Special Issue on BioMEMS

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Since BioMEMS has been introduced in 1990's, it has been rapidly grown in both technology and market. BioMEMS or biomedical microelectromechanical system is typically considered one of subsets of MEMS, which utilizes microfabrication technology and is aiming the field of biomedical or health science. Initially, BioMEMS research had been mainly focused on the replacement technology of the conventional biomedical devices and systems by simply miniaturizing current ones although there are several advantages of the miniaturized system over conventional macro systems. Recently, BioMEMS research has shown a great deal of potential not only in the replacement technology but also in the novel technology, which provides new methodologies for investigating biomedical issues. By which, it is believed that even extremely challenging biomedical issues could be addressed. In this “*Special Issue on BioMEMS*”, out of various novel BioMEMS technologies, microfluidic platforms for the applications of cell or micro-particle manipulation are mainly introduced as representative examples of novel technologies.

The first review paper “Microfluidic Platforms for the study of Cancer Metastasis” by Juan-Lin Ng *et al.* provides in-depth review on the applications of microfluidic platforms and their advantages for cancer biology and pathology [1]. As well known, metastases leave cancer patients untreatable and are one of the leading causes of death worldwide in many times. In their paper, they discuss the applications of microfluidic platforms and their advantages for the study of cancer biology and pathology.

The second review paper “Micro-/Nanotechnology-Based Isolation and Clinical Significance of Circulating Tumor Cells”

by Kim *et al.* provides another microfluidic platform for cancer cell manipulation in microfluidic environment [2]. Especially, this review focuses on available micro-/nano-based techniques for the detection of CTCs, clinical utilities of CTCs and their limitations, and future perspectives in this field.

The last review paper “Organomimetic Microsystems Technologies” by Park *et al.* delivers an intensive review on recent advances in the development of ‘Organs-on-Chips’ in which microsystems technologies have been applied to develop cell culture systems that recapitulate the structural, biochemical, and mechanical characteristics of living organs in order to mimic their complex physiology in vitro [3].

An original article “Microfluidic Synthesis of Anisotropic Particles from Janus Drop by in situ Photopolymerization” by Chang-Hyung Choi *et al.* describes a microfluidic method to generate anisotropic particles from Janus drop with high flexibility to control their shapes by in situ photopolymerization. Anisotropic particles are widely used in a variety of applications such as self-assembly, photonic crystals, diagnostics, and drug delivery [4]. Among these applications, shape encoded system for diagnostics is particularly promising one due to the fact numerous encoding could be realized by simply controlling the shape of particles. Readers should be able to apply the novel fabrication method to produce functional material in various applications such as self-assembly, photonics, diagnostics, and drug-delivery.

In closing this editorial, I would like to express my sincere respect and deepest gratitude to many reviewers, whose professional comments guaranteed the high quality of the selected papers. In addition, I would like to express my sincere appreciation to Dr. Beebe for his supporting letter [5]. Finally, I can't imagine this special issue without the endless support from Dr. Jae Sung Lee, Managing Editor, and Dr. Sang-Hoon Lee, Editor-in-Chief of the journal “*Biomedical Engineering Letters*”. I really appreciate their endless devotion on this issue. I hope readers find this special issue helpful for their future study.

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