DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING SEMINAR
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA

Interface Mechanics from Macroscale Sliding Friction to Atomic Force Microscopy

Speaker:

Dr. Edward Berger, Associate Professor
Department of Mechanical and Aerospace Engineering
University of Virginia
122 Engineer's Way
P. O. Box 400746
Charlottesville VA 22904
berger@virginia.edu
Research: http://www.mae.virginia.edu/SAM
Teaching: http://www.people.virginia.edu/~ejb9z/Weblog

Abstract:

This talk describes the research focus areas of the Berger Lab, including interface mechanics, soft materials, and nanoscale materials characterization. The talk is broken down into three parts. First, archival and on-going research in the mechanics of jointed structures is discussed, including dynamic and energy dissipation behavior of friction-contact joints. This research spans 15 years and a variety of different modeling and experimental approaches, including low-order idealizations of high-order models, finite element approaches, and novel experimental methods. The second part of the talk describes our more recent focus on soft material (E = 1-50 kPa) characterization using atomic force microscopy (AFM). AFM indentation and other forms of force spectroscopy are becoming increasingly popular for materials characterization on the micro- and nanoscale, and our lab has focused on a number of important modeling and experimental challenges associated with identifying the elastic and viscous properties of soft materials. The third part of the talk describes several interesting on-going collaborations with MAE and other SEAS faculty.