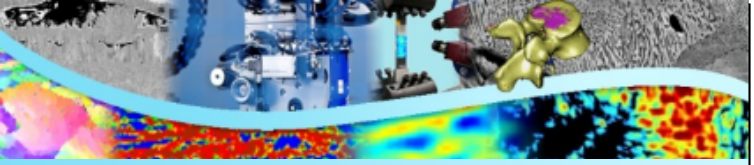

ICACM 2016

9th Annual French-US Symposium
Compiègne, France
1-3 June, 2016

International Center
for Applied
Computational Mechanics

http://www.reef.ufl.edu/ICACM_website/home.html

From microstructure observations to multiscale modeling of deformation mechanisms and interfaces

Program available on April, 1, 2016

CHAIRPERSONS

Pr Salima BOUVIER (UTC),
Pr Djimedo KONDO (UPMC),
Pr Adnan IBRAHIMBEGOVIC (UTC)

LOCATION

The symposium will be held at the
Université de Technologie de Compiègne,
Centre de Transfert / Centre d'Innovation

LOCAL ORGANIZING COMMITTEE

Dr Aurélie MONNIN, Dr Delphine BRANCHERIE,
Dr Pierre FEISSEL, Mme Valérie DUQUENNE,
Mme Brigitte DUCH, Pr Salima BOUVIER

http://icacm2016.rbv.utc.fr
CONTACT: icacm2016.rbv@utc.fr

SORBONNE UNIVERSITÉS | utc | UPMC | cnrs

BACKGROUND

ICACM is a partnership between several French and American Universities with the scope of promoting joint research at the forefront of computational mechanics. The focus of the 9th symposium will be on the latest advances in experimental and computational mechanics aimed at understanding the contribution of the microstructure to the material behavior at macroscopic scale. It will gather researchers from different fields and with different scientific backgrounds including mechanics of materials, material sciences, chemistry, biomechanics, advanced experimental techniques and computational mechanics to allow cross fertilization. Contributions on both experimental and theoretical/modeling studies will be considered in order to stimulate discussions and interactions. The symposium will feature invited talks on progress in multi-scale and multi-physics modeling that go beyond the state-of-the-art materials research.

All the presentations are by invitation only. The symposium will culminate with panel discussions on future directions and merging technologies between experts from the United States and France from academia, National laboratories and industry.

Confirmed US invited speakers
W. AQUINO (Duke University)
L. ANAND (MIT, Cambridge)
O. CAZACU (University of Florida)
J. S. CHEN (University of California)
A. CUITINO (Rutgers University)
C. FARHAT (Stanford University)
W. K. LIU (Northwestern University)
J. MICHOPOULOS (Naval Research Laboratory)
D. MOHR (MIT and ETH Zurich)
A. NEEDLEMAN (Texas A&M University)
A. PILCHAK (AFRL/RXCM)
A. ROLLETT (Carnegie Mellon University)
D. ROWENHORST (Naval Research Laboratory, Washington)
J. J. VLASSAK (Harvard University)
G. VOYIADJIS (Louisiana State University)

Confirmed French invited speakers
E. BUSSO (ONERA)
O. CASTELNAU (Arts et Métiers Paristech)
P. CHINESTA (Centrale Nantes)
F. DARVE (Université de Grenoble)
J. DIANI (École Polytechnique)
X. FEAUGAS (Université de la Rochelle)
J.-F. GANGHOFFER (Université de Lorraine)
A. IBRAHIMBEGOVIC (UTC Sorbonne Universités)
D. KONDO (UPMC, Sorbonne Universités)
H. PROUDHON (Mines ParisTech)
S. QUEYREAU (Université Paris 13)
L. TOTH (Université de Lorraine)
A. VATTRE (CEA DAM)

From microstructure observations to multiscale modeling of deformation mechanisms and interfaces

SCOPE

The mechanical behavior of materials is strongly influenced by their **microstructure**