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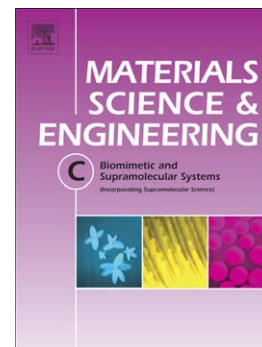
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Effect of Nanofillers on the Physico-Mechanical Properties of Load Bearing Bone Implants

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Abstract

Bones are nanocomposites consisting of a collagenous fibre networks, embedded with calcium phosphates mainly hydroxyapatite (HA) nanocrystallites. As bones are subjected to continuous loading and unloading process every day, they often tend to become prone to fatigue and breakdown. Therefore, this review addresses the use of nanocomposites particularly polymers reinforced with nanoceramics that can be used as load bearing bone implants. Further, nanocomposite preparation and dispersion modification techniques have been highlighted along with thorough discussion on the influence that various nanofillers have on the physico-mechanical properties of nanocomposites in relation to that of natural bone properties. This review up to dates the nanocomposites that meet the physico-mechanical properties (strength and elasticity) as well as biocompatibility requirement of a load bearing bone implant and also attempts to highlight the gaps in the reported studies to address the fatigue and creep properties of the nanocomposites.

Keywords: Bioactive; Nanocomposite; Nanofillers; Physico-mechanical Properties; Load bearing bone implants.

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