

Temperature effect on Zinc substituted hydroxyapatite investigated by XRD, FTIR and SEM technique

The aim of this work is investigate characteristic of zinc substituted hydroxyapatite after heat treatment. Zinc substituted hydroxyapatite was synthesized from calcium oxide (CaO) of waste eggshell by precipitation method. The concentration of zinc nitrate was substituted hydroxyapatite at various from 1 to 25%wt. The zinc substituted hydroxyapatite was heated at different temperature from 200 to 1300 C with an increment of 100 C. The crystal structure, function group and morphology of sample were analyzed by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy, respectively. The XRD results show that the zinc substituted hydroxyapatite was hexagonal phase after heated from 200 to 800 C. The hydroxyapatite phase of zinc substituted hydroxyapatite was changed to zinc containing β -tricalcium phosphate phase and higher crystalline after heated from 900 to 1300 C. The crystalline of β -tricalcium phosphate was increased with increasing zinc concentration. The zinc substitution and phase change of zinc substituted hydroxyapatite was confirmed with FTIR and SEM results.

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