

عنوان مقاله:

Study on compressive and compatibility properties of titanium functionally graded scaffolds (FGSs) as bone replacements

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خلاصه مقاله:

Recently, Functionally Graded Scaffolds (FGSs) have attracted a lot of attention as bone replacements due to their gradient porosities as well as a bone structure. In present study titanium functionally graded scaffolds (FGSs) were fabricated by powder metallurgy route using Mg and carbamide as space holders. The arranged layers with ۲۰، ۴۰ and ۶۰ Vol.% porosities were compacted in steel die using uniaxial pressure of ۵۰۰ MPa before sintering in sealed quartz tubes at ۱۱۰۰ °C for ۳ hours. Image analyzing results and scanning electron microscope (SEM) observations showed more regular shapes and sizes of pores in FGSs using Mg as a space holder compared to carbamide. The observed compressive strength and Young's moduli of the FGSs having Mg as a space holder were in the range of ۴۷- ۱۶۰ MPa and ۲۵-۷۵ GPa , respectively which can be appropriate as bone replacements. The results of MTT assay showed that the values of proliferation rate were higher in samples produced using Mg

کلمات کلیدی:

(Biocompatibility, compressive properties, Functionally Graded Scaffold (FGS

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