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Abstract

Metal Injection Molding is a well-known powder metallurgy technology, which allows net-shaped parts to be produced with a high degree of automation and reduced costs in large-scale production. However, shape retention during sintering of porous parts remains a challenge. The present study demonstrates that plasma assisted debinding and sintering of injection-molded parts is a promising route for manufacturing highly porous Fe-P-based parts, improving porosity amount and dimensional accuracy, avoiding surface distortion of injection-molded parts while decreasing processing time. In this study, the effect of plasma sintering was analyzed regarding dimensional accuracy, porosity, phase composition and microstructure of highly porous Fe-2wt.%P parts.

Keywords: Porous materials; Powder technology; Plasma Sintering; Metal Injection Molding; Fe-P-based alloy.

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