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Investigations of the effects of initial Zn concentration and sintering conditions on the phase behavior and mechanical properties of Zn-doped bcp (Article)

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Abstract

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Sintering behaviour of zinc doped biphasic calcium phosphate was investigated over the temperature range of 1000-1300°C. The starting powders have been synthesized through Sol-Gel method. Zinc concentration was varied in the range of 0, 1, 2, 4, 5, 10 and 15mol%. After uniaxial pressing followed by isostatic pressing, the compacted samples were sintered via conventional pressureless sintering. The dense samples were studied in terms of phase stability, relative density, Vickers hardness, and fracture toughness. The results showed hydroxyapatite as the main phase and β-tricalcium phosphate as the secondary phase. However, parascholzite phase started to appear in 15mol%. Relative density results indicated that Zn-doped BCP dense samples showed the maximum relative density of 96.1% compared to 88.0% for Zn free-BCP fired at 1300oC. The maximum Vickers hardness and fracture toughness of 3.44 GPa and 1.43 MPa.m1/2 respectively, was achieved at 1200°C. This study showed that Zn doping improved the hardness and toughness of BCP.

Author keywords

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References (22)

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1 Dorozhkin, S.V.
Calcium Orthophosphates as Bioceramics State of the Art
(2010) *Journal of Functional Biomaterials*, 1, pp. 22-107. Cited 77 times.

2 Garrido, C.A., Lobo, S.E., Turibio, F.M., Legeros, R.Z.
Biphasic calcium phosphate bioceramics for orthopaedic reconstructions: Clinical outcomes
(2011) *International journal of biomaterials*, pp. 1-9. Cited 26 times.

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Biphasic, Triphasic, and Multiphasic Calcium Orthophosphates
Dorozhkin, S.V.
(2016) Advanced Ceramics

Multiphasic calcium orthophosphate (CaPO4) bioceramics and their biomedical applications
Dorozhkin, S.V.
(2016) Ceramics International

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