Special Issue

Microstructural and Mechanical Characterization of Materials for Biomedical Applications

Message from the Guest Editors

With the recent developments of 3D printing, it is possible to make biomedical devices and constructs at a much higher resolution to mimic natural structures with greater detail and accuracy, leading to personalised treatments and changing medical practice. As a result, stronger materials have been developed, allowing ceramics to be used with more confidence in orthopaedics and dentistry. Polymer microstructures have led to the development of new drug release devices and tissue engineering substrates. New medical metal alloys have been developed with bioresorbable microstructures. All these new possibilities have led to materials that are stronger with better mechanical performance and with a stiffness that is now closer than ever to the tissues that are replaced or repaired. This is an important development that minimises stress shielding in orthopaedic implants and promises longevity of the modern metal and ceramic implants. The aim of this issue is to showcase all these new developments by bringing this knowledge together and covering a large number of biomedical applications to raise their scientific and commercial value in the field of biomedical materials.

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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