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Ti对Mo-Ti合金拉伸强度及显微组织的影响

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摘要:采用粉末冶金方法制备Mo-Ti合金, 研究合金元素添加方式及添加量对材料拉伸强度和显微组织的影响。结果表明, 添加TiH₂粉末所制备的合金的拉伸强度及相对密度均较添加纯Ti粉末的合金高, 当添加量(质量分数)为0.8%时合金拉伸强度最高。显微组织分析结果表明, 一部分Ti固溶到Mo基体, 提高材料的拉伸强度, 另一部分则与Mo及合金中的氧结合形成Mo_xTi_yO_z复合氧化物第二相粒子, 起到细化晶粒及净化晶界的作用。

关键字: Mo-Ti合金; 拉伸强度; 相对密度; 固溶强化; 第二相粒子

Effects of Ti on tensile strength and microstructure of Mo-Ti alloy

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Abstract: Mo-Ti alloy were fabricated by powder metallurgy process. The effects of adding forms and content of Ti on the tensile strength and microstructure of molybdenum were studied. The results indicate that the tensile strength of Mo-Ti alloy with TiH₂ addition is much higher than that with pure Ti. The tensile strength achieves the highest value when the content of TiH₂ is 0.8%. The microstructure analysis reveals that a part of the alloying element Ti solves into the Mo matrix, which enhances the tensile strength of the alloys, while the other part of Ti is combined with Mo and O in alloy to form second phase compounding oxide particles Mo_xTi_yO_z, which refines the grains and purifies the grain boundaries.

Key words: Mo-Ti alloy; tensile strength; relative density; solid solution; second phase particles

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