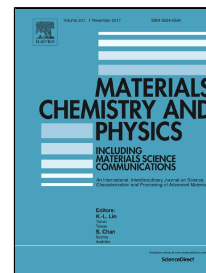


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Microstructure characterization of a directionally solidified Mg-12wt.%Zn alloy:
Equiaxed dendrites, eutectic mixture and type/ morphology of intermetallics



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Highlights

- A dendritic $\alpha - Mg$ matrix and a eutectic $\alpha - Mg / Mg_{21}Zn_{25}$ typify the microstructure of the Mg-12wt.%Zn alloy
- The eutectic mixture has two morphologies: lamellae and rods, the latter increasing with decreasing cooling rates
- Eutectic spacing (λ) and the growth rate (V) are related by the Jackson-Hunt equation: $\lambda^2 V = \text{constant}$
- Non-equilibrium $MgZn_2$ and Mg_4Zn_7 nanoparticles are distributed throughout the $\alpha - Mg$ matrix

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