

SPECIAL ISSUE ON INNOVATIONS OF SENSOR APPLICATIONS AND RELATED TECHNOLOGIES IN IOT: PART 2-1

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 2-1 of this special issue selects 10 excellent papers about four categories of sensors and materials fields:

(1) Physical Mechanical Sensors: "Development of Fault Detector with Acoustic Emission Discrimination for Mechanical Motors" presented by Chen and Lo, "Analysis and Design of

Single-layer Lattice Aluminum Domes Using ANSYS Workbench” presented by Hsu *et al.*, and “Development of Transient Earth Voltage Sensor for Partial Discharge Detection in Gas-insulated Switchgear” presented by Kuo *et al.*

(2) Related Materials: “Analysis of Chemical Composition Formula of Sealing Alloys Using Nearest-neighbor Two-shell Model” presented by Hong *et al.*

(3) Related Technologies: “Radiation-resistant Silicon-on-insulator MOSFETs Realized by Neutron Irradiation” presented by Huang *et al.*, “State Synchronous Control for Nerve-cell Systems via Adaptive Faster Finite-time-stabilized Sliding Mode Method” presented by Yang *et al.*, and “An Enhanced Quantum Genetic Algorithm and Its Application in the Health Monitoring of a Rocket Engine” presented by Hao Xiang, and “A Fully Automated Construction of a Deep U-Net Network Model for Medical Image Segmentation” presented by Gong *et al.*, and “An Improved Faster Region-based Convolutional Neural Network Algorithm for Identification of Steel Coil End-head” presented by Pan *et al.*

(4) Sensor Applications: “Training a Neural Network to Predict House Rents Using Artificial Intelligence and Deep Learning” presented by Yang *et al.*

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