



2009 Symposium Committees

Scientific Committee

The scientific committee of the symposium is formed by the ICACM Executive Advisory Board and by the ICACM Scientific Committee.

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- Prof. F. Darve (Institut National Polytechnique de Grenoble, France)
- Dr. Patrick Franciosi (Université Paris XIII, France)
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- Prof. F. Darve (Institut National Polytechnique de Grenoble)
- Dr. P. Franciosi (Université Paris XIII),
- Prof. Ioan. R. Ionescu (Paris XIII), Prof. D. Kondo (Université de Lille),
- Dr. R.A. Lebensohn, Los Alamos National Lab, US,
- Dr. M. Schmidt, AFRL, US, Dr L. Chhabildas, AFRL, US, Prof. O. Cazacu (Univ. of Florida).

Local Organizing Committee: Prof. Row Rogacki, Mrs. Julie Lusk, Prof. Oana Cazacu.

3rd US-France ICACM Symposium
**Damage and Failure in Heterogeneous
Materials and Structures**

Agenda

DAY ONE: Wednesday, April 22, 2009

9:00-9:30 AM **Registration; Optional breakfast**

9:30-9:45 AM **Welcome and opening remarks**

Session One **Chair: Prof D. Kondo, Laboratoire de Mécanique de Lille, USTL, Lille, France**

9:45 AM **Keynote**

A homogenization-based constitutive model for viscoplastic porous media with evolving microstructure

K. Danas¹ and P. Ponte Castaneda²

¹Cambridge University, U.K., ²Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, U.S.A.

10:30 AM

A micromechanical model coupling damage and strain gradient effect

Vincent Monchiet and Guy Bonnet

Laboratoire Modélisation et Simulation Multi-Echelle, University Paris-Est, Marne la Vallée, France

11:00 AM

Measurement of crack openings in the 2D case comparison between experimental and numerical results

Frédéric Dufour¹, Gilles Pijaudier-Cabot², Grégory Legrain³

¹Laboratoire 3S-R, Grenoble University, France; ²Laboratoire Complex Fluids, Université de Pau, France ³ GeM, Ecole Centrale de Nantes, France

11:30 AM **BREAK**

Session Two **Chair: Prof F. Darve, Laboratoire 3S-R, Grenoble University, France**

11:45 AM **Keynote**
Construction of fatigue laws from cohesive forces models
Jean-Jacques Marigo
Institut Jean le Rond d'Alembert, University Paris VI, France

12:30 PM
Theoretical and experimental framework for the multiscale study of fatigue
Eric Charkaluk
Laboratoire de Mécanique de Lille, USTL, Lille, France

1:00 PM **LUNCH**

Session Three **Chair: Prof. I. R. Ionescu, LPMTM, University Paris XIII, France**

2:30 PM
Grain scale mechanisms of deformation during strain localization in a granular material
¹P. Bésuelle, ¹S.A. Hall, ¹N. Lenoir, ¹J. Desrues, ¹G. Viggiani, ^{2,3}M. Bornert, ²Y. Pannier
¹Laboratoire 3S-R, Grenoble University, France, ²LMS, Ecole Polytechnique, Palaiseau, France, ³UR Navier, Ecole des Ponts, ParisTech, Marne-la-Vallée, France

3:00 PM **Keynote**
A Multiscale Cohesive Zone Model for Quasi-continua
Shaofan Li
Department of Civil and Environmental Engineering, University of California, Berkeley, USA

3:45 PM **BREAK**

4:00 PM **Keynote**
Modeling of electromagnetic forming processes in finitely strained solids
Nicolas Triantafyllidis and Jesse D. Thomas
Aerospace Engineering Department, The University of Michigan, Ann Arbor, MI USA

4:45 PM **Keynote**
Influence of Anisotropy (Crystallographic and Microstructural) on Spallation in Zr, Ta, HY-100 Steel, and 1080 Eutectoid Steel
¹G.T. Gray III, ²N.K. Bourne, ³K.S. Vecchio, and ²J.C.F. Millett
¹Materials Science and Technology Division, Los Alamos National Laboratory, USA; ²AWE, Aldermaston, UK; ³Department of Nano-Engineering, University of California-San Diego, USA

