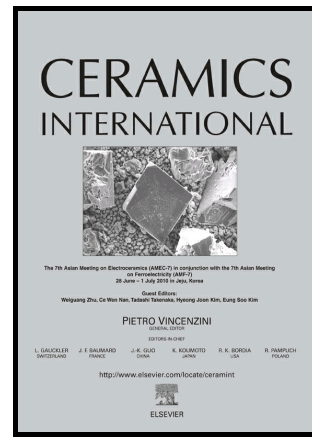


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Two-Step Modification Process to Improve Mechanical Properties and Bioactivity of Hydroxyfluorapatite Scaffolds

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Abstract

Porous ceramic scaffolds are synthetic implants, which support cell migration and establish sufficient extracellular matrix (ECM) and cell-cell interactions to heal bone defects. Hydroxyapatite (HA) scaffolds is one of the most suitable synthetic scaffolds for hard tissue replacement due to their bioactivity, biocompatibility and biomimetic features. However, the major disadvantages of HA is poor mechanical properties as well as low degradability rate and apatite formation ability. In this study, we developed a new method to improve the bioactivity, biodegradability and mechanical properties of natural hydroxyfluorapatite (HFA) by applying two-step coating process including ceramic and polymer coats. The structure, morphology and bioactivity potential of the modified and unmodified nanocomposite scaffolds were evaluated using transmission electron microscopy (TEM), scanning electron microscopy (SEM), X-ray diffraction (XRD), Fourier transform infrared spectroscopy

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