kuo-Chin Hsu, Chih-Liang Tseng

I-Shou University, Taiwan

S11-2

**SCATTERING DIRECTION OF TILTED FIBER
BRAGG GRATINGS**

Nai-Hsiang Sun, Yu-Jen Chang

I-Shou University, Taiwan

S11-3

**MEASUREMENT OF ETCHED FIBER BRAGG
GRATINGS**

Nai-Hsiang Sun, Yu-Zhang Wang

I-Shou University, Taiwan

S11-4

**SENSING PROPERTY OF AZO THIN FILM
WITH CONNECTED NANOROD STRUCTURE
AT ROOM TEMPERATURE**

Dinesh Kumar, Zingway Pei

National Chung Hsing University, Taiwan

S11-5

STUDY OF LATTICE STRUCTURE FOR PHOTONIC CRYSTAL FIBER

Jung-Sheng Chiang, Jia-Ming Syu, Wei-Chih Wang, Ming-Young Chung, Ruyen Ro
I-Shou University, Taiwan

S11-6

EXPERIMENTAL OF SINGLE-MODE FIBER AND PHOTONIC CRYSTAL FIBER

Jung-Sheng Chiang, Wei-Chih Wang, Jia-Ming Syu, Bo-Chin Lin, Shih-Chiang Lin
I Shou University, Taiwan

S14

16:00-17:30

Compound Semiconductor Materials, and Optoelectronic Devices / Microelectronic Devices and Materials

Chair: Prof. Yu-Chieh Cheng

S14-1

ELECTRICAL CHARACTERISTICS OF WO₃/AG/WO₃ SANDWICH STRUCTURE FABRICATED WITH MAGNETIC-CONTROL SPUTTERING METROLOGY

Shih-Fan Chen, Shea-Jue Wang, Yu-Hsiang Li, Zheng-An Zhu, Xiao-Ting Hong, Jin-Hui Hu, Mu-Chun Wang

Minghsin University of Science and Technology, Taiwan; National Taipei University of Technology, Taiwan

S14-2

STEEP SWITCH-OFF OF IN_{0.18}AL_{0.82}N/ALN/GAN ON SI MIS-HEMT

P.-G. Chen, Y.-C. Chou, S.-S. Gu, R.-C. Hong, Z.-Y. Wang, S.-Y. Chen, C.-Y. Liao, M. Tang, M.-H. Liao, Min-Hung Lee
National Taiwan Normal University, Taiwan; National Taiwan University, Taiwan; PTEK Technology Co., Ltd, Taiwan

S14-3

HIGH-SENSITIVITY SURFACE PLASMON INTERFEROMETER IN SILICON-ON-INSULATOR FOR BIOSENSING

Chi-Ting Lin, Hong-Shen Chen, Meng-Syuan Jian, Shih-Hsiang Hsu
National Taiwan University of Science and Technology, Taiwan

S14-4

INVESTIGATION OF THE DNA DROPLET CMOS/MEMS CHIP MICROFLUIDIC CHANNELS GEOMETRY

Jian-Chiun Liou, Ting-Yu Su
Taipei Medical University, Taiwan

S14-5

STUDY OF THE SILICON PHOTONIC INTEGRATED CIRCUITS WITH GRATING COUPLER

Jian-Chiun Liou, Ting-Yu Su
Taipei Medical University, Taiwan

S9 **Computer
Communication and
Multimedia Techniques**
11:00-12:30

Chair: Prof. Shang-Chih Ma

S9-1**TWOFOLD CONCATENATION OF
SPACE-TIME CODED SPATIAL MODULATION**

Shang-Chih Ma, Hao-Wei Cheng, Tan-Hsu Tan

National Taipei University of Technology, Taiwan

S9-2**SOURCE-ASSISTING FULL-DIVERSITY
DQOSTBC IN WIRELESS RELAY NETWORKS**

Shu-Ming Tseng, Jian-Cheng Yu, Chi-Hsuan Hsieh

National Taipei University of Technology, Taiwan;
Winstron Corp., Taiwan

S9-3**REDUCING LATENCY FOR AN
ANDROID-BASED VOIP PHONE**

Shingchern You, Jeremy Chang

National Taipei University of Technology, Taiwan;
Ring Taiwan, Taiwan

S9-4**AN ENERGY-SAVING SCHEME OF
TWDM-PON SYSTEM FOR NG-EPON
NETWORKS**

Ho-Ting Wu, Chien-Ping Liu, Pu-Yu Yu, Kai-Wei Ke

National Taipei University of Technology, Taiwan;
National Taipei University of Technology / Taipei City
University of Science and Technology, Taiwan

