

Production and Characterization of Silver Doped Hydroxyapatite Thin Films for Biomedical Applications

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Abstract : In this paper, the preparation and characterization of silver doped hydroxyapatite thin films and their antimicrobial activity characterized is reported. The resultant Ag: HAp films coated on commercially pure Si disks substrates were systematically characterized by Scanning Electron Microscopy (SEM) coupled with X-ray Energy Dispersive Spectroscopy detector (X-EDS), Glow Discharge Optical Emission Spectroscopy (GDOES) and Fourier Transform Infrared spectroscopy (FT-IR). GDOES measurements show that a substantial Ag content has been deposited in the films. The X-EDS and GDOES spectra revealed the presence of a material composed mainly of phosphate, calcium, oxygen, hydrogen and silver. The antimicrobial efficiency of Ag:HAp thin films against *Escherichia coli* and *Staphylococcus aureus* bacteria was demonstrated. Ag:HAp thin films could lead to a decrease of infections especially in the case of bone and dental implants by surface modification of implantable medical devices.

Keywords : silver, hydroxyapatite, thin films, GDOES, SEM, FTIR, antimicrobial effect

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