

Effects of Hexagonal Boron Nitride on Tricalcium Phosphate- Hexagonal Boron Nitride Composite

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ABSTRACT

Hydroxyapatite (HA) and tricalcium phosphate (TCP) ceramics have been widely used in biomaterials owing to their chemical composition and crystalline structures similar to those of inorganic bones and teeth. In this study, hexagonal boron nitride (hBN; 0 and 4 wt %) was added to HA. Composite samples were shaped and sintered at 900, 1000, 1100, 1200 C. The density and open porosity of the sintered samples were determined by Archimedes' method, the crystalline phases present in the samples were identified by X-ray diffraction (XRD) and microstructural evolution under the different sintering temperatures was examined using scanning electron microscopy (SEM). Experimental results indicated that all the sintered samples were transformed into TCP and density increase with hBN up to 1100 C.

Keywords : Hydroxyapatite, tricalcium phosphate, hexagonal boron nitride, sintering, microstructure