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CeO₂在镀镍碳纤维增强铝合金基复合材料中的作用

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摘要:以稀土氧化物CeO₂为添加剂, 研究CeO₂对镀镍碳纤维增强铝合金基复合材料碳纤维的分布、气孔率以及力学性能的影响, 利用扫描电镜分析和拉伸力学性能检测等探讨了CeO₂在镀镍碳纤维增强铝合金基复合材料中的行为。结果表明: CeO₂能够使碳纤维均匀分布在复合材料中, 而不产生分层及团聚; 而且能够降低复合材料的气孔率, 使轧制态复合材料的抗拉强度、屈服强度分别提高23%和26%。

关键字: 铝合金; 碳纤维; 镀镍; CeO₂

Behavior of CeO₂ addition in nickel-plated carbon fiber reinforced aluminium alloy matrix composites

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Abstract: The influence of CeO₂ as the addition agent on the distribution of carbon fiber, porosity and mechanics of the aluminum alloy matrix composites reinforced with Ni-coated carbon fibers was investigated. The behavior of CeO₂ in the aluminum alloy matrix composites reinforced with Ni-coated carbon fibers was discussed by scanning electron microscopy (SEM) and tensile test. The results show that CeO₂ can make the distribution of carbon fiber even in the composites, not laminated, not agglomerated, and can reduce the porosity of composites, and increase the tensile strength by 23% and the yield strength by 26% of the composites in the rolling form.

Key words: aluminium alloy; carbon fiber; nickel plating; CeO₂

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