

ELECTROCHEMICAL INVESTIGATION OF THE CORROSION BEHAVIOR OF Ti₆Al₄V ALLOY IN PRESENCE OF ESCHERICHIA COLI IN CHLORIDE ENVIRONMENT

Monica Galicia^{1,2}, Elsa Ordoñez^{1,2}, Roxana Malpica^{1,2}, Jonathan Calvillo^{1,2}

¹Universidad Autónoma de Ciudad Juárez, Ingeniería y manufactura, Mexico. ²Universidad Autónoma de Ciudad Juárez, Químico-Biológicas, Mexico.

In this work we present an electrochemical investigation of the corrosion process for the Ti₆Al₄V alloy in presence of Gram (-) *Escherichia Coli* bacteria through potentiodynamic polarization and electrochemical impedance spectroscopy. The first attempt was to investigate if the bacteria metalized a biofilm in a 7-days lapse by using impedance analysis using passive electrical circuit elements. The second approach, determined electrochemically the corrosion rate through Tafel slopes and the influence of the bacteria in this corrosive process. High resolution microscopy SEM and analysis of chemical composition with scattered electrons to verify the colonization process of the specimen in an abiotic and bacterial culture media. Results showed contrary aspects in the impact of the *E. coli* as a model for elucidate the possible microbiologically influenced corrosion (MIC) present in this alloy as in the biomedical implants, aerospace components or even offshore equipment.

Keywords: Ti6Al4V corrosion, impedance analysis, MIC

Presenting author's email: al154790@alumnos.uacj.mx