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气压对定向凝固藕状多孔镁的气孔分布影响

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摘 要：采用统计分析方法，通过孔径分布、气孔最邻近距离和局部气孔率定量分析定向凝固藕状多孔镁横截面上的气孔分布特征，并在此基础上分析气压对藕状多孔镁气孔分布的作用规律。结果表明：纯氢条件下气压越高，孔尺寸分布越趋于一致、孔位置和气孔结构单元分布越均匀；氢气分压一定，选择合适的氩气分压可使熔体共晶凝固时，孔尺寸、孔位置和气孔结构单元的分布最均匀。

关键字： 多孔镁金属；定向凝固；藕状结构；空间分布

Effect of gas pressure on pore distribution of lotus-type porous magnesium fabricated by unidirectional solidification

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Abstract: The characteristic of pore distribution on cross section of lotus-type porous magnesium fabricated by unidirectional solidification was quantitatively studied with the pore size distribution, nearest-neighbour distance of pores, and local porosity by use of statistic analysis methods. On the basis of this analysis, the influences of gas component and pressure on pore distribution were then studied. The results show that at pure hydrogen atmosphere, the uniformity of pore size, spatial distribution of pores and pore-cells increases with hydrogen pressure. While at a constant hydrogen pressure, the uniformity of pore size, spatial distribution of pores and pore-cells is the best when the melt solidifies at eutectic point.

Key words: porous Mg metal; unidirectional solidification; lotus-type structure; spatial distribution

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