

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

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. Part 1-1 of this special issue selects 14 excellent papers about four categories of sensors and materials fields:

(1) Physical Mechanical Sensors: "Microwave Imaging of Conductors by Direct Sampling Method and U-Net" presented by Chiu *et al.*, "Reducing Surge Voltage and Ringing Effect of DC Voltage Converter by Transient Suppressor" presented by Chien *et al.*, "Effect of Laser

Intensity on an Electron's Optimal Position and Spatial Radiation Characteristics in a Linearly Polarized Tightly Focused Laser Field" presented by Qiu *et al.*, "Analyses of Distributions of Different Impurities for Growth of Polysilicon Ingots in Directional Solidification System" presented by Peng *et al.*, "Parameters in Injection Molding of Cooling Fan for Electronic Chips of Electric Vehicles" presented by Cheng *et al.*, and "Microwave-cavity-based Online Moisture Sensing for Concrete Fabrication" presented by Liu *et al.*

(2) Bio/Chemical Sensors: "Model for Effectively Extracting Mixed Features and Classifying Emotions from Electroencephalograms" presented by Ruan *et al.* and "An Exploratory Study on the Efficacy of Gelfoam and Medical Cyanoacrylate Glue Combination for Passive Reduction of Vascular Pulsatile Tinnitus" presented by Gao *et al.*

(3) Related Technologies: "Convolutional Takagi–Sugeno–Kang-type Fuzzy Neural Network for Bearing Fault Diagnosis" presented by Jhang *et al.*, "Effect of Dust Deposition on Solar Panel in Solar Power Generation" presented by Wu *et al.*, "Design of Multi-module LED Headlamp of Vehicle Under Federal Motor Vehicle Safety Standard" presented by Hsieh *et al.*, "Web-based Crop System" presented by Lan *et al.*, and "Adaptive Tracking Control of Single Input Single Output Nonlinear System with Sectorial Dead Zone Using Interval Type-2 Neural Network Fuzzy Control" presented by Chen *et al.*

(4) Sensor Applications: "Monitoring and Controlling System of Water Quality and Temperature in a Coffee Pot" presented by Lan *et al.*

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