

عنوان مقاله:

In vitro bioactivity of silicophosphate glasses doped with ZnO, SrO or CuO

محل انتشار:

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تعداد صفحات اصل مقاله: 11

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خلاصه مقاله:

AbstractSilicophosphate glasses with variable divalent ion dopants (Zn^{2+} , Sr^{2+} or Cu^{2+}) were prepared via melt annealing route. Parent and doped glasses were thermally heat-treated through a two-step regime to be converted into their glass-ceramic derivatives. Fourier transform infrared (FT-IR) spectral data were recorded for parent glasses and their glass-ceramics derivatives to identify the structural building units which reveal vibrational bands due to both main phosphate and some silicate groups and to verify the bioactivity behavior after immersion in diluted phosphate solution. X-ray diffraction studies indicate the formation of different phosphate and silicate crystalline phases in the derived glass-ceramics which varied with the type of dopant oxide. SEM investigations of the glass-ceramics before and after immersion in phosphate solution showed multicomponent microcrystalline textures in the studied micrographs before immersion. Nodular-shaped microcrystalline features were identified after immersion in phosphate solution referring to the formation of crystalline hydroxyapatite. The undoped glass-ceramic is identified to crystallize in almost equal silicate and phosphate phases, while with the dopant ZnO, SrO or CuO, the crystalline phases are only of phosphates, while the silicate phase is assumed to be retained in the surrounding remaining vitreous boundaries.

کلمات کلیدی:

Silicophosphate, glass, Glass-ceramics, ZnO, CuO, SrO, Bioactivity

لینک ثابت مقاله در پایگاه سیویلیکا:

