Neues Denken. Neue Materialien.

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INM-KOLLOQUIUM

"GRAIN BOUNDARY ENGINEERING AT THE NANOSCALE"

Prof. Dr. Andrea M. Hodge
Mork Family Department of Chemical Engineering and Materials Science,
Aerospace and Mechanical Engineering Department,
University of Southern California. Los Angeles, USA

Wednesday, June 14, 2017, 11:00 am

INM, Leibniz-Saal, Campus D2 5
Host: Prof. Dr. Eduard Arzt

Our research has demonstrated a new direction for materials development by introducing engineered microstructures at the nanoscale. Even though nanoscale materials have shown tremendous potential, there are typically two limiting factors to their applications: thermal stability and low ductility. Our research has focus on three main themes: (a) understanding the role of special boundaries for improving corrosion, thermal stability and ductility, (b) expanding experimental techniques in order to synthesize a wide range of materials with nanoscale growth twins ($\sum 3$), and (c) performing mechanical studies to understand the effect of the growth twins across many materials and compositions.

Overall, one of the main contributions of our work was the design of a protean twin thickness contour zone map that illustrates how the nucleation and mobility of twin boundaries affects the twin thickness of sputtered films. The twin thickness contour zone map can be used as a versatile guide to synthesize fully nanotwinned films with tailored twin thicknesses in materials with a wide range of stacking fault energies. This allows for designing materials with improved corrosion, thermal and mechanical properties. This presentation will also cover additional efforts regarding synthesis of thermally stable nanostructured materials.

Short bio

Andrea Hodge is the Arthur B. Freeman Professor of Chemical Engineering and Materials Science and of Aerospace and Mechanical Engineering. She is the Vice-Provost for Undergraduate Programs at USC since July 2016. She received her Ph.D. degree in Materials Science from Northwestern University, in 2002, and became a Post-Doctoral Fellow at Lawrence Livermore National Laboratory that same year. In 2007, she joined USC as an Assistant Professor of Aerospace and Mechanical Engineering. Andrea has co-authored over 80 peer-reviewed publications and two book chapters. Her research interests range from processing of nanocrystalline and nanoporous materials to nanomechanics of metals and biomaterials. She recently served on the Board of Directors of the Materials Research Society (MRS). Andrea is the recipient of, a 2008 NSF BRIGE Award, a 2010 NSF CAREER Award, a 2011 Alexander von Humboldt Senior Research Fellow, a 2012 ONR Young Investigator Program (YIP) Award, a 2012 DARPA Young Faculty Award (YFA), and a 2013 National Diverse Education Emerging Scholar Honor.

Wir laden 15 Minuten vor Beginn zu einem Get-together mit der Referentin ein.

KONTAKT

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