

Special Issue for BIOMATTER

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Development of Porous Biomaterials for Tissue Engineering and Drug Delivery Applications

Aims & Scope:

The current research on biomaterials is expected to have an enormous impact on human health care. The applications include medical devices, diagnostics, sensors, drug delivery systems, and tissue/bone engineering. In this special issue of Biomatter, both original and review articles will highlight and describe in more detail some of the most recent technologies used to develop porous-based biomaterials for tissue/bone engineering and drug delivery applications. Porous drug delivery systems should be biocompatible allowing for high payloads of drug molecules without premature drug release, be site specific for targeting delivery, and release the drug at a controlled rate reaching effective local drug concentrations with the fewest side effects possible. In addition, tissue engineering is a newly emerging biomedical technology, which aids and increases the repair and regeneration of deficient and injured tissues/organs. It combines principles from different fields such as materials science, cell biology, transplantation, and engineering in an effort to treat or replace damaged tissues. For example, synthetic, natural and inorganic porous-based biomaterials can be used as scaffolds for tissue/bone engineering therapies and for locally controlling the dose, location, and duration of the release of drug molecules from the biomaterials. All together, this special issue will hopefully provide knowledge on the advances and most recent porous-based biomaterials, scaffolds and other technologies intended to develop precisely tissue/bone engineered and drug delivery systems that will ultimately aid healing complex diseases. Several examples of the methods of preparation, characterization and applications of these materials are also presented and discussed in detail in this issue.

Keywords:

Biocompatibility, biomaterials, bone, cartilage, drug delivery systems, hydrogels, nano/microparticles, membranes, polymers, porous, tissue engineering/regeneration, scaffold

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