

对流作用下胞晶侧向生长实时观察

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摘要 对透明模型合金的晶体生长过程进行实时观测, 是研究晶体凝固过程的有效手段, 对认识晶体组成结构形成机理及控制金属组织结构具有重要的意义.

采用自行设计的定向晶体生长室和观察测量装置, 在不同的晶体生长速度下, 对丁二腈-5wt% 乙醇透明模型合金定向凝固的界面生长形态进行了实时观测研究. 实验发现,

由于重力对流和微对流机制对晶体生长过程的影响, 使得胞晶在生长过程中有明显顺流偏转现象.

关键词 [定向生长](#) [实时观察](#) [微对流](#) [顺流偏转](#)

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Observation *In-situ* for Side-growth of the Cell Growth by Convection

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Abstract Observation *in-situ* of crystal growth of the transparent model alloy is an effective method to study solidification of crystal. An apparatus system to study the process of crystal growth was designed, which includes the room of crystal growth in unidirectional solidification and the observation and measurement apparatus. With this experiment system, the morphology of growing interface of Succinonitrile-5wt% ethanol as a transparent model alloy were experimentally studied at different growth condition parameters. It is found that the effect of the buoyancy-driven flow and the microconvection in the crystal growth process can cause downstream alternation of the cell growth direction.

Key words [unidirectional growth](#) [real-time observation](#) [microconvection](#) [downstream alternation](#)

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