

Effects of Li₂O Doping on Mechanical and Electrical Properties of Bovine Hydroxyapatite Composites (BHA)

Authors : Sibel Daglilar, Isil Kerti, Murat Karagoz, Fatih Dumludag, Oguzhan Gunduz, Faik Nuzhet Otkar

Abstract : Hydroxyapatite (HA) materials have common use in bone repairing due to its ability to accelerate the bone growth around the implant. In spite of being a biocompatible and bioactive material, HA has a limited usage as an implant material because of its weak mechanical properties. HA based composites are required to improve the strength and toughness properties of the implant materials without compromising of biocompatibility. The excellent mechanical properties and higher biocompatibilities are expected from each of biomedical composites. In this study, HA composites were synthesized by using bovine bone reinforced doped with different amount of (wt.%) Li₂O. The pressed pellets were sintered at various sintering temperatures between 1000°C and 1300°C, and mechanical, electrical properties of the obtained products were characterized. In addition to that, in vitro stimulated body fluid (SBF) tests for these samples were conducted. The most suitable composite composition for biomedical applications was discussed among the composites studied.

Keywords : biocomposites, sintering temperature, biocompatibility, electrical property, conductivity, mechanical property

Conference Title : ICMET 2016 : International Conference on Materials Engineering and Technology

Conference Location : Melbourne, Australia

Conference Dates : February 04-05, 2016