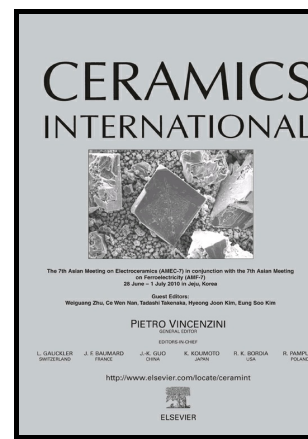


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Abstract

The effect of the pulsed electron beam (PEB) treatment on the structure and morphology of the hydroxyapatite (HA) coating deposited on the surfaces of titanium substrates by radio frequency magnetron sputtering was elucidated. The structure, composition and morphology of the samples were characterized by scanning electron microscopy (SEM), X-ray photoelectron spectroscopy (XPS) and X-ray diffraction (XRD). The results collected from SEM experiments demonstrated that the HA film was smooth and featureless. The samples were irradiated by PEB using an electron beam energy density of 0.1 J cm^{-2} , electron beam pulse duration of 50 ns, pulse repetition frequency of 5 Hz, and number of pulses $N=50$ and $N=150$. After PEB treatment with $N=50$, the coating exhibited a much finer uniform surface morphology, playing a crucial role in the

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