

## SPECIAL ISSUE ON INNOVATIONS OF SENSOR APPLICATIONS AND RELATED TECHNOLOGIES IN IOT PART 4-1

### PREFACE



In recent years, applications of novel sensors and related technologies in electronic and mechanical devices have become rapidly developing fields. The booming economic development in Asia, particularly in leading manufacturing industries such as automobiles, machinery, computers, communications, flat panel displays, semiconductors, and micro/nanoscale technologies, has attracted intense attention among universities, research institutions, and many industrial corporations. Manufacturing is the economic lifeline of a country and has been regarded as a labor intensive industry. To cut production costs, devices for the Internet of Things (IoT) have been widely developed. IoT systems can be composed of 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 aim of attracting companies that manufacture high-value-added products in the fields of aerospace, automotive, IT molds, textiles, optoelectronics, watches, medical devices, automation, energy, and semiconductor-related parts and components to drive a country's economy. Therefore, the key to maintaining a competitive advantage in domestic manufacturing in the future is still to promote the development of novel manufacturing and precision-machinery-related

technologies.

The scope of this Special Issue, "Innovations of Sensor Applications and Related Technologies in IoT", 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; the evaluation of various performance characteristics; and the exploration of their broad applications to industry, environmental control, materials analyses, and so forth. The part 4-1 of this special issue selects 12 excellent papers about five categories of sensors and materials fields:

- (1) Physical Mechanical Sensors: “Development of Load-lifting-assist Mechanism Using Lower Limbs” presented by Shiraishi *et al.*, and “Sputtering Growth of Nitrogen-doped Ga<sub>2</sub>O<sub>3</sub> Films and Applications of Photodetectors” presented by Wei *et al.*
- (2) Related Materials: “Molecular Dynamics Investigations of Thermomechanical Characteristics of Solid and Hollow Spherical Platinum Nanoparticles during Additive Manufacturing” presented by Lai *et al.*
- (3) Bio/Chemical Sensors: “Spectrophotometric Determination of Total Phosphorus in Fresh Water Using Ammonium Molybdate” presented by Sun *et al.*, and “Facial Paralysis Diagnosis and Treatment Assessment Computational Model” presented by Lan *et al.*
- (4) Related Technologies: “A Fine Vehicle Model Measurement Method Based on Plane Ranging” presented by Liu *et al.*, and “Identification Methods for Structural Problems of Bridges Based on Deep Convolutional Neural Network” presented by Liu *et al.*, and “Development of a Machine for Print Circuit Board Electrical Test Wire–Pin Fixture” presented by Lu *et al.*, and “Relation Network Using Meta-learning for Intelligent Machinery Fault Diagnosis with Few Labeled Samples” presented by Fang *et al.*, and “Monitoring Resource Usage of Digital Learning Platforms for Online and Onsite Learning” presented by Pan *et al.*
- (5) Sensor Applications: “Fuzzy Control Design for Table Tennis Robot to Strike Spinning Balls” presented by Sun *et al.*, and “Development of an Intelligent Milling Tool System” presented by Lo *et al.*

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