

### 论文摘要

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## 工艺参数对单晶连铸线材表面质量的影响

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**摘要:** 单晶连铸技术是一项新型的 Near-net-shape 生产技术, 它可以连续铸造无限长镜面金属单晶线材。作者利用自制的小型单晶连铸设备, 以工业纯铝为原料在实验室内进行了工艺试验, 分析和探讨了各主要工艺参数对连铸线材表面质量的影响。结果表明连铸线材的表面质量取决于固液界面的位置, 后者受铸型温度、冷却能力、连铸速度等各主要工艺参数的影响。只有当这些工艺参数正确地协调匹配时, 才能获得光如镜面的表面质量。

**关键字:** 连续铸造 表面质量 工艺参数

## EFFECTS OF TECHNOLOGICAL PARAMETERS ON SURFACE QUALITY OF SINGLE CRYSTAL Al WIRE MADE BY CONTINUOUS CASTING

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**Abstract:** The technique of continuous casting of single crystal metals (CCSC) is a new near-net-shape producing process, it can continuously produce long single crystal metal wire with very smooth surface like a mirror. A small horizontal CCSC equipment in laboratory has been successfully designed and manufactured. Using this equipment, the technology test of CCSC of industrial pure Al has been completed and a single crystal Al rod with 8 mm in diameter and 8~10 mm in length has been manufactured. The effects of main technology parameters on the surface quality of the CCSC wire were discussed. The results indicated that the surface quality of the CCSC wire is determined by the position of the liquid-solid interface which is effected by the main technology parameters such as mold temperature, cooling capacity and casting speed. Only when these parameters are coordinated, the smooth surface can be obtained.

**Key words:** continuous casting surface quality technology parameter

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