



Duplex nitriding treatment of a beta-metastable Ti94Mo6 alloy for biomedical applications

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In the present work, nitridation process of a biocompatible beta-type Ti₉₄Mo₆ (at.%) alloy was carried out to optimize the microhardness and brittleness surface characteristics. We propose a duplex treatment consisting of a superficial gas nitriding at high temperature followed by an annealing treatment. By this treatment, the superficial TiN layer is transformed into a nitrogen rich α -Ti layer with a superior adherence on the substrate. The coated Ti₉₄Mo₆ alloy combines the profitable bulk properties of the beta-type microstructure and a superior superficial microhardness reducing the wear debris in service for a use as prosthetic device.