

Synthesis and Characterization of Boron containing Hydroxyapatite Bioceramics

Sefa Özzaman (University of Afyon Kocatepe), Atilla Evcin (University of Afyon Kocatepe), Bahri Ersoy (University of Afyon Kocatepe), Taner Kavas (University of Afyon Kocatepe), Abdullah Küçük (University of Afyon Kocatepe)

Hydroxyapatite [HA, chemical Formula $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$] is an inorganic compound whose chemical composition is similar to the composition of the bone and teeth. It has excellent biocompatibility with hard tissues. However due to poor mechanical properties its biomedical applications are limited. In recent years, many reinforcement studies including additive, particle, fiber and whiskers have been used in HA bioceramics to improve its mechanical properties. In this work, HA with boric acid (0, 5, 10 and 15%wt) was produced by novel chemical precipitation technique. Dried powders were shaped under uniaxial pressure and then sintered at different temperatures (1000, 1050 and 1100 °C) for 2 hours under air atmosphere. Characterization of the products was accomplished by differential thermal analysis (DTA-TG), X-ray diffraction (XRD) and scanning electron microscopy (SEM). Some physical (shrinkage, water absorption, apparent porosity, bulk density) and mechanical strength (three point bending) tests were applied on fired samples

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