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### 定向凝固时热溶质对流对Al/AlLi共晶生长形态稳定性的影响

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### EFFECT OF THERMOSOLUTAL CONVECTION ON MORPHOLOGICAL STABILITY OF Al/AlLi EUTECTIC DURING DIRECTIONAL SOLIDIFICATION

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摘要

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**摘要** 在垂直向上定向凝固条件下,研究了热溶质对流对二元亚共晶 Al-Li合金 Al/AlLi共晶生长形态稳定性的影响。结果表明,晶体生长初期,热溶质对流较弱,对界面形态稳定性无明显的影响,晶体以完全的Al/AlLi共晶方式生长。当热溶质对流较强烈时,对界面形态稳定性产生严重的影响。平面界面失稳破开时,单相胞状晶领先生长。在单相胞状晶之间以Al/AlLi共晶方式生长。获得了二元亚共晶 Al-Li合金共晶的稳定性生长条件

**关键词:** 热溶质对流 Al/AlLi共晶 形态稳定性 共晶生长 定向凝固

**Abstract:** The effects of thermosolutal convection on morphological stability were studied during Al/AlLi eutectic growth subjected to vertically upward directional solidification of two hypoeutectic Al-Li alloys. It is shown that thermosolutal convection was weak and was not enough to induce morphological instability of interface at the initial stage. The crystal structure was perfect Al/AlLi eutectic. When thermosolutal convection was strong, the plane interface broke down and grew into single phase cells ahead of the interface. Eutectic phases formed between single phase cells. And, the requirement for stability of eutectic growth in two hypoeutectic Al-Li alloys was also established.

**Keywords:** thermo sol ut al convectio n Al/ AlLi eut ect ic mor pho lo gical stability eutectic g rowt h dir ectio nalsolidification

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