S9-5**HARDWARE DESIGN ON FPGA FOR
ETHERNET/SONET BRIDGE IN SMART
SENSOR SYSTEM**

Guo-Ming Sung, Hsin-Kwang Wang, Zi-Yu Li

National Taipei University of Technology, Taiwan

S12 **Integrated Circuits and
Systems**
14:00-15:30

Chair: Prof. Pang-Jung Liu

S12-1**A 10-BIT 200-MS/S SWITCHED-CURRENT
PIPELINED ADC FOR ANALOG FRONT END
OF XDSL**

Shan-Hao Sung, Jonathan Hsia, Chih-Ping Yu

National Taipei University of Technology, Taiwan

S12-2**CMOS CURRENT-REVERSING CIRCUIT**

Weihsing Liu

National Formosa University, Taiwan

S12-3**AN IMPROVED REFERENCE VOLTAGE
CIRCUIT DESIGN**

Weihsing Liu, Tien-Hsin Wang

National Formosa University, Taiwan

S12-4**COMPARATIVE STUDY OF SUB-VT SRAM
BITCELLS BASED ON
NOISE-MARGIN-AWARE DESIGN**

*Jinn-Shyan Wang, Yi-Shiun Lin, Wei-Jia Weng,
Chien-Tung Liu, Yung-Chen Chien*

National Chung Cheng University, Taiwan

S12-5**FAST TRANSIENT BUCK CONVERTER WITH
ADAPTIVE THRESHOLD VOLTAGE
CONTROL**

Pang-Jung Liu, Ting-Yu Wei, Zhi-Yuan Hong

National Taipei University of Technology, Taiwan

S12-6

**EVALUATION OF ROUTABILITY-DRIVEN
MACRO PLACEMENT WITH
MACHINE-LEARNING TECHNIQUE**

Wei-Kai Cheng, Yu-Yin Guo, Chih-Shuan Wu
Chung Yuan Christian University, Taiwan

S12-7

**DRAM REFRESH IMPROVEMENT WITH
BANK REORDERING**

Wei-Kai Cheng, Xin-Lun Li, Jian-Kai Chen
Chung Yuan Christian University, Taiwan

S15 IOT and AI Techniques

16:00-17:30

Chair: Prof. Shing-Chern You

S15-1

**CAR DOOR SAFETY SYSTEM WITH
WIRELESS ALERT TRANSMISSION**

*Chien-Hung Lai, Che-Chuan Lin, Go-Long Tsai,
Yuh-Shyan Hwang*
National Taipei University of Technology, Taiwan

S15-2

**OPEN ENVIRONMENT WIRELESS SENSING
FRAMEWORK BASED ON IEEE 802.11AH**

Chien-Hung Lai, Yuh-Shyan Hwang
National Taipei University of Technology, Taiwan

S15-3

**CAR 2 INFRASTRUCTURE USE CASE
DEVELOPMENT PROGRESS**

Radek Holý, Marek Kalika, Jiří Havlík, Michal Kašpárek
Czech Technical University in Prague, Czech Rep.;
IMA, Czech Rep.

S15-4

**STOCHASTIC WEIGHTS BINARY NEURAL
NETWORKS ON FPGA**

Yasushi Fukuda, Takayuki Kawahara
Tokyo University of Science, Japan

S15-5

**SINGING VOICE DETECTION BASED ON
CONVOLUTIONAL NEURAL NETWORKS**

*Hong-Ming Huang, Woei-Kae Chen, Chien-Hung Liu,
Shingchern You*
National Taipei University of Technology, Taiwan;
Synology Inc, Taiwan

