

Curriculum Vitae (2018)

Professor Dr. rer. nat. Ralf Busch

born April 6st, 1963 in Bad Gandersheim
German, married, 1 child

Research Interests

Broad interest in physical metallurgy, including thermodynamics and kinetics of metastable phase formation, metallic glasses, nanocrystals, composites, interface reactions, nucleation and phase separation.

Education

University of Göttingen, Göttingen. Germany 1989-1992; Ph.D. Physics
Thesis (Metalphysics): "Analytical Field Ion Microscopy of the Reaction in Zr-Co Double Layers".

University of Göttingen, Göttingen. Germany 1987-1988; Diploma Physics
Thesis (Metalphysics): "Thermodynamical Description of Phase Transformations of Metastable NbNi - and NbCo - Alloys".

University of Göttingen, Göttingen. Germany 1983-1988; Student Physics.

Research Experience

Director, 2011–present.

Steinbeis–Research–and Development Center for Amorphous Metals, Saarbrücken, Germany.

- *Technology transfer of amorphous metals: development of commercial purity amorphous alloys.*
- *Processing of feedstock molding and thermoplastic forming.*
- *Limited-lot production.*

Chair Professor (W3), 2005–present.

Chair for Metallic Materials, Materials Science Department, Saarland University, Saarbrücken, Germany.

- Thermophysical properties of bulk metallic glass forming alloys, physical metallurgy.
- Structure and phase transformations of bulk metallic glasses.
- Alloy development and technology of bulk metallic glass processing.

Associate Professor (with tenure), 2004-2011.

Department of Mechanical Engineering, Oregon State University, Corvallis, Oregon, USA.

- Thermophysical properties of bulk metallic glass forming alloys.

Assistant Professor, 1999-2004.

Department of Mechanical Engineering, Oregon State University, Corvallis, Oregon, USA.

- Thermophysical properties of bulk metallic glass forming alloys.

Research Fellow (with Professor W.L. Johnson). 1993-1996, Senior Research Fellow 1996-1999.

Materials Science Department, California Institute of Technology, Pasadena, California, USA.

- Thermophysical properties of bulk metallic glass forming alloys: specific heat capacity, emissivity, viscosity and glass transition; microstructure upon crystallization, solid state reactions in multicomponent systems and metallic glass matrix composites.

Postdoctoral Associate (with Professor P. Haasen), 1992-1993.

Institut für Metallphysik, University of Göttingen, Göttingen, Germany.

- Determined microstructure and decomposition behavior of highly supersaturated f.c.c. Cu-Co and Cu-Fe solid solutions by AP/FIM, TEM, XRD and CALPHAD calculations.

Ph.D.thesis research (with Professor P. Haasen), 1989-1992.

Institut für Metallphysik, University of Göttingen, Göttingen, Germany.

- AP/FIM studies of the early stages of the solid state amorphization reaction in Zr-Co bilayers.

Diploma thesis research (with Dr. R. Bormann), 1987-1988.

Institut für Metallphysik, University of Göttingen, Göttingen, Germany.

- Characterization of crystallization behavior of rapidly quenched Nb-Ni alloys by XRD and DSC. Modeling of the thermodynamic functions of the alloy including the amorphous state using the CALPHAD method.

Teaching

Courses in Saarbrücken (2005 - present):

- Mechanical Properties of Materials (in German).
- Thermodynamics and Kinetics of Materials (in German).
- Amorphous materials (in English).

Courses in Oregon [in English (1999-2005)]:

- Introduction to Materials Science (Undergraduate Level).
- Mechanical Properties of Materials (Undergraduate Level).
- Thermodynamics of Materials (Graduate Level).
- Solidification (Graduate Level).
- Amorphous Materials (Graduate Level).

148 Publikations, [about 7600 citations („H-Index“: 45)], see list of publications.

Fellowships and awards

- *Feodor Lynen Research Fellow* of the *Alexander von Humboldt Foundation*, 1993-1996.

Professional societies

- *Materials Research Society*, Member (1994–present).
- *The Minerals, Metals and Materials Society*, Member (1996–present).
- *German Physical Society*, Member (1988 – present).
- *Journal of Metastable and Nanocrystalline Materials*, Associate Editor (1999–present).

Reviewer

Acta Materialia, *Applied Physics Letters*, *Journal of Applied Physics*, *Journal of Materials Research*, *Metallurgical and Materials Transactions*, *Nature*, *Philosophical Magazine A*, *Physical Review B*, *Physica B*, *Science*, *Scripta Materialia*.

Conference organizer and proceedings editor

- MRS Fall 2013, Boston, organizer of “Symposium on Bulk Metallic Glasses.
- Euromat 2013, Sevilla, area coordinator of “Advanced Metals”.
- MRS Fall 2007, Boston, organizer of “Symposium on Bulk Metallic Glasses”.
- MRS Fall 2003, Boston, organizer of “Symposium on amorphous and nanocrystalline metals”.