Thursday Evening Poster Sessions, November 2, 2017

Tribology Focus Topic
Room Central Hall - Session TR-ThP

Tribology Poster Session

TR-ThP-1 Tribocorrosion Behaviour of Ti6Al4V Alloy Trated By Laser Shock Processing, *Roman Angel Rosas Meza, G Gómez Rosas, M Flores Martínez,* Universidad de Guadalajara, Mexico*; C Rubio González,* Centro de Ingeniería y Desarrollo Industrial, Mexico*; J González Sevilla,* Universidad de Guadalajara, Mexico

The Ti6Al4V alloy is used in biomedical industry, currently employed in prosthesis fixing screws, there are concerns regarding its metal ion release and material loss caused by tribocorrosion in a living being. The surface functionalization by laser could improve the osseous integration of TiAl4V and reduce the damage by fretting corrosion in these screws. In this work, the laser shock processing (LSP) with two different swept densities (2500 and 5000 pulses/cm^2) have been employed to know the behavior of the tribocorrosion resistance of Ti6Al4V with and without treatment. The laser used was a Nd:YAG with pulsed laser frequency of 10 Hz and wavelength of 1064 nm. The LSP configuration was the water jet mode without protective coating. The tribocorrosion tests were made with the sample immersed in a simulated body fluid containing synthetic body fluid (SBF) and bovine serum (BS) as corrosive medium, in a tribometer with reciprocating movement, using loads from 0.5 N to 1.5 N. In the tribocorrosion test was measured the evolution of open circuit potential and friction coefficient. The lost volume of the wear track was calculated using a stylus profilometer. Hole drilling test was used to measure the residual stress. The samples were characterized by means of Raman spectroscopy, scanning electron microscopy and x ray diffraction. The tribocorrosion behavior was analyzed as a function of the laser swept densities and the applied loads.

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