Biomaterials Science: Processing, Properties, and Applications V

Edited by
Roger Narayan
Susmita Bose
Amit Bandyopadhyay

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EFFECT OF IMMERSION MEDIUM ON THE DEGRADATION AND CONVERSION OF SILICATE (13-93) BIOACTIVE GLASS SCAFFOLDS

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DRUG DELIVERY FROM SURFACE MODIFIED TITANIUM ALLOY FOR LOAD-BEARING IMPLANTS

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A FAMILY OF NOVEL BIOSTABLE RETICULATED ELASTOMERIC AND RESILIENT BIOINTREGATIVE CROSSLINKED POLYURETHANE-UREA SCAFFOLDS

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IN SITU NITRIDATION OF TITANIUM USING LENS™

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NOVEL PLA- AND PCL-HA POROUS 3D SCAFFOLDS PREPARED BY ROBOCASTING FACILITATE MC3T3-E1 SUBCLONE 4 CELLULAR ATTACHMENT AND GROWTH

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Figure 5. Comparison of osteoblast proliferation on 3D scaffolds and HA: Cell densities are reported with proliferation studied over 7 d. Control cell proliferation was approximately 5x initial seeding density (50 000 cells cm^{-2}).

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Figure 7. Electron micrograph of MC3T3-E1.4 layer on robocasted PLA-HA. Overall views of cell layers (white) on PLA-HA 3D scaffold (dark gray) at A) 100x, B) 2000x, C) 5000x. Individual cells were seen attached to the PLA-HA surface at D) 1000x. (O – osteoblast or osteoblast layers, L – lamellipodia, F – filopodia, S – scaffold, PD – polymer degradation)

DEXTRAN COATED CERIUM OXIDE NANOPARTICLES FOR INHIBITING BONE CANCER CELL FUNCTIONS

Figure 1: Schematic of the synthesis and characterization of dextran coated ceria nanoparticles and cell culture experiments.

Figure 2: Figure 2a) TEM micrograph of 0.1M (left) and 0.01M (right) dextran coated nanoceria; b) X-ray diffraction of 0.1M and 0.01 M dextran coated nanoparticles; and c) X-ray photoelectron spectra.

Figure 3: Toxicity effect of 0.1 M and 0.01M dextran coated ceria nanoparticles (DCN) against to osteosarcoma cells at various concentrations after 1-day treatment. Data = mean +/- SEM and *p < 0.01 compared to control at the same DCN concentration.

Figure 4: Toxicity effect of 0.1 M dextran coated nanoparticles (DCN) against osteosarcoma cells at various concentrations after 1, 3 and 5 days treatment. Data = mean +/- SEM and *p < 0.01 compared to control at the same DCN concentration.

Preface

This volume is a collection of research papers from the Next Generation Biomate-rials and Surface Properties of Biomaterials symposia, which took place during the Materials Science & Technology 2014 Conference & Exhibition (MS&T'14), at the David L. Lawrence Convention Center, Pittsburgh, Pennsylvania. These symposia focused on several key areas, including biomaterials for tissue engineering, ceramic biomaterials, metallic biomaterials, biomaterials for drug delivery, nanostructured biomaterials, biomedical coatings, and surface modification technologies.

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We hope that this issue becomes a useful resource in the area of biomaterials research that not only contributes to the overall advancement of this field but also signifies the growing roles of The American Ceramic Society and its partner materials societies in this rapidly developing field.

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Next Generation Bioceramics