

Characterization of Titanium -Niobium Alloys by Powder Metallurgy as Implant

Authors : Eyyüp Murat Karakurt, Yan Huang, Mehmet Kaya, Hüseyin Demirtaş, Alper İncesu

Abstract : In this study, Ti-(x) Nb (at. %) master alloys (x:10, 20, and 30) were fabricated following a standard powder metallurgy route and were sintered at 1200 °C for 6h, under 300 MPa by powder metallurgy method. The effect of the Nb concentration in Ti matrix and porosity level was examined experimentally. For metallographic examination, the alloys were analysed by optical microscopy and energy dispersive spectrometry analysis. In addition, X-ray diffraction was performed on the alloys to determine which compound formed in the microstructure. The compression test was applied to the alloys to understand the mechanical behaviors of the alloys. According to Nb concentration in Ti matrix, the β phase increased. Also, porosity level played a crucial role on the mechanical performance of the alloys.

Keywords : Nb concentration, porosity level, powder metallurgy, The β phase

Conference Title : ICABBE 2022 : International Conference on Applied Biotechnology and Bioprocess Engineering

Conference Location : London, United Kingdom

Conference Dates : August 16-17, 2022