

CONTENTS

SPECIAL ISSUE ON SELECTED PAPERS FROM ICASI 2018 (1) GUEST EDITOR, TEEN-HANG MEEN (NATIONAL FORMOSA UNIVERSITY)

Preface

Research Papers of Special Issue

Sensors

Design and Fabrication of a Displacement Sensor Using Screen Printing Technology and Piezoelectric Nanofibers in d_{33} Mode (S & M 1763)

Yi-Chen Chen, Chih-Kun Cheng, and Sheng-Chih Shen.....233

Electrode Design for Biochemical Reagent Concentration Measurement (S & M 1764)

Chan-Young Park, Mi-So Lee, Yu-Seop Kim, Hye-Jeong Song, and Jong-Dae Kim.....245

Development of Portable Electrical-cell-substrate Impedance Sensing System (S & M 1765)

Chan-Young Park, Jae-Hong Min, Yu-Seop Kim, Hye-Jeong Song, and Jong-Dae Kim...253

Investigation of Characteristics of Dual-band Ladder-type Surface Acoustic Wave for High-power Durability Duplexer (S & M 1766)

Chien-Yu Li, Hua-Jian Hsu, Lih-Shan Chen, and Mau-Phon Houng261

Real-time Polymerase Chain Reaction System Using an Open Platform Camera (S & M 1767)

Seul-Bit-Na Koo, Chan-Young Park, Yu-Seop Kim, Hye-Jeong Song,
and Jong-Dae Kim.....269

Evaluation of Milk Quality by Ultrasonic Technique (S & M 1768)

Chien-Hsing Chen and Li-De Zhang279

Gel Documentation System Using an Open Platform Camera (S & M 1769)

Deuk-Ju Lee, Yeo-Reum Kim, Jong-Dae Kim, Yu-Seop Kim, Hye-Jeong Song,
and Chan-Young Park.....287

Polymerase Chain Reaction Thermoelectric Module Based on Prediction and Attachment of Aging Phenomena (S & M 1770)

Jong-Dae Kim, Jeong-Uk Park, Hye-Jeong Song, Yu-Seop Kim,
and Chan-Young Park.....293

Materials

Preparation of Biodegradable Polycaprolactone Microcarriers with Doxorubicin Hydrochloride by Ultrasonic-assisted Emulsification Technology (S & M 1771)

Yeong-Maw Hwang, Cheng-Tang Pan, Yu-Min Lin, Song-Wei Zeng, Chung-Kun Yen,
Shao-Yu Wang, Shiao-Wei Kuo, Shin-Pon Ju, Shih-Shin Liang, and Zong-Hsin Liu.....301

Development of Polycaprolactone Microspheres with Controllable and Uniform Particle Size by Uniform Design Experiment in Emulsion Progress (S & M 1772)

Cheng-Tang Pan, Yeong-Maw Hwang, Yu-Min Lin, Song-Wei Zeng, Shao-Yu Wang,
Shiao-Wei Kuo, Shin-Pon Ju, Shih-Shin Liang, Zong-Hsin Liu, and Chung-Kun Yen.....311

Related Technologies

Utilization of the Tail Gas and Waste Catalyst from the Petrochemical Process to Generate Syngas by Microwave-induced Technology (S & M 1773)

Chin Chung Lo, Bo-Jyun Jou, Tsung Yueh Tsai, Chien Li Lee, and Chih-Ju G. Jou.....319

Boost Converter with a Transformer Capacitor Cell for Implementing Features of Zero-voltage Switching/
Zero-current Switching and Double-output Sources (S & M 1774)

Cheng-Tao Tsai, Jye-Chau Su, and Sin-Ru Wei.....327

Fault Prognosis of Polymerase Chain Reaction Thermal Cycler Using Temperature Analysis
(S & M 1775)

Jong-Dae Kim, So-Yeon Lee, Yu-Seop Kim, Hye-Jeong Song, and Chan-Young Park.....347

Sensor Applications

Elliptic Curve Cryptosystems-based Date-constrained Hierarchical Key Management Scheme in Internet
of Things (S & M 1776)

Tsung-Chih Hsiao, Tzer-Long Chen, Tzer-Shyong Chen, and Yu-Fang Chung355

Design and Implementation of an Internet-of-Things Roadside Parking System Based on Raspberry Pi 3
and Bluetooth Low Energy Mesh Sensor Network (S & M 1777)

Ing-Chau Chang, Peng-Jun Hsu, Yuan-Sheng Lin, Yu-Sheng Wu, Pin-Lin Chen,
Xian-Feng Lin, and Chin-En Yen.....365

Low-cost Miniaturization of Gel Document System Using Blue LED (S & M 1778)

Seul-Bit-Na Koo, Dong-Geon Jo, Chan-Young Park, Yu-Seop Kim, Hye-Jeong Song,
and Jong-Dae Kim.....377

Cross-estimation of Soil Moisture Using Thermal Infrared Images with Different Resolutions
(S & M 1779)

Wei-Ling Hsu and Kuan-Tsung Chang387

SPECIAL ISSUE ON SELECTED PAPERS FROM ICASI 2018 (1)

PREFACE



The 4th IEEE International Conference on Applied System Innovation 2018 (IEEE ICASI 2018) was held in Chiba, Tokyo, Japan on April 13–17, 2018, and it provided a unified communication platform for researchers on the topics of electrical engineering, material science, and related fields. In recent years, the applications of advanced materials to electronic devices and optical sensors have been fast developing fields. Owing to their flexibility and light weight, they have the potential to be employed in daily use. The scope of this special issue “Selected Papers from ICASI 2018” covers fundamental materials of electrical, mechanical, and optical engineering, including their synthesis engineering, integration with many elements, designs of electrical and optical devices, evaluation of various performances, and exploration of their broad applications in industry, environmental control, materials analyses, and so forth.

This special issue contains 54 excellent papers from the fields of sensors and materials from among 800 papers presented at IEEE ICASI 2018. The guest editors would like to thank the authors for their contributions to this special issue and all the reviewers for their constructive reviews. We are also grateful to Ms. Misako Sakano for her time and effort in the publication of this special issue of *Sensors and Materials*.

Teen-Hang Meen
Distinguished Professor
Department of Electronic Engineering
National Formosa University
Taiwan