S15-6

**TERNARY SPARSE XNOR-NET FOR FPGA
IMPLEMENTATION**

Yasuhiko Yoshida, Ryo Oiwa, Takayuki Kawahara
Tokyo University of Science, Japan

S16 Others

09:00-10:30

Chair: Prof. Chuan-Ming Liu**S16-1****ANALYSIS OF TRANSIENT PRESSURE AND TEMPERATURE VARIATIONS IN A SUBCOOLED BOILING CHANNEL UNDER FORCED VERTICAL EXCITATIONS***Shao-Wen Chen, Yu-Hsien Chang, Hsiao-Jou Lin, Pei-Syuan Ruan, Yen-Shih Cheng, Jin-Der Lee, Jong-Rong Wang, Chunkuan Shih*

National Tsing Hua University, Taiwan; National Tsing Hua University, Institute of Nuclear Engineering and Science, Taiwan; National Tsing Hua University, Nuclear Science and Technology Development Center, Taiwan

S16-2**APPLICATION OF ELECTRICAL IMPEDANCE ON MEASUREMENT OF VOID FRACTION IN TWO-PHASE FLOW***Yu-Hsien Chang, Shao-Wen Chen, Min-Lun Chai, Hsiao-Jou Lin, Jin-Der Lee, Jong-Rong Wang, Chunkuan Shih*

National Tsing Hua University, Taiwan; National Tsing Hua University, Institute of Nuclear Engineering and Science, Taiwan; National Tsing Hua University, Nuclear Science and Technology Development Center, Taiwan

S16-3**FEASIBILITY STUDY FOR DISPERSED BUBBLY FLOW AND OTHER FLOW PATTERNS SPECTRUM BOUNDARY BY PROBABILITY DENSITY FUNCTION***Yen-Shih Cheng, Feng-Jiun Kuo, Hsiao-Jou Lin, Min-Song Lin, Shao-Wen Chen, Jin-Der Lee, Jong-Rong Wang, Chunkuan Shih, Bau-Shei Pei*

National Tsing Hua University, Taiwan; National Tsing Hua University, Institute of Nuclear Engineering and Science, Taiwan; National Tsing Hua University, Nuclear Science and Technology Development Center, Taiwan

S16-4**DEPOSITION OF POLYMER FILMS BY ATMOSPHERIC PRESSURE PLASMA***Chuan Li, Ching Ting Yu, J.H. Hsieh*

Ming Chi University of Technology, Taiwan; National Yang Ming University, Taiwan

S16-5**PROBABILISTIC REVERSE NEAREST NEIGHBORS ON UNCERTAIN DATA STREAMS***Lin-Ru Feng, Chuan-Ming Liu, Chuan-Chi Lai*

National Chiao Tung University, Taiwan; National Taipei University of Technology, Taiwan

S19 Microelectronic Devices and Materials

11:00-12:30

Chair: Prof. Jian-Chiun Liou**S19-1****HOLE MOBILITY CALCULATION FOR MONOLAYER MOLYBDENUM TUNGSTEN ALLOY DISULFIDE***Yen-Shuo Su, Min-Hsin Hsieh, Yun-Fang Chung, Tzu-Ling Hung, Yu-Yan Qiu, Kuan-Ting Chen, Wen-Jay Lee, Shu-Tong Chang*

National Applied Research Laboratories, National Center for High-Performance Computing, Taiwan; National Chung Hsing University, Taiwan; National Taiwan Normal University, Taiwan

S19-2**A STUDY OF NEGATIVE RESISTANCE EFFECT OF CUXO RRAM FABRICATED BY USING A SOL-GEL METHOD***Chih-Chieh Hsu, Jung-En Tsai, Po-Yang Chuang, Yu-Han Chen*

National Yunlin University of Science and Technology, Taiwan

S19-3

ANALYSIS OF HETEROJUNCTION
GAAS1-XSBX/IN1-YGAYAS TUNNEL FETS
CONSIDERING LINE TUNNELING

Chiu-Ting Wang, Vita Pi-Ho Hu

National Central University, Taiwan

S19-4

DEVICE DESIGN OF VERTICAL NANOWIRE
III - V HETEROJUNCTION TFETS FOR
PERFORMANCE ENHANCEMENT

Hung-Han Lin, Vita Pi-Ho Hu

National Central University, Taiwan

S19-5

A UNIFIED QUANTUM SCALING LENGTH
MODEL FOR NANOMETER MULTIPLE-GATE
MOSFETS

*Te-Kuang Chiang, Ying-Wen Ko, Yu-Hsuan Lin,
Hong-Wun Gao, Yeong-Her Wang*

National Cheng Kung University, Taiwan; National
University of Kaohsiung, Taiwan

S19-6

IMPACT OF POST DEPOSITION ANNEALING
ON RESISTIVE SWITCHING IN
GA2O3-BASED CONDUCTIVE-BRIDGE RAM
DEVICES

*Kai-Jhih Gan, Po-Tsun Liu, Ta-Chun Chien,
Dun-Bao Ruan, Yu-Chuan Chiu, Simon M. Sze*