5:30 PM **WELCOME RECEPTION AT UF-REEF**

DAY TWO: Thursday, April 23, 2009

9:00-9:30 AM **Optional breakfast**

Session Four **Chair: Dr. R. Lebensohn, Los Alamos National Laboratory, USA**

9:30 AM **Keynote**
Damage evolution in porous materials with two populations of voids under internal pressure
Pierre-Guy Vincent¹, Yann Monerie², Pierre Suquet³
¹ IRSN, Fontenay-aux-Roses, France, ² IRSN and MIST, Saint-Paul-les-Durance, France,
³ Laboratoire de Mécanique et d'Acoustique, Marseille, France

10:15 AM **Keynote**
Hot Spots in Plastic Deformation of Polycrystals
Anthony D. Rollett
Materials Science & Engineering Dept., Carnegie Mellon University, Pittsburgh, USA

11:00 AM **BREAK**

Session Five **Chair: Dr. E. Buzaud, CE-Gramat, DGA, France**

11:15 AM
Numerical exploration of a high cycle fatigue criterion using a polycrystalline analysis
Andrei Constantinescu
Laboratoire de Mécanique des Solides, Ecole Polytechnique, Palaiseau, France

11:45 PM **Keynote**
Integrated Multiscale Characterization-Analysis Methodology for Ductile Fracture in Heterogeneous Metallic Materials
Somnath Ghosh
Department of Mechanical Engineering, Ohio State University, Columbus, USA

12:30 PM **LUNCH**

Session Six Chair: Dr. M. Schmidt, AFRL, Eglin, USA

2:00 PM

J-T Characterized Stress Fields of Surface-Cracked Metallic Liners Bonded to a Structural Composite

Shawn A. English and Nagaraj K. Arakere

Department of Mechanical & Aerospace Engineering, University of Florida, Gainesville, USA

2:30 PM

Crystal Plasticity Modeling and EBSD Study of Crack Tip Deformation Fields in Ductile Single Crystals

Raj Mishra, Swapnil Patil² and R. Narasimhan²

¹GM R&D Center, Warren, MI, USA, ²Indian institute of Science, Bangalore, India

3:00 PM

BREAK

3:15 PM

Discrete modeling applied to the characterization of cracking in brittle materials

A. Delaplace

LMT, ENS de Cachan, Paris, France

3:45 PM

Keynote

Crack Propagation from an industrial perspective

Jeong Whan Yoon

Alcoa Technical Center, PA, USA

4:30 PM

ADJOURN

5:00 PM

Vans depart Hampton Inn for Banquet

6:00 - 9:00 PM

Conference Banquet (Dinner Cruise)

DAY THREE: Friday, April 24, 2009

9:00-9:30 AM **Optional breakfast**

Session Seven **Chair: Prof P. Suquet, LMA, Marseille, France**

9:30 AM **Keynote**

Dilatational viscoplasticity of polycrystalline materials: homogenization estimates vs. full-field calculations

Ricardo A. Lebensohn¹, Pedro Ponte Castañeda², Martin I. Idiart³ and Pierre-Guy Vincent⁴

¹Materials Science and Technology Division, Los Alamos National Laboratory, USA, ²Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, USA,

³Cambridge University Engineering Dept., Cambridge, UK ⁴Laboratoire de Mécanique et d'Acoustique, Marseille, France

10:15 AM

Theoretical and numerical modeling of non linear behavior of plastic media containing microcracks

Djimédo Kondo

Laboratoire de Mécanique de Lille, USTL, Lille, France

10:45 AM **BREAK**

Session Eight **Chair: Prof. O Cazacu, REEF, University of Florida, USA**

11:00 AM **Keynote**

Ductile damage in metals studied by X ray tomography

Eric Maire, Caroline Landron, Olivier Bouaziz, Jerome Adrien, Andrea Bareggi

MATEIS Laboratoire, INSA de Lyon, Villeurbanne, France

11:45 AM

An extended model for ductile fracture in structural materials

A. A. Benzerga

Department of Aerospace Engineering, Texas A&M University, College Station, TX, USA

12:15 PM **LUNCH**

1:45 PM

Keynote

Plastic instabilities in polycrystalline metals under strain reversal at large strains

J.J. Gracio¹, E.F Rauch² and F. Barlat^{3,1}

¹Centre for Mechanical Technology & Automation, Dept. Mechanical Engineering, University of Aveiro, Portugal, ²Laboratoire SIMAP, GPM2, Grenoble University, France, ³Materials Mechanics Laboratory, Graduate Institute of Ferrous Technology, Pohang University of Science and Technology, Pohang, Korea

2:30 PM

Keynote

Failure mechanisms in geomaterials

Félix Darve,

¹Laboratoire 3S-R, Grenoble University, France

3:15 PM

Discussions and Concluding Remarks

4:00 PM

ADJOURN