



TEL AVIV אוניברסיטת
UNIVERSITY תל אביב

The Department of Materials Science and Engineering cordially invites you to **The Seidman Family Lecture Series**

In memory of Elie and Jeanne Cohen-Sabban, z"l, Marseille, France, and Charles and Jeanette Seidman, z"l, New York City, New York

Atomic-scale Analysis of Materials using Advanced Atom Probe Tomography

Dr. Dierk Raabe

Professor, Director
Max-Planck-Institut für Eisenforschung, Germany

Recent progress in developing and using correlative methods for the joint analysis of complex materials using by Atom Probe Tomography (LEAP 3000, LEAP 5000) in conjunction with Electron Microscopy (SEM, TEM, STEM, Cs corrected Titan Themis) and Field Ion Microscopy is presented. Measurements are conducted on the same atom probe sample tips, and in some cases atomic resolution is reached. Methods related to crystallographic atom probe tomography are also presented and discussed.

Examples from functional and structural materials are presented including segregation effects in multicrystalline silicon solar cells and their relation to cell efficiency, superalloys for advanced turbines, high-strength steels and hydrides.



Dierk Raabe studied first music and later metallurgy and metal physics at RWTH Aachen. After his doctorate and habilitation he worked at Carnegie Mellon University. His interests lie in three main fields: 1) Design of advanced metallic alloys; 2) Structure-Property simulations of microstructures and mechanical properties of alloys; 3) Advanced and correlative atom probe tomography. Currently he works on the integration of quantum mechanical and micromechanical simulations and correlative atomic probe – electron microscopy observations into engineering materials design and property predictions. The aim is to develop computational materials science from a descriptive into a predictive method enabling identification of new microstructure mechanisms and novel alloys by blending theory, characterization, and processing. In 2004 he received the highest German research award (Leibniz-Award). In 2008 he was awarded the Lee Hsun Lecture Award of the Chinese Academy of Sciences and in 2011 the Weinberg Award of the University of British Columbia. In 2012 he received an ERC advanced grant. He is a member of the National Academy Leopoldina, Professor at RWTH Aachen and Honorary Professor at the Katholieke Universiteit in Leuven.

Wednesday, April 25th, 15:00

Room 134, Wolfson Mechanical
Engineering Building