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液相沉淀-热还原纳米Fe包覆Mo粉末微结构特征

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摘 要: 采用液相沉淀-热还原法制备纳米Fe包覆Mo合金粉末, 研究还原过程中的晶粒组织及微结构并进行分析。结果表明: 还原过程中, 粉末晶粒平均晶粒尺寸随还原温度的升高而变小, 微观应变在还原温度为600 °C时最高, Mo晶粒先于Fe晶粒还原并长大至1 μm左右, Fe晶粒粒径最终保持为1.8 nm, 并形成20 nm左右的薄层, 沉积在Mo颗粒表面。

关键字: 液相沉淀-热还原; Fe-Mo; 晶粒组织; 微结构

Microstructure characteristics of nanometer Fe coated Mo powders prepared by liquid precipitation-thermal reduction method

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Abstract: Nanometer Fe coated Mo powders were prepared by liquid precipitation and thermal reduction. The grain structure and microstructure of materials during the reduction process were discussed. The results show that the average grain size of Fe coated Mo powders decrease with increasing reduction temperature, and the microstrain reaches the maximum at the reduction temperature of 600 °C. The reduction of Mo grains precedes over Fe grains and the Mo grains grow significantly. The microstructure of the Fe coated Mo alloy powders is the Mo particles with the size about 1 μm coated layer-by-layer by metastable Fe grains and normal state Fe grains whose lattice constant closes to Mo grains, and the total thickness is around 20 nm.

Key words: liquid precipitation-thermal reduction; Fe-Mo; grain structure; microstructure

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