



"Gheorghe Asachi" Technical University of Iasi, Romania



CORROSION BEHAVIOR OF CoCrMo ALLOY IN NON-PASTEURIZED AND PASTEURIZED APPLE JUICE

**Daniel Mareci^{1*}, Catalin Punguta², Manuela Romaş¹,
Ionuţ Lucian Bistriceanu², Corneliu Munteanu², Daniel Sutiman¹**

¹*"Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,
73 Prof. dr. doc. D. Mangeron Blvd., 700050, Iasi, Romania*

²*"Gheorghe Asachi" Technical University of Iasi, Faculty of Mechanical Engineering,
61-63 Prof. dr. doc. D. Mangeron Blvd, 700050, Iasi, Romania*

Abstract

CoCrMo alloy used currently as metallic biomaterial was investigated in view of dental applications using electrochemical methods. The prevalence of dental corrosion in human mouth has increased in the few decades as a result of an increasing consumption of commercial fruit juices. Two electrochemical techniques were used: cyclic potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) in non-pasteurized and pasteurized apple juice at 25°C. The electrochemical corrosion properties of CoCrMo alloy was measured in terms of zero current potential (ZCP) and corrosion current density (i_{corr}). EIS technique was applied to study the nature of the passive film formed on CoCrMo sample at various time immersed in non-pasteurized and pasteurized apple juice: 1 minute, 1 hour and 3 hours. From EIS data, an equivalent circuit (EC) with on time constant was modelled.

Key words: CoCrMo alloy, cyclic potentiodynamic polarisation curves, EIS, pasteurized apple juice, SEM

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* Author to whom all correspondence should be addressed: e-mail: danmareci@yahoo.com; Phone: +40232278683; Fax: +40232271311