

光固化立体造型熔模铸造工艺的研究 (PDF)

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Title: Investment Casting Processing Based on Stereolithography Pattern

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关键词: [快速铸造](#); [树脂模型](#); [型壳开裂](#); [涡轮导向器](#)

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摘要: 为了解决快速熔模铸造中型壳开裂问题,对树脂模型与型壳材料在消失过程中的热变形机理和型壳开裂条件进行了有限元分析,建立了原型 型壳热变形数学模型,并应用于新型燃气涡轮导向器的快速铸造.实验中当升温幅度较低时,涂挂厚度很小,型壳也不会破裂;当树脂模型在一个方向上的尺寸很小时,即使不抽壳,型壳也能保持完整而不破裂.研究表明:采用树脂制备方法,不仅可以简化传统制作蜡模的工艺步骤,而且大大缩短了制作周期;树脂模型精度、粗糙度对复杂铸件的传递特性,已成为该方法被广泛应用的一个重要的前提条件.

Abstract: In order to avoid the shell cracking during baking process of quick investment casting based on stereolithography(SL) pattern, an expanding model of SL pattern ceramic shell is proposed via analyzing the interaction between investment shell and SL pattern, then the cracking condition of investment shell is given. This model has been applied in quick casting of the new engine turbine nozzle vane. The experimental results show that if such technology parameters as the baking speed, wall thickness, and SL pattern thickness are suitable, or the size of SL pattern in one direction gets very small, shell can be prevented from cracking during baking process.

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