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TITANIUM POWDER METALLURGY ACTIVITIES AT IMI/NRC: CURRENT STATUS AND FUTURE DIRECTIONS

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Key Words: *Titanium, Powder Metallurgy, Metallic Foams, Metal Injection Molding, Press-and-sinter, Sintering, Support Materials, Ceramics*

Abstract

Titanium and Titanium alloys are characterized by their low density, high specific strength, excellent biocompatibility and high resistance to corrosion in different environments. These properties make them materials of choice for different applications in the aerospace, biomedical and chemical fields. As Ti and its alloys are relatively expensive metals, they are generally confined to high-added-value applications. This fact makes the net-shape forming of these materials very attractive in order to reduce machining costs and material waste during processing. Powder metallurgy (P/M) is a very versatile way of processing high-technology materials as it encompasses several forming techniques which can be applied to obtain parts with characteristics and properties adapted to specific applications.

During this presentation, the current titanium P/M activities in the Powder Forming Group of IMI/NRC will be reviewed. Available facilities for titanium press-and-sinter processing, metal injection molding and titanium foam production will be described and the most recent results on Ti-based materials obtained through these different processes will be briefly summarized. Possible future directions and partnership opportunities (academic, industrial, etc) for titanium P/M at IMI/NRC will be discussed.