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TECHNISCHE UNIVERSITÄT DARMSTADT

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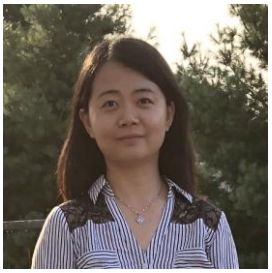
Offen im Denken

Hysteresis Design of Magnetic Materials for Efficient Energy Conversion

Tuesday, 13 July 2021, 9:00 s.t., TU Darmstadt, Zoom



Dr. Lin Zhou

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Applications of TEM imaging and analysis to alnico magnets

Abstract:

The transmission electron microscope (TEM), with its many different configurations for imaging, diffraction, and microanalysis, has become an indispensable tool for the structural characterization of materials at the nanoscale. Aided by aberration correction, the image resolution can nowadays surpass the 0.5-Ångstron level. Such characterization capability is essential for the discovery and exploitation of novel materials, which often require the precise control of structures and chemistries. In this presentation, I will briefly summarize my research on alnico permeant magnets using atom probe tomography and various TEM techniques, separately or in tandem. Our collaborative studies on alnico magnets reveal how the chemistry and heat-treatment conditions control the properties of the final products. Finally, I will show some of our in-situ investigations on the mechanisms and dynamics of solid-solid phase transitions in different material systems. [6] N.Y. Schmidt et al., Phys. Rev. B 100, 064428 (2019).

About the speaker:

Dr. Lin Zhou is a material scientist specializing in structure and dynamic behavior studies of advanced materials that will enable clean energy. She is the science coordinator that oversees staff/postdocs and electron-beam instruments in the Sensitive Instrument Facility in Ames Laboratory, and an Adjunct faculty in the Materials Science and Engineering department at Iowa State University. Dr. Zhou also serves as the deputy Quantum Technology thrust leader in the Superconducting Quantum Materials and Systems Center. Dr. Zhou obtained her Ph.D. degree in Materials Science and Engineering from Arizona State University in 2006. Her research focuses on the understanding of structure-property relationships in metal, ceramic and semiconductors, as well as the discovery of mechanisms and dynamics of phase transitions using in situ electron microscopy techniques. Her interdisciplinary research portfolio covers materials science, physics, and chemistry.