

Abstract Submitted  
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**A novel approach to the growth of polycrystalline hydroxyapatite thin films**<sup>1</sup> ZHENDONG HONG, LAN LUAN, SE-BUM PAIK, BIN DENG, DONALD ELLIS, JOHN KETTERSON, Department of Physics and Astronomy, Northwestern University, ALEXANDRE MELLO, ALEXANDRE ROSSI, JOICE TERRA, Centro Brasileiro de Pesquisas Fisicas, Brasil, NORTHWESTERN UNIVERSITY COLLABORATION, CBPF COLLABORATION — Hydroxyapatite (HA) thin films on metals have been extensively studied in connection with bioimplants. Conventional sputtering techniques have shown some advantages over the commercially utilized plasma spray method; however, the as-sputtered films are usually amorphous which can cause serious adhesion problems when post-deposition heat treatment is necessitated. We present a novel opposing RF magnetron sputtering approach for the room temperature preparation of HA thin films on various substrates at low power levels. The as-sputtered films are found to be polycrystalline and the preferred orientations of the films vary with the substrate material and orientation. The effects of different sputtering parameters on the physical, chemical and structural properties was also studied. Finally, patterned films fabricated both before and after deposition have been prepared for further *in vitro* cell culture experiments.

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