Special Issue on Advanced Materials and Sensing Technologies on IoT Applications: Part 3-1

Preface

In recent years, applications of advanced 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 the Internet of Things (IoT) have been widely developed. IoT is 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 hope of attracting companies that manufacture high-value-added products in the fields of aerospace, automotive, IT molds, textiles, optoelectronics, watches, medical devices, defense, automation, energy, and semiconductor-related parts and components to drive the country's economy. Therefore, the key to maintaining a competitive advantage in 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 3-1 of this special issue selects 11 excellent papers about three categories of sensors and materials fields:

(1) Physical/Mechanical Sensors: "Novel Fault Diagnosis Approach for Rolling-element Bearings Based on Bispectral Analysis" presented by Zhang *et al.*, "Design and Implementation of a Miniaturized Dual-wavelength UV Crosslinker" presented by Z. Wang and M. Wang, "Local Object Tracking Using Infrared Array for Bed-exit Behavior Recognition" presented by Lin *et al.*, and "Hybrid Energy Storage Module in Photovoltaic Power Generation System for Brushless DC Motor Operation" presented by Chen *et al.*

(2) Bio/Chemical Sensors: "Approximate Model for Stress Assessment Using Electroencephalogram Signal" presented by Lin *et al.*

(3) Related Technologies: "Machine-vision-based Spindle Positioning System of Grinding-wheel-saw Automatic Replacement System" presented by Qiu *et al.*, "Using Neural Networks

for Tool Wear Prediction in Computer Numerical Control End Milling" presented by Chen *et al.*, "Design of an Intelligent Grinding Parameter Selection Assistance System" presented by Jhang and Lin, "Port Container Terminal Quay Crane Allocation Based on Simulation and Machine Learning Method" presented by Chatterjee and Cho., "Clustering Routing Algorithm for Wireless Sensor Network Based on Mixed Strategy Game Theory" presented by Wang *et al.*, and "Design of GaN Energy Router to Reduce Household Energy Use" presented by Yuan and Si.

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