

A Comprehensive Study on the Porosity Effect of Ti-20Zr Alloy Produced by Powder Metallurgy as a Biomaterial

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Abstract : In this study, the effect of the porosity effect of Ti-20Zr alloy produced by powder metallurgy as a biomaterial was investigated experimentally. The Ti based alloys (Ti-20%Zr (at.)) were produced under 300 MPa, for 6 h at 1200 °C. Afterward, the microstructure of the Ti-based alloys was analyzed by optical analysis, scanning electron microscopy, energy dispersive spectrometry. Moreover, compression tests were applied to determine the mechanical behaviour of samples. As a result, highly porous Ti-20Zr alloys exhibited an elastic modulus close to human bone. The results later were compared theoretically and experimentally.

Keywords : porosity effect, Ti based alloys, elastic modulus, compression test

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