

CORROSION BEHAVIOR OF NiTi ALLOY IN BODY FLUIDS

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In recent years NiTi shape memory alloys have attracted considerable interest for biomedical applications due to the combination of their mechanical properties (shape memory and superelasticity) and biocompatibility. However, due to the high nickel content of the alloy and as this element may induce allergic response, the material should present superior corrosion resistance in contact with body fluids. Although several studies have been performed on the corrosion performance of Nitinol when in contact with physiological media, there is a lack of reproducibility in the reported results and no information is available on the characterization of the material in dynamic conditions or after being deformed. The present work deals with the preliminary results of a wide project aiming to understand the mechanisms of NiTi corrosion and to develop new surface treatments to enhance its corrosion resistance. The corrosion performance of Nitinol in human body simulating fluids was evaluated using polarization curves, open circuit potential measurements and electrochemical impedance spectroscopy at the body temperature (37°C 0.5°C).

Publicado em:

CD de Comunicações e Actas do Congresso Latino-Americano de Corrosão "LATINCORR 2006" p. 20, 21 a 26 de Maio 2006, Fortaleza, Brasil