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Microstructural characterization of low elastic modulus β -Ti alloy fabricated by arc melting process

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Development of low elastic modulus β -Ti alloys for implant application has grown significantly in recent years. In this work, alloy Ti-28.3Nb-13.8Ta-6.9Zr was produced by button arc melting (BAM). Pure metal powders of Ti, Nb, Ta and Zr were pre-mixed and prepared as feedstock powder to the Copper-Hearth BAM. The alloy was manufactured, and heat treated (HT - solution treated + aged). The samples were analyzed for microstructure using the following techniques – OM, ImageJ, SEM-EDX, XRD and EBSD. The alloy showed a dominant β -phase microstructure in a dendritic morphology in both the as-cast and heat treated condition. The microstructure was characteristic of Ti-Nb-Ta-Zr (TNTZ) alloys. The EBSD results will be presented.

Key words: Low modulus, β -Ti, implant, arc melting, heat treated, microstructure.

Apply to be considered for a student ; award (Yes / No)?

N/A

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Primary authors: MADIGOE, Mandy (CSIR); NYAKANE, N; MODIBA, R

Presenter: MADIGOE, Mandy (CSIR)

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