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Investigating the effect of heat transfer on immersion behavior of plasma sprayed HAp coatings deposited on Ti-6Al-4V alloy substrates

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In this investigation, air plasma spraying was used to coat two sets of geometrically different Ti-6Al-4V alloy substrates with hydroxyapatite (HAp). The two sets of samples were then immersed in simulated body fluid (SBF), a fluid whose ionic composition resembles that of the human fluid, to determine the biofunctional performance of the coatings. Immersion was done for varying time periods (0, 7, 28 and 56 days) under physiological conditions. Samples where then analyzed using X-ray diffraction (XRD) and scanning electron microscopy (SEM) in order to compare coatings deposited on the two geometrically different substrates before and after immersion. XRD technique was used to investigate the effect of the simulated body fluid on the thermal products formed, the degree of crystallinity and the residual stresses of the coating for both substrate geometries. SEM was used to study the surface morphology and microstructure of both samples after coating and immersion. Previous investigations conducted on these coatings indicated that immersion in SBF has an effect on the morphology and chemical composition of the samples.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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