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Synthesis and Characterization of Nanostructured Forsterite Scaffolds Using Two Step Sintering Method

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Abstract

This paper reports the successful synthesis of nanostructured forsterite (Mg_2SiO_4) scaffold with high compressive strength for tissue engineering application. Forsterite slurry was prepared and pre-cut foams were immersed in the slurry for 5 min. The saturated foams were then annealed at various times and temperatures using the two step sintering method. The compressive strength and porosity of the scaffolds were in the range of 0.03-24.16 MPa and 58-88% depends on the heat treatment process, respectively. The 15-60-3 sample consisted of grains in the range of 24 to 35 nm and micron size pores that could be detected by SEM observation.

Keywords: Sintering; Nanomaterials; Porosity; Ceramics

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