

Chapter 11

Tribo–Corrosion Behaviour and Characterization of Biocompatible Coatings

Amol Bajarang Chavan

Sanjeevan Engineering and Technology Institute, Panhala, India

Sanjaykumar S. Gawade

Rajarambapu Institute of Technology, Islampur, India

Digvijay G. Bhosale

Dr. D. Y. Patil Institute of Technology, Pimpri, India

ABSTRACT

Commercially available metallic orthopaedic implant materials cause major problems like stress shielding and the release of harmful ions due to corrosion and wear. Also, the secondary operation is a must for the implant removal. Therefore, the biodegradable and biocompatible magnesium (Mg) implant materials have been investigated. Mg shows favorable biological properties and matching mechanical properties with the natural bone. Mg alloys rapidly corrode in the physiological environment, which cause failure of the implant before completing the expected function. Surface coating is the most effective method for improving the corrosion performance of Mg and its alloys. Hydroxyapatite (HA), being the most stable phase of calcium phosphates in physiological conditions, is preferred as a coating material. The chapter focuses on the tribo-corrosion and characterization of HA coatings prepared by electrodeposition process on Mg alloys. The results are useful for the designer community in the selection of biocompatible coatings and process parameters to maximize the life of bio-implants.

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