



Mechanics of Materials Across Nano to Geological Time and Length Scales

A Symposium in Honor of Ares J. Rosakis
on the Occasion of his 60th Birthday

School of Engineering - Brown University - September 16-17, 2016

Mechanics of Materials across Nano to Geological Time and Length Scales
In honor of the pioneering contributions of Professor Ares J. Rosakis on the occasion of his 60th birthday
September 16-17, 2016; Martinos Auditorium (Granoff Center for the Creative Arts)
154 Angell St, Brown University, Providence, RI

Program

September 16, 2016

07:30 – 08:20 am	Breakfast – Studio 1 (Granoff 4th floor)
08:20 – 08:30 am	Welcome Remarks by Larry Larson , Dean of Engineering, Brown University
Session 1: Seismo-mechanics	Session Chair: D.Henann , Brown University
08:30 – 09:00 am	Ares and the sorting out of bi-material rupture dynamics James R. Rice , Harvard University
09:00 – 09:30 am	Earthquake fracture speeds: past, present and future Shamita Das , Oxford University
09:30 – 10:00 am	The Diversity of Earthquakes and Energy Partitioning Hiroo Kanamori , California Institute of Technology
10:00 – 10:30 am	Dynamic imaging of spontaneously evolving friction in laboratory earthquakes Nadia Lapusta , California Institute of Technology
10:30 – 11:00 am	Break (lower lobby)
Session 2: Dynamic Fracture Mechanics	Session Chairs: R.P.Singh , Oklahoma State University V.Eliasson , University of California, San Diego
11:00 – 11:30 am	Two Advances in Quasibrittle Fracture Mechanics: Fracking Simulations and Testing of Postpeak in Composites Zdenek Bazant , Northwestern University
11:30 – noon	Visualization and quantification of dynamic crack penetration vs. branching at a weak interface in a brittle bilayer Hareesh Tippur , Auburn University
noon – 12:30 pm	Shock Initiated Instabilities in Underwater Structures Arun Shukla , University of Rhode Island
12:30 – 2:00 pm	Lunch – Studio 1 (Granoff 4th floor)

Session 3:
Dynamic Fracture Mechanics

Session Chairs: **H.Kesari**, Brown University
V.Chalivendra, University of Massachusetts Dartmouth

02:00 – 02:30 pm

Dislocations vs Ares' cracks! Which are the fastest?
Phoebus Rosakis, University of Crete

02:30 – 03:00 pm

Intersonic Delamination in Curved Composite Laminates
Demir Coker, Middle East Technical University

03:00 – 03:30 pm

Microstructurally-Informed Fracture & Fragmentation
Leslie Lamberson, Drexel University

03:30 – 04:00 pm

Break (lower lobby)

Session 4:
Mechanical Behavior of Materials

Session Chairs: **M.Zhou**, Georgia Institute of Technology
K.Xia, University of Toronto

04:00 – 04:30 pm

Formation of echelon cracks in brittle materials
K.Ravi-Chandar, University of Texas - Austin

04:30 – 05:00 pm

To measure and compute like never before in granular materials
Jose Andrade, California Institute of Technology

05:00 – 05:30 pm

Ultrasonic Characterization of Materials from the Macro to the Nanoscale
Sridhar Krishnaswamy, Northwestern University

06:30 – 09:30 pm

Banquet (Alumnae Hall)
Master of Ceremonies: G. Ravichandran, Caltech

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September 17, 2016

07:30 – 08:30 am

Breakfast – Studio 1 (Granoff 4th floor)

**Session 5:
Bio-mechanics**

Session Chair: **C. Franck**, Brown University

08:30 – 09:00 am

On the concept of 'reptation' of an elastic filament in a narrow channel
L.B.Freund, University of Illinois, Urbana-Champaign

09:00 – 09:30 am

Mechanics in Medicine
Subra Suresh, Carnegie Mellon University

09:30 – 10:00 am

Simulation of arterial tissue delamination experiments
Xiaomin Deng, University of South Carolina

10:00 – 10:30 am

Break

**Session 6:
Mechanics of Solids and Structures**

Session Chairs: **C-E. Rosseau**, University of Rhode Island
I.Chasiotis, University of Illinois, Urbana-Champaign

10:30 – 11:00 am

Mechanically guided, deterministic 3D assembly
Yonggang Huang, Northwestern University

11:00 – 11:30 pm

Nanoscale silicon surfaces: small but mighty
Alan T. Zehnder, Cornell University

11:30 – noon

Adhesion energy of a thin foil bonded on a substrate
Cheng Liu, Los Alamos National Laboratory

noon – 1:30 pm

Lunch – Studio 1 (Granoff 4th floor)

**Session 7:
Mechanics of Fracture**

Session Chairs: **D.M.Kochmann**, California Institute of Technology
S.Hulikal, Brown University

01:30 – 02:00 pm

Topological toughening of graphene and other 2D materials
Huajian Gao, Brown University

02:00 – 02:30 pm

Role of tensile twinning on fracture behavior of magnesium
R. Narasimhan, Indian Institute of Science

02:30 – 03:00 pm

Ductile Fracture of Controlled Microstructures
Alan Needleman, Texas A&M University

03:00 – 03:30 pm

Multiscale Mechanics of Natural Materials: A Source of Inspiration for
Engineering Composites
Hugh Bruck, University of Maryland

03:30 – 04:00 pm

Break (lower lobby)

**Session 8:
Discussion**

04:00 – 05:30 pm

Panel Discussion

Moderator: **R.J. Clifton**, Brown University

Panelists: **J.W.Hutchinson**, Harvard University

K.T.Ramesh, Johns Hopkins University

S.Pellegrino, California Institute of Technology

K-S. Kim, Brown University

A.F.Bower, Brown University

05:30 pm

Closing

06:00 – 09:00 pm

Clam Bake (Sayles Hall)