

# References Phase Field Method

## *Review articles*

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- M. Plapp (2010). Phase-field simulations of crystal growth. (2010)  
<http://pmc.polytechnique.fr/mp/publications/dalian.pdf>

## *Books/In books*

- The Diffuse Interface Approach in Materials Science. Thermodynamic Concepts and Applications of Phase-Field Models. H. Emmerich. Lecture Notes in Physics. Springer-Verlag Berlin Heidelberg 2003. ISSN 0940-7677. ISBN 3-540-00416-5.
- Continuum Scale Simulation of Engineering Materials. Fundamentals – Microstructures – Process Applications. Edited by D. Raabe, F. Roters, F. Barlat and L.-Q. Chen. Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim 2004. ISBN 3-527-30760-5.
- Computational Materials Engineering: An introduction to microstructure evolution. K. G. F. Janssens et al. Elsevier 2007. ISBN 9780123694683

## *Quantitative 'thin interface' phase-field models*

- Diffusion controlled solidification in dilute systems
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alloy solidification with coupled heat and solute diffusion. Phys. Rev. E, 2004,69:051607.

- Folch, R. and Plapp, M. Quantitative phase-field modeling of two-phase growth. Phys. Rev. E, 2005, 72:011602.
- Plapp, M. Remarks on some open problems in phase-field modelling of solidification. Phil. Mag. 2011. arXiv:1004.4502v1

- Multi-component systems

- Kim, S. G. and Kim, W. T. and Suzuki, T. Phase-field model for binary alloys. Phys. Rev. E, 1999, 60:7186-7196.
- Eiken, J. and Böttger, B. and Steinbach, I. Multiphase-field approach for multicomponent alloys with extrapolation scheme for numerical application. Phys. Rev. E, 2006,73:066122.
- Kim, S. G. A phase-field model with antitrapping current for multicomponent alloys with arbitrary thermodynamic properties. Acta Mater. 2007,55:4391-4399.

- Polycrystalline and multi-phase systems

- N. Moelans, B. Blanpain, P. Wollants. Quantitative phase-field approach for simulating grain growth in anisotropic systems with arbitrary inclination and misorientation dependence. Phys. Rev. Lett., 101, 025502, July 2008; Quantitative analysis of grain boundary properties in a generalized phase field model for grain growth in anisotropic systems. Phys. Rev. B, 78 (2), 024113, July 2008.

- N. Moelans. A quantitative and thermodynamically consistent phase-field interpolation function for multi-phase systems. Acta Mater 2011.

## *Links*

- Software and educational tools: <http://matforge.org/>
- Personal homepage on phase-field modeling:  
<http://nele.studentenweb.org>