

UNIVERSITY OF CALIFORNIA, IRVINE

THE DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

Is Proud to Host a Seminar by:

PROFESSOR EDUARD ARZT

New Materials and Scientific Director for INM
Leibniz Institute for New Materials in Saarbrücken,
Germany

Thursday, October 20, 2022

2:00-3:20 PM

Location: McDonnell Douglas Engineering Auditorium

DESIGN AND MECHANICS OF ADHESIVE MICROSTRUCTURES—HOW BIOINSPIRATION IS CHANGING MICROMANIPULATION

Abstract: Biological evolution has arrived at resource-efficient and sustainable materials solutions. Inspired by these natural examples, the micropatterning of polymeric surfaces has now become a powerful paradigm: microfibrillar structures can be designed for, e.g., controlled wetting and anti-icing to coloration and switchable adhesion, enabling gripping of objects without energy expenditure or deleterious chemicals. This talk will discuss our results of microstructure design as well as the mechanics of microfibrillar adhesion. Successful integration of these materials has been achieved in innovative pick-and-place systems or as delicate skin adhesives. A recent development is the integration of machine learning in operando to improve the reliability of handling, e.g. for microassembly or removal of satellite debris from orbit.

Bio: Eduard Arzt is Professor for New Materials and Scientific Director of *INM – Leibniz Institute for New Materials* in Saarbrücken, a leading German research laboratory. Previously, he co-directed the *Max Planck Institute for Metals Research* in Stuttgart. Following a physics PhD from the University of Vienna, Austria, he has carried out research at Cambridge University, Stanford University, MIT, and the University of California. He is the recipient, e.g., of the Leibniz Award, the Fellow Award and the Morris Cohen Award of TMS and several competitive European Research Council grants. He is member of several academies including the US National Academy of Engineering. Arzt is editor-in-chief of the review journal *Progress in Materials Science* and co-founder of a deep tech start-up.