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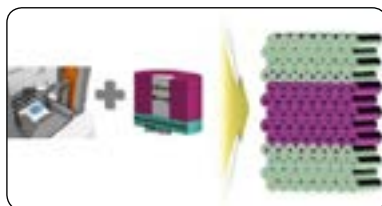
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Ceramic/camphene based three-dimensional co-extrusion for biomimetic structure

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We report a novel ceramic scaffold structure with biomimetic dense/channel using ceramic/camphene based by extrusion. As you know porous structure can give good favorable environment for bone ingrowth and excellent permeability. Biphasic calcium phosphate (BCP) powder comprises of hydroxyapatite and tricalcium phosphate (TCP) has good biocompatibility and bioactivity. Therefore, in this study, we decide to use the camphene-based freeze casting method in order to produce biomimetic graded porous biphasic calcium phosphate (BCP) ceramic. This design consists of dual layer as mimicking core-shell structure of natural bone, which is relatively dense part as a shell structure of natural bone, and porous part as an inner section, which is a biomimetic structure of nature human bone. To accomplish this, biphasic calcium phosphate (BCP)/camphene slurry with two different contents of 15vol% and 40vol% is first frozen uni-directionally in a 20mm diameter mold with multi-layered extrusion through a reduction die with a cross section of 1mm diameter at room temperature. This simple processes enabled the formation of dense/channel scaffold with aligned pores by removing camphene dendrites in the biphasic calcium phosphate (BCP)/camphene region.



Recent Publications:

1. Kim JW, Shin KH, Koh YH, Hah MJ, Moon J, Kim HE Production of Poly(ϵ -Caprolactone)/Hydroxyapatite Composite Scaffolds with a Tailored Macro/Micro-Porous Structure, High Mechanical Properties, and Excellent Bioactivity MDPI 2017 Oct;10(10):1123
2. Choi JW, Kim JW, Jo IH, Koh YH, Kim HE. Novel self-assembly-induced Gelation for Nanofibrous Collagen/Hydroxyapatite Composite Microspheres MDPI 2017 Sep 21;10(10)
3. Kwan-Ha Shin, Jong-Woo Kim, Young-Hag Koh, Hyoun-Ee Kim Novelself-assembly-induced3Dplottingformacro/nano-porous collagen scaffolds comprised of nanofibrous collagen filaments Materials Letters 143 (2015) 265-268.

Biography

Jong Woo Kim has extensive experience in the field of biomaterials. He has a lots of experience in bio materials research, evaluation, and operation in the lab. He has high passion for biomaterial development.

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