



Minisymposium 8 - Homogenisierung und Anwendungen

Homogenization for Phase Transitions with Microstructures

CHRISTOF ECK (UNIVERSITY ERLANGEN–NÜRNBERG)

Many phase transition processes exhibit microstructures of various types, important examples are dendritic and eutectic microstructures in the solidification of metallic alloys or microstructures in epitaxial growth processes of semiconductors. These microstructures are not given a priori, their computation is part of the solution process for the problems. Homogenization of such processes therefore does not lead to a purely macroscopic model, but to a two- or multiscale model that combines different models for the different relevant length scales. The derivation and analysis of such models is described for applications in solidification and epitaxial growth. The models are justified by an estimate for the model error. The numerical implementation of the models is briefly discussed and examples of numerical simulations are presented.