

## **Influence of Ball Milling Time on Mechanical Properties of Porous Ti-20Nb-5Ag Alloy**

**Authors :** M. J. Shivaram, Shashi Bhushan Arya, Jagannath Nayak, Bharat Bhooshan Panigrahi

**Abstract :** Titanium and its alloys have become more significant implant materials due to their mechanical properties, excellent biocompatibility and high corrosion resistance. Biomaterials can be produced by using the powder metallurgy (PM) methods and required properties can be tailored by varying the processing parameters, such as ball milling time, space holder particles, and sintering temperature. The desired properties such as, structural and mechanical properties can be obtained by powder metallurgy method. In the present study, deals with fabrication of solid and porous Ti-20Nb-5Ag alloy using high energy ball milling for different times (5 and 20 h). The resultant powder particles were used to fabricate solid and porous Ti-20Nb-5Ag alloy by adding space holder particles ( $\text{NH}_4\text{HCO}_3$ ). The resultant powder particles, fabricated solid and porous samples were characterized by scanning electron microscopy (SEM). The compressive strength, elastic modulus and microhardness properties were investigated. Solid and porous Ti-20Nb-5Ag alloy samples showed good mechanical properties for 20 h ball milling time as compared to 5 h ball milling.

**Keywords :** ball milling, compressive strengths, microstructure, porous titanium alloy

**Conference Title :** ICPMPT 2017 : International Conference on Powder Metallurgy and Particulate Technology

**Conference Location :** Paris, France

**Conference Dates :** September 21-22, 2017