Special Issue on International Conference on BioSensors, BioElectronics, BioMedical Devices, BioMEMS/NEMS and Applications 2019 (Bio4Apps 2019) (1)

Preface

In terms of significant progress in different fields of biotechnology, enabled by underlying core technologies such as sensors, electronics, medical devices, micro/nanotechnology, and MEMS/NEMS technology, technology fusion with a focus in emerging markets and applications will create disruptive biotechnology.

BioSensors, BioElectronics, BioMedical Devices, BioMEMS/NEMS, & Applications (Bio4Apps) is a conference series, which was held first in the National University of Singapore (2012), then Tokyo Medical and Dental University (2013), Shanghai Jiao Tong University (2014), Kyushu University (2015), Griffith University (2016), The University of Tokyo (2017), and Harbin Institute of Technology (2018/2019). The objective of Bio4Apps2019 was to bring together researchers to meet and present their work and to disseminate new knowledge to the Bio and Nano engineering community. This conference provided a fantastic opportunity to build networks and exchange ideas among participants and peers from around the world. Bio4Apps2019 was held in Kagoshima, Japan, from December 18–21, 2019.

This special issue focuses on bioelectronics, biosensors, biomedical devices, Bio-MEMS/NEMS, and sensing biology with a strong emphasis on commercialization and applications. In our mind, this special issue on Bio4Apps2019 is suitable for *Sensors and Materials*, which is designed to provide a forum for people working in the multidisciplinary fields of sensing technology, and publishes contributions describing original work in the experimental and theoretical fields, aimed at understanding sensing technology, related materials, associated phenomena, and applied systems. All the papers were submitted by researchers working in related fields. In fact, the Editorial Department of *Sensors and Materials* and we have collected works on the current practice and the state of research in these topics with MEMS background in Japan.

We would like to thank all the authors, reviewers, and others who have helped in the editorial process. Special thanks go to Ms. Misako Sakano, the leader of the Editorial Department, for her great help and encouragement.

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Special Issue on Optical Sensors: Novel Materials, Approaches, and Applications

Preface

Novel sensing methodologies based on optical sensors continue to develop rapidly with advances in physics, material science, chemistry, biology, engineering, and medicine. The growing interest in optical sensors has arisen owing to their well-known characteristics, such as high sensitivity, electrical passivity, in situ measurement, sample nondestructiveness, and immunity to external electromagnetic interference. Optical detection can be realized by measuring the changes in the amplitude, phase, frequency of signals, or the polarization of light in the case of an interaction of a target molecule or recognition element with an optical field.

This special issue focuses on recent developments in novel bio/chemical materials or receptors for optical sensors, new approaches or configurations based on optical sensors, and novel experimental setups for optical sensors toward improving the sensitivity and selectivity of optical sensors in numerous fields, including biomolecule analysis and environmental monitoring.

This special issue contains three papers related to optical sensors. The first paper is related to the optical sensor based on light absorbance using LED. The other two papers present the use of surface plasmon resonance (SPR) as an effective optical sensor, where one of the papers is related to the refractive index sensor and the other one is a mini review paper that presents the recent advances in SPR for potential application in environmental monitoring.

Last but not least, I would like to thank all the authors, reviewers, and others who have helped in the editorial process. Special thanks go to Ms. Misako Sakano, the leader of the Editorial Department, for her great help and invitation to edit this special issue.

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