

عنوان مقاله:

Investigation of the microstructure and mechanical properties of in-situ copper infiltrated P/M parts

محل انتشار:

ششمین کنفرانس بین المللی متالورژی پودر (سال: 1397)

تعداد صفحات اصل مقاله: 1

نویسندگان:

k Eftekharnia - *Department of materials and metallurgical engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

m.r Attar - *Department of materials and metallurgical engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

a Kamyabi-Gol - *Department of materials and metallurgical engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

e Kamali-Heidari - *Department of materials and metallurgical engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

خلاصه مقاله:

The current study focuses on a novel approach to replace the multi-step copper infiltration process commonly used as a final manufacturing stage in P/M components. In the proposed process, a thin layer of copper is deposited on the surface of highly pure iron powder (~98.5% Fe) by means of an electroless process using copper sulfate as the source of copper ions. The coated iron powder is thoroughly dried after the copper deposition, pressed in the shape of a disc and sintered at 1100 oC. The hardness of the disc was measured and its microstructure was characterized after polishing and etching to confirm the in-situ copper infiltration. A separate disc was similarly produced using uncoated iron powder to quantify the effect of the in-situ copper infiltration. The results revealed that the hardness of the disc produced using copper coated iron powder increased and the microstructure confirmed the complete infiltration of copper.

کلمات کلیدی:

Iron powder; Copper infiltration; Hardness; In-situ

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