National Chiao Tung University, Taiwan; National
Chiao Tung University, China; National Chiao Tung
University, United States

S22

Bioelectronics /
IOT and AI Techniques

14:00-15:30

Chair: Prof. Ching-Yuan Chang

22-1

IMPROVING OPERATION ELECTRIC
FIELD OF CU-BASED RESISTIVE
SWITCHING MEMORY BY CU CHEMICAL
DISPLACEMENT TECHNIQUE

Tun-Po Liao, Bo-Ling Tzeng, Chi-Chang Wu, Wen-Luh Yang

Feng Chia University, Taiwan

S22-2

DISPOSABLE PEDOT:PSS-MODIFIED
GRAPHENE ELECTROCHEMICAL
BIOSENSOR

*Kalpana Settu, Yu-Ming Huang, Sheng-Xuan Zhou,
Jang-Zern Tsai*

National Central University, Taiwan; National
Taipei University, Taiwan

S22-3

EXPLORE CONNECTION FAULT
HANDLING STRATEGIES OF
THIRD-PARTY LIBRARIES BY AOP

Chia-Cheng Lee, Yu Chin Cheng, Chin-Yun Hsieh

National Taipei University of Technology, Taiwan

S22-4

RELATIVE INDEXED COMPRESSED
SPARSE FILTER ENCODING FORMAT FOR
HARDWARE-ORIENTED ACCELERATION
OF DEEP CONVOLUTIONAL NEURAL
NETWORKS

Yuechao Gao, Nianhong Liu, Sheng Zhang

Tsinghua University, China

S22-5

PROGRAM PLAGIARISM DETECTION
WITH DYNAMIC STRUCTURE

Jong Yih Kuo, Hsuan-Kuei Cheng, Ping-Feng Wang

Institute for Information Industry, Taiwan;
National Taipei University of Technology, Taiwan

S17 **Integrated Circuits and
Systems**

09:00-10:30

Chair: Prof. San-Fu Wang**S17-1****A SEGMENTED RESISTOR-STRING DAC
BASED STIMULUS GENERATOR FOR ADC
LINEARITY TESTING***Hsin-Wen Ting, Zi-Tao Wu, Jian-Zhou Yan, Hsin-Ying Wu*MediaTek Inc., Taiwan; National Cheng Kung
University, Taiwan; National Kaohsiung University of
Science and Technology, Taiwan**S17-2****A DUALBAND SIX-PHASE
VOLTAGE-CONTROL OSCILLATOR***San-Fu Wang, Yu-Wei Chang*

Ming Chi University of Technology, Taiwan

S20 **Power and Control
Engineering**

11:00-12:30

Chair: Prof. Tzu-Chiao Lin**S20-1****THREE-LEVEL PWM FOR GRID-CONNECTED
PV INVERTER CONSIDERING SWITCHING
LOSS AND COMMON-MODE VOLTAGE***Yi Ming Chen, Keng Yuan Chen, Chih Lun Wei,
Ji Qing Dong*Fuzhou University, China; Fuzhou University/Yuan
Ze University, China; Yuan Ze University, Taiwan**S20-2****ONE-COMPARATOR SAMPLING DESIGN
FOR DIGITAL POWER CONVERTERS***Yeu-Torng Yau, Kuo-Ing Hwu*Asian Power Devices Inc., Taiwan; National Taipei
University of Technology, Taiwan**S20-3****A DIMMABLE LED DRIVER BASED ON
H-BRIDGE AND DIFFERENTIAL-MODE
TRANSFORMER***Wen-Zhuang Jiang, Kuo-Ing Hwu*

