

Synthesis and Characterization of Iron-doped Hydroxyapatite by Sol–Gel Method

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Nanoporous materials of $\text{Ca}_{(10-x)}\text{Fe}_x(\text{PO}_4)_6(\text{OH})_2$ (FeHAp, $x = 0, 0.1, 0.2,$ and 0.3) were successfully synthesized by sol–gel method. To obtain FeHAp, the prepared precursors were calcined in air at 600, 700 and 800 oC for 2 h. The samples were characterized by X–ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR) and transmission electron microscope (TEM) observation. The XRD results confirm the formation of HAp phase with a small trace of beta-tricalcium phosphate phase. The crystallite sizes of the powder were found to be 30–60 nm as evaluated by the XRD line broadening method. The morphology of the samples was nanoporous particles of size less than 100 nm as evaluated by TEM. With increasing the Fe-substituted, the particle size of the FeHAp decreased.

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