

Effects of local non-equilibrium in rapid eutectic solidification. Part 2: modeling versus experimental data

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Abstract

The developed model of diffusion-limited and diffusionless solidification of eutectic alloy describes the relation “undercooling (ΔT)–velocity(V)–interlamellar spacing (λ)” for two cases. Namely, if the lamellar velocity V is smaller than the solute diffusion speed in bulk liquid V_D , V_D , the solidification is mainly controlled by kinetic and thermal undercoolings. We show an influence of model parameters on the growth kinetics of eutectic solidification. Comparison of the model predictions with experimental data obtained on Fe-B samples processed in melt-glass fluxing is given.

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