National Taipei University of Technology, Taiwan

S20-4**SOLUTION OF THE OPTIMAL REACTIVE
POWER DISPATCH FOR POWER SYSTEMS
BY USING NOVEL CHARGED SYSTEM
SEARCH ALGORITHM***Yu-Ming Zhang, Chao-Rong Chen, Ching-Yin Lee*National Taipei University of Technology, Taiwan;
Tungnan University, Taiwan**S20-5****MEASUREMENT AND ANALYSIS OF PARTIAL
DISCHARGE OF HIGH AND MEDIUM
VOLTAGE POWER EQUIPMENT***Chih-Ju Chou, Chien-Hsun Chen*

National Taipei University of Technology, Taiwan

S20-6**LOW CURRENT HARMONICS PWM FOR
TOW-LEVEL THREE-PHASE
GRID-CONNECTED PV INVERTER***Hao Chen, Keng Yuan Chen, Cheng-Ting Tsai, Guo Qing Lin*Fuzhou University, China; Fuzhou University /
Yuan-Ze University, China; Yuan Ze University,
Taiwan

S18 **Computer
Communication and
Multimedia Techniques**

09:00-10:30

Chair: Prof. Shih-Chia Huang**S18-1****ON APPLYING STSK SCHEME TO AN
MASSIVE-MIMO SYSTEM OVER 3-D α - λ -
 μ FADING CHANNEL***Joy long-Zong Chen*

Da-Yeh University, Taiwan

S18-2**HYBRID UNICAST AND MULTICAST VIDEO
STREAMING USING H.264 SVC AND FLUTE
FOR SET-TOP BOX USERS***Shih-Hsuan Yang, Hong-Bo Chen*

National Taipei University of Technology, Taiwan

S18-3**THE INFLUENCE OF IOT DATA
ENCAPSULATION ON TRANSMISSION AND
ENERGY : A CASE STUDY ON WEARABLE
SMART SHOES***Chao-Hsien Lee, Mao-Qun Gen*

National Taipei University of Technology, Taiwan

S18-4**2-DIMENSION CLUSTER OF MULTIPLE
CORRELATION COEFFICIENT WITH
MUTUAL INFORMATION APPLIED TO
HYPERSPECTRAL IMAGE BAND SELECTION***Yang-Lang Chang, Min-Yu Huang, Silvia Wan-Ting Chen,
Amare Anagaw Ayele*

National Taipei University of Technology, Taiwan

S18-5**A NOVEL SHOT DETECTION APPROACH
USING 8-NEIGHBORS AND KEY-COLORS***Hui-Bin Liu, Tan-Hsu Tan, Shih-Chia Huang, Ze-Jie Wang,
Jing Zhou*National Taipei University of Technology, Taiwan;
Shanghai University of Engineering Science, China**S21** **Compound
Semiconductor
Materials, and
Optoelectronic Devices**

11:00-12:30

Chair: Prof. Yin-Wen Lee**S21-1****ENHANCEMENT OF RANDOM LASER BY
USING SILVER NANOSTRUCTRE MATERIALS***Bich Hanh Nguyen, Ja Hong Lin, Shwu Yun Tsay, Yao Hui Chen*

National Taipei University of Technology, Taiwan

S21-2**FABRICATION AND CHARACTERIZATION
OF PLANAR-TYPE TOP-ILLUMINATED
HIGH-RESPONSIVITY INP-BASED
AVALANCHE PHOTODETECTOR FOR 10
GBPS OPTICAL RECEIVER APPLICATIONS***Cho-Chun Chiang, Wen-Jeng Ho, Jheng-Jie Liu,
Shih-Ting Tseng, Jian-Nan Lin, June-Yan Chen,
Hao-Xiang Zhang*

National Taipei University of Technology, Taiwan

S21-3**THE STUDY ON COLD CATHODE
FLUORESCENT LAMP AS OPTICAL
MICROSCOPE LIGHT SOURCE***Gang-You Fan, Pi-Hsiang Tsai, Chien-Ming Chen*

National Taipei University of Technology, Taiwan

S21-4

**ENHANCED LUMINOUS EFFICACY OF
WHITE LED LAMP USING
CA₂MGSi₂O₇:EU₂+PHOSPHOR**

*Nguyen Doan Quoc Anh, Nguyen Thi Phuong Loan,
Nguyen Ngoc Long, Miroslav Voznak*

Power System Optimization Research Group,
Faculty of Electrical and Electronics Engineering,
Ton Duc Thang University, Ho Chi Minh City,
Vietnam