# University of Birmingham

# Dr Nils Warnken

Lecturer

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## About

Nils Warnken is lecturer at the School of Metallurgy and Materials, University of Birmingham.

His research interest is the study and modelling of phase-transformation in metals and alloys, with a special interest in solidification related phenomena.

Nils has published over 30 research papers in scientific journals as well as conference proceeding and book chapters.

## Qualifications

- Dr.Ing. in Metallurgy and Materials Engineering, RWTH-Aachen University, Germany, 2007
- Dipl. Ing. in Metallurgy and Materials Engineering, RWTH-Aachen University, Germany, 2000

## Teaching

- Fundamentals of Materials a [04 17033]

## Postgraduate supervision

- PhD Studentship in Grain-Boundary Segregation in Ni-based Superalloys available

## Research

**Research themes:**

- Phase-field modelling of microstructure evolution
- Diffusion in multi-component alloys
- Thermodynamics
- High temperature Materials
- Alloy development
- Solidification
- Phase Separation in Nano Alloys

## Publications

**Selected Publications:**

Huang, J. L.; Warnken, N.; Gebelin, J.-C.; Strangwood, M.; Reed, R. C. (2012), On the mechanism of porosity formation during welding of titanium alloys, **Acta Materialia**, 60:1359-6454

Warnken, N.; Reed, R. C., (2011), On the Characterization of Directionally Solidified Dendritic Microstructures, **Metallurgical and Materials Transactions A**, 42A: 1675-1683

Mottura, A.; Warnken, N.; Miller, M. K.; Finnis, M. W.; Reed, R. C., (2010), Atom probe tomography analysis of the distribution of rhenium in nickel alloys, **Acta Materialia**, 58: 1359-6454

Warnken, N.; Ma, D.; Drevermann, A.; Reed, R. C.; Fries, S. G.; Steinbach, I., (2009), Phase-field modelling of as-cast microstructure evolution in nickel-based superalloys, **Acta Materialia**, 57: 1359-6454

Reed, R. C.; Tao, T.; Warnken, N. (2009), Alloys-By-Design: Application to nickel-based single crystal superalloys, **Acta Materialia**, 57: 1359-6454

Warnken, N.; Larsson, H.; Reed, R. C., (2009), Coupled modelling of solidification and solution heat treatment of advanced single crystal nickel base superalloy, **Materials Science and Technology**, 25: 0267-0836

Warnken, N; Drevermann, A; Ma, D; Fries, SG; Steinbach, I, (2008), Development of a simulation approach to microstructure evolution during solidification and homogenization using the phase field method, **Superalloys 2008**, ed. Reed, RC; Green, KA; Caron, P; Gabb, TP; Fahrmann, MG; Huron, ES, 951-960

Steinbach, I.; Boettger, B.; Eiken, J.; Warnken, N.; Fries, S. G. (2007), CALPHAD and phase-field modeling: A successful liaison, **Journal of Phase Equilibria and Diffusion**, 28: 1547-7037

Herzog, R.; Warnken, N.; Steinbach, I.; Hallstedt, B.; Walter, C.; Mueller, J.; Hajas, D.; Muenstermann, E.; Schneider, J. M.; Nickel, R.; Parkot, D.; Bobzin, K.; Lugscheider, E.; Bednarz, P.; Trunova, O.; Singheiser, L., (2006), Integrated approach for the development of advanced, coated gas turbine blades, **Advanced Engineering Materials**, 8: 1438-1656

Warnken, N; Ma, D; Mathes, M; Steinbach, I, (2005), Investigation of eutectic island formation in SX superalloys **Materials Science and Engineering-A**, 413: 0921-5093

Walter, C; Hallstedt, B; Warnken, N, (2005), Simulation of the solidification of CMSX-4, **Materials Science and Engineering-A**, 397: 0921-5093