

## SPECIAL ISSUE ON “APPLICATIONS OF NOVEL SENSORS AND RELATED TECHNOLOGIES FOR INTERNET OF THINGS” PART 1-2

### PREFACE



In recent years, applications of novel sensing and related technologies to electronic and mechanical devices have become very popular fields. The booming economic development in Asia, particularly the leading manufacturing industries from automobile, machinery, computer, communication, consumer products, and flat-panel displays to semiconductor and micro/nano applications have attracted intense attention from universities, research institutions and many industrial corporations. Manufacturing is the economic lifeline of a country and has been regarded as a labor-intensive industry. In order to cut production costs, devices for the Internet of Things have been widely developed. The Internet of Things is composed of integrated end devices and facilities, such as intelligent sensors for internal control, industrial systems, mobile terminal systems, floor control systems, and home intelligent facilities. Smart devices and external control information are utilized with the hope of attracting companies that manufacture high-value-added products in the aerospace, automotive, IT mold, textiles, optoelectronic, watches, medical device, automation, energy, and semiconductor-related parts and components fields. Therefore, the key to maintaining a competitive advantage in domestic manufacturing in the future is to continue to rely on the development of novel manufacturing and precision machinery-related technologies.



The scope of this Special Issue, entitled “Applications of Novel Sensors and Related Technologies for Internet of Things”, covers fundamental sensors and materials used in electronic, mechanical, and electrical engineering, including their synthesis and integration with many elements, the design of electronic and optical devices, sensing technologies, evaluation of various performance characteristics, and exploration of their wide-ranging applications in areas such as industry, environmental control, and materials analyses. In part 1-2 of this special issue, 9 excellent papers in four categories of sensors and materials fields have been selected.

- (1) Physical Mechanical Sensors: “Robust Sliding Mode Speed Control of Permanent Magnet Synchronous Motor with Time Delay Estimation” by Lin *et al.*, and “Innovative Optical Axis Adjustment Method for Reflective Beam Expander” by Yeh *et al.*, and “Design of 5G Millimeter-wave Filtering Antenna with  $\Gamma$ -shaped Slot Radiators Coupled to Substrate Integrated Waveguide Cavity” by Xing *et al.*
- (2) Materials: “Fabrication of Single-layer Graphene-doped Electric Double-layer Capacitor and Effect of Annealing, Platinum Deposition, and Gel Electrolyte on Its Performance” by Yuan *et al.*

(3) Related Technologies: “Improved Reparameterization You-Only-Look-Once v5 Model for Strip-steel Surface Defect Detection” by Qiu *et al.*, and “Integrations of LabelImg, You Only Look Once (YOLO), and Open Source Computer Vision Library (OpenCV) for Chicken Open Mouth Detection” by Ke *et al.*, and “A Feature-fusion-based Convolutional Neuro-fuzzy Classifier for Facial Emotion Recognition” by C.-J. Lin and X.-Q. Lin, and “Segmentation of Oral Mucosal Cell Sampling Images Based on Enhanced Deeplabv3+ Algorithm” by Zhu *et al.*

(4) Sensor Applications: “Node-RED Web-based Monitor and Control of Power System Using Modbus and Message Queuing Telemetry Transport Communication in Raspberry Pi Embedded Platform” by Lin *et al.*

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