

## SPECIAL ISSUE ON ADVANCED MATERIALS AND SENSING TECHNOLOGIES ON IoT APPLICATIONS: PART 1-1

### PREFACE



In recent years, applications of novel materials and sensing technologies in electronic and mechanical devices have become rapidly developing fields. Manufacturing is the economic lifeline of a country and has been regarded as a labor-intensive industry. Therefore, to cut production costs, devices for Internet of Things (IoT) are widely developed. IoT is composed of the most 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 to attract companies that manufacture high-value-added aerospace, automotive, IT mold, textile, optoelectronic, watch, medical, defense-related, automation, energy, and semiconductor-related parts and components to drive a country's economy. Therefore, the key to keeping up with the competitive advantage of domestic manufacturing in the future is still to rely on the development of advanced manufacturing and precision machinery-related technologies. The scope of this Special Issue "Advanced Materials and Sensing Technologies on IoT Applications" covers fundamental 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 broad applications to industry, environmental control, materials analyses, and so forth. Part 1-1 of this special issue selects 12 excellent papers about five categories of sensors

and materials fields:

- (1) Physical/Mechanical Sensors: "Comparison between Two Different Snubbers of a Boost Converter for Achieving Soft-switching Features" presented by Tsai *et al.* and "Levitation Stability of the Passive Magnetic Bearing in a Nutation Blood Pump" presented by Chen *et al.*
- (2) Materials: "Simulation of Effect of Ar Flow Rate on Silicon Ingot Growth in Directional Solidification System" presented by Li *et al.* and "Multiplicative Degree-Kirchhoff Index of Random Polyphenyl Chains" presented by Li *et al.*
- (3) Related Technologies: "Quality of Service (QoS)-based Hybrid Optimization Algorithm for Routing Mechanism of Wireless Mesh Network" presented by Huang *et al.*, "Simulation Analysis of Silicon Ingot Growth in Directional Solidification System" presented by Dai *et al.*, "Simultaneous Localization and Mapping Method Based on Improved Cubature Kalman Filter"

presented by Chen *et al.*, “Design and Optimization of Red-light Reflector Using Simulation Software” presented by Xu *et al.*, “Classification of Esophageal Adenocarcinoma, Esophageal Squamous Cell Carcinoma, and Stomach Adenocarcinoma Based on Machine Learning Algorithms” presented by Chen *et al.*, and “Shadow Removal Method for Single Image Based on Instant Learning” presented by Zhu *et al.*

(4) Sensor Applications: “Hybrid Predetection Technique for Efficient Tag Identification in Radio-frequency Identification Systems” presented by Hsu *et al.* and “Improved Ant Colony Algorithm-based Automated Guided Vehicle Path Planning Research for Sensor-aware Obstacle Avoidance” presented by Liu.

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