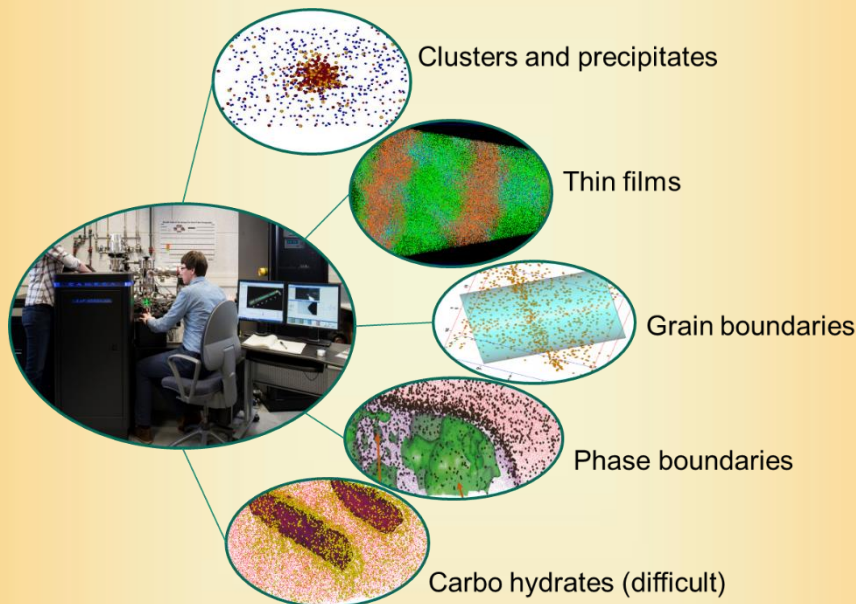


Quinta-feira, 22 de Junho de 2023, às 14:30h
Auditório da Escola de Ciências, Gualtar

Atom Probe Tomography: Methodology and Application

Dr. Torben Boll, Institut für Angewandte Materialien -
Werkstoffkunde (IAM-WK), Karlsruher Institut für Technologie
(KIT), 76344 Eggenstein-Leopoldshafen, Germany



Resumo: Atom probe tomography (APT) permits a three-dimensional analysis of species distribution with individually resolved atoms and allows to quantify even small amounts of trace elements. For this, a needle shaped tip with a diameter around 100 nm is exposed to a high electric field. With an additional voltage, or laser pulse, the tip is evaporated atom by atom. The produced ions are accelerated to a 2D-Detector, where the time of flight is measured, which allows to determine the species. From the obtained data a 3D representation of the tip with near atomic resolution is reconstructed.

This allows to investigate and quantify nanoscopic features like segregation to a metal-oxide interfaces. In this presentation APT as a technique and its possibilities for materials research will be introduced with a focus on diffusion along oxide grain boundaries. Other topics investigated at KIT include high entropy alloys, nano devices and additive manufacturing.