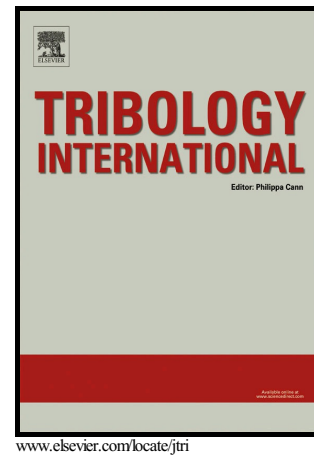


Author's Accepted Manuscript

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PII: S0301-679X(16)30450-9
DOI: <http://dx.doi.org/10.1016/j.triboint.2016.11.029>
Reference: JTRI4469

To appear in: *Tribology International*

Received date: 8 September 2016
Revised date: 9 November 2016
Accepted date: 15 November 2016

Cite this article as: M. Buciumeanu, A. Araujo, O. Carvalho, G. Miranda, J.C.M. Souza, F.S. Silva and B. Henriques, Study of the tribocorrosion behaviour of Ti6Al4V – HA biocomposites, *Tribology International* <http://dx.doi.org/10.1016/j.triboint.2016.11.029>

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Study of the tribocorrosion behaviour of Ti6Al4V – HA biocomposites

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Abstract

This study is concerned with tribocorrosion behaviour of Ti6Al4V-HA biocomposites. The Ti6Al4V composites reinforced with different contents of hydroxyapatite (HA) particles (5 to 15%, vol.%) were produced by hot pressing technique. The tribocorrosion tests were performed by using a ball-on-plate configuration in artificial saliva at 37°C. The tests were carried out under open circuit potential (OCP), with a sliding duration of 1800 s, 1N normal load and 1Hz frequency. The open circuit potential and wear mechanisms for all tested biocomposites are presented and discussed. The results suggest that HA plays a relevant role on tribocorrosion behaviour of Ti6Al4V-HA composites. All composites samples presented better wear resistance and also a relatively lower tendency to corrosion with increasing HA content.

Keywords: hydroxyapatite; Ti6Al4V alloy; composites; tribocorrosion.

1. Introduction

Wear and corrosion resistance of biomaterials have been reported to be a primary reason for the failure of an implant [1,2]. Regarding the use as biomaterial (e.g. implant material), titanium and its

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