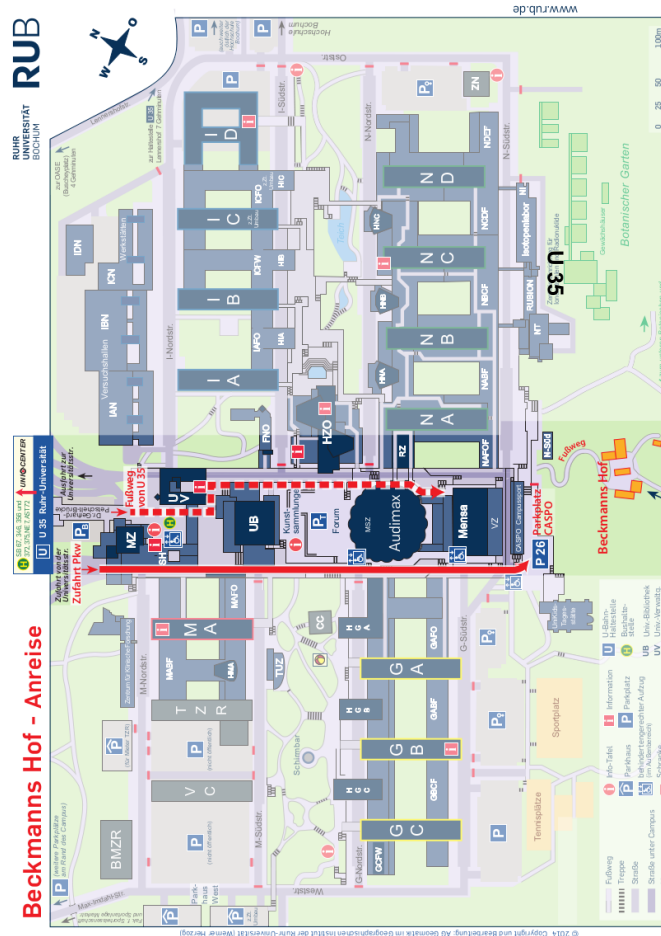


SYMPOSIUM / OBJECTIVES:

The symposium is devoted to the data science of single crystal Ni- and Co-base superalloys. The central objective is to review interdisciplinary aspects of superalloy data science, to identify areas in need of development and to explore the potential of machine learning tools. The symposium will establish the state of the art in superalloy data science, identify available data and discuss all aspects associated with data acquisition, data storage and data mining of heterogeneous research data. Emphasis will be placed on how to apply machine learning concepts and material informatics in advanced superalloy technology.

The symposium is supported by the Collaborative Research Centre SFB/TR 103 (From Atoms to Turbine Blades) of the German Research Association (DFG) and the Materials Research Department of the Ruhr University Bochum.



Location:

Beckmannshof, Ruhr University Bochum,
Universitätsstraße 150, 44801 Bochum, Germany

Organization:

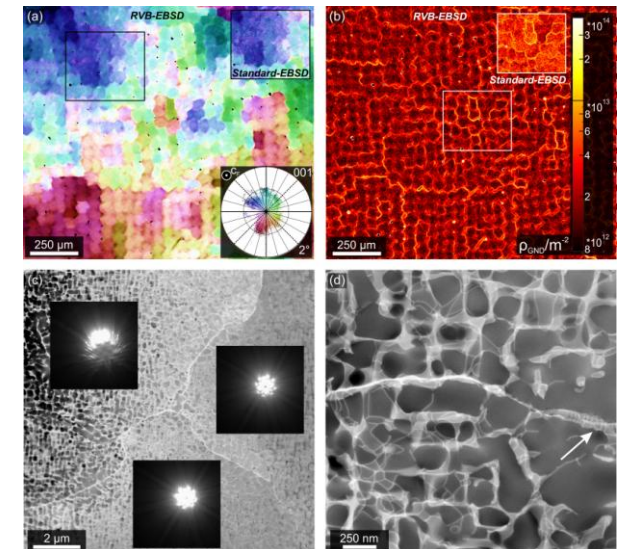
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Gunther Eggeler, IFM, RUB
Uwe Glatzel, Metals and Alloys, University Bayreuth

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Symposium

Superalloy Data Science – Acquisition, Storage, Mining and Machine Learning



30th/31st January, 2020

ICAMS & Institute for Materials
Ruhr University Bochum

PROGRAMME:					
Thursday, January 30th:		16.30–17.00	Catherine M.F. Rae University of Cambridge, UK <i>Modelling Non-Isothermal Creep</i>	11.00–11.30	Yunzhi Wang Ohio State University, USA <i>Generating Synthetic Data of Microstructure and Deformation in Multiphase Alloys Using Phase Field Simulations</i>
12.30	Registration / Coffee	17.00–17.30	Stefan Sandfeld TU Freiberg <i>Dislocation Plasticity and Data Science</i>	11.30–12.00	Uwe Glatzel University Bayreuth <i>Single-crystal Superalloys: Parameters Determining Mechanical Properties</i>
13.00–13.30	Gunther Eggeler IFM, RUB <i>Superalloy Data in SFB/TR 103</i>	17.30–18.00	Antonin Dlouhy IPM, CZAS, Brno, CZE <i>Noisy Creep Data and their Filtering by Machine-Learning Techniques</i>	12.00-13:00	Light Lunch
13.30–14.00	Alfred Ludwig IFM, RUB <i>Mastering Data in High Throughput Characterization</i>	18.00–21.00	Symposium Dinner Location: Beckmannshof	13.00–13.30	Thomas Hammerschmidt ICAMS, RUB <i>Predicting Structural Stability with Data Mining and Machine Learning</i>
14.00–14.30	Baptiste Gault MPIE, Düsseldorf <i>Atom Probe: Opportunities for Data Mining</i>	Friday, January 31st:		13.30–14.00	Erik Bitzek FAU Erlangen-Nürnberg <i>Experimentally Informed Atomistic Simulations as Example of Data-Reuse</i>
14.30–15.00	Luca Ghiringhelli Fritz Haber Institute, Berlin <i>Metadata and Ontologies for Computational and Experimental Materials Science</i>	8.30	Registration / Coffee	14.00–14.30	Irina Roslyakova ICAMS, RUB <i>Data Mining and Machine Learning Applied to Thermodynamic and Mechanical Properties of Superalloys</i>
15.00–15.30	Tilman Hickel MPIE, Düsseldorf <i>pyIron: Concepts of Data and Workflow Management Applied to H in Ni-based Superalloys</i>	9.00–9.30	Surya R. Kalidindi Georgia Inst. of Technology, USA <i>Materials Innovation Driven by Data and Knowledge Systems</i>	14.30–15.00	Pascal Thome IFM, RUB <i>Studying Dendrite Growth Combining Qualitative Metallography with Machine-Learning Techniques</i>
15.30–16.00	Coffee Break	9.30–10.00	Krishna Rajan University of Buffalo, USA <i>A Data Foundry for Superalloy Design</i>	15.00	Coffee and End of Symposium
16.00–16.30	Chris Eberl Fraunhofer IWM, Freiburg <i>The Digital Transformation in Materials Science and Engineering: From Vision to Community-Driven Implementation</i>	10.00–10.30	Coffee Break		
		10.30–11.00	Stefanie Reese RWTH Aachen <i>Data Driven Mechanics - The End of Classical Constitutive Modeling?</i>		