Global and Local Equilibrium During Solidification - Modelling of Microsegregation

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Abstract

For predicting microsegregation and type and amount of solidifying phases in multicomponent alloys, reliable thermodynamic data are an absolutely necessary prerequisite. However, kinetic effects can also play a significant role. Diffusion in the solid, dendrite arm coarsening and different growth undercoolings lead to a reduction of segregation effects. Establishing a model and verifying the model through comparison with experiments both pose their own problems. It is shown that in aluminum alloys very high precision of microsegregation predictions can be achieved if combined with careful measurement.