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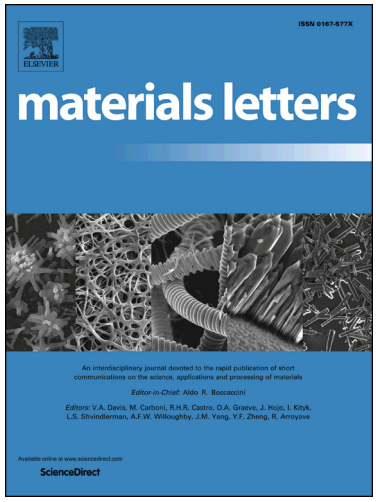

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PII: S0167-577X(18)31236-9
DOI: https://doi.org/10.1016/j.matlet.2018.08.041
Reference: MLBLUE 24752

To appear in: *Materials Letters*

Received Date: 15 November 2017
Revised Date: 6 August 2018
Accepted Date: 7 August 2018

Please cite this article as: N.F. Daudt, T.L.S. dos Santos, I.F. Limberger, R.L. Seeger, L.S. Dorneles, C. Binder, L. Schaeffer, Highly Porous Fe-2wt.%P alloy Produced by Plasma Assisted Debinding and Sintering of Injection-Molded Parts, *Materials Letters* (2018), doi: https://doi.org/10.1016/j.matlet.2018.08.041

Highly Porous Fe-2wt.%P alloy Produced by Plasma Assisted Debinding and Sintering of Injection-Molded Parts

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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.