

Design and characteristics of hydroxyapatites: Effect of radiation

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Hydroxyapatites single crystals have been investigated their applications as the laser host material. Czochralski and flux growth methods have been utilized to achieve single crystals. Because of their bioactivities with tissues these have attracted interest for bone applications. For low temperature processing we have used several techniques. We utilized some organic melt and oriented the grains by the directional solidification method. This organic treated material has different characteristics than coarsened oxide materials. Our approach involved low temperature processing using nano engineered powders of the material system MgO-Na₂O-K₂O-CaO-SrO-SiO₂ and also borates were processed by sintering and grain growth. Our results indicate that substitution of calcium and strontium with some other elements such as gallium and magnesium have great potential to improve the mechanical properties of bones.

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