

Inaugural Editorial

The **Biomaterials and Biomedical Engineering (BME)**, *An International Journal*, is a new, peer-reviewed journal that encompasses all aspects of a variety of biomaterials and biomedical applications. **BME** aims to provide an open forum for scientists, engineers, clinicians and researchers of the world to facilitate sharing the most recent scientific findings and novel technologies in biomaterials and biomedical engineering.

Not only in the traditional area of implantable biomaterials for replacement strategies, but also on the new paradigms of regenerative medicine, the use of materials in contact with biological environment is a contemporary illustration of the need of interdisciplinary scientific approaches that combine the most recent advances in materials science and technology, biomedical engineering, basic sciences and life sciences. In tissue engineering, new generation of bioinstructive matrices has been developed to support cells, promoting their differentiation and proliferation towards the formation of a new tissue. These hybrid structures are aimed to be implanted in patients to induce the regeneration of tissues or replace failing or malfunctioning organs.

Biomedical engineering based on the biomaterials science plays thus a key role in the development of such advanced therapeutic strategies. Materials applied in medical fields both *in vivo* and *ex vivo*, have been developed since the early 1950's have been based on metals, polymers, ceramics and composites, processed with a variety of shapes and sizes. Biomaterials have allowed us to improve the quality of life of a large number of patients. However, recent developments in biology, nanotechnologies, engineering, surface sciences, or chemistry/biochemistry have allowed to enhance further the performance of medical devices and permitted to introduce new paradigms for radically new diagnosis and therapeutic strategies. We will face in the future for a boost in the development of biomaterials based on new biomimetic concepts, with a perfect communication with the physiological environment, able to respond to biological or other stimuli, and processed with more complex structures, designed for the required medical specifications.

With the advancement of biomaterials and tissue engineering technologies, research on biomedical applications has been recently accelerated and rapidly expanded. Some of the most challenging studies for biomedical applications today, however, are in the interdisciplinary research on advanced material processing, biology/chemistry of interfaces, physics for design/manufacturing, *in vitro/in vivo* tests, and clinical trials. A wide range of researchers focuses on developing devices for important or sustainment of human life. Therefore, an urgent need exists for discussing various topics in the field of biomaterials and bioengineering, which further improve the quality of human life.

BME will publish exciting and innovative papers involving new fundamental and applied aspects on development of biomaterials and applications in areas including but not limited to the following topics: design and surface modification of biomaterials; materials-cells interactions and biocompatibility; hydrogels; nanobiomaterials; drug and gene delivery systems; bioimaging and 3D printing, biosensors and diagnostic/theragnosis tools; biomedical devices for *ex vivo* applications, including drug screening, high-throughput evaluation, stem cell biology research and disease models; tissue engineering and regenerative medicine; medical devices and artificial organs.

We would like to take this opportunity to thank the **Techno-Press** for managing publication process of *BME*. We look forward to seeing your contributions to the new journal.

Editors-in-Chief

March, 2014

Youngjae Chun

U Pittsburgh, USA

Kazuhiko Ishihara

U Tokyo, Japan

João F. Mano

U Minho, Portugal

Dong Keun Han

KIST, Korea