

ANNOUNCEMENT



Vortragsankündigung

Mittwoch, 19. Juni 2024, 11.15 Uhr im SR I

Prof. Dr. Amber SCHNEEWEIS

TH Rosenheim

“The Secret Life of Metals: Investigating the Complex Microstructures of Alloy Solidification”

The manufacture of virtually all metal objects begins with melting and solidification of the metal. The microstructures that form during freezing play a large part in determining the properties of the finished part. It is therefore vital to understand the factors that control solidification structures in order to tailor metal properties to new and demanding applications. Most industrial alloys consist of multiple chemical elements and often multiple phases, making the job of predicting behavior during and after solidification far more complex. In addition, new production methods like additive manufacturing create extreme non-equilibrium conditions that are outside of the range of existing models.

Prof. Dr. Amber Schneeweis has more than two decades of experience as a physical metallurgist, studying the connections between alloy composition, processing conditions, microstructure and properties. Her presentation will draw on examples of research projects that illustrate how physical parameters like nucleation, diffusion and interfacial energy are responsible for the complex and beautiful microstructures seen in metal alloys, including atomized Al-Si, directionally solidified cast iron, and Al-Ag-Cu ternary eutectics. She will also describe some of her efforts to visualize and quantify these complex morphologies in two and three dimensions, and the importance of collaboration between experimental work and simulation.

Prof. Schneeweis is an American scientist who received degrees in materials science and engineering from Iowa State University (BS, MS) and Northwestern University (PhD). After two years as a postdoc at the German Aerospace Center (DLR) in Cologne, she became a professor of materials science and engineering at the University of Alabama at Birmingham (USA). In August 2023 she returned to Germany to join the engineering faculty at the Rosenheim University of Applied Sciences, where her current research focuses on 3D printing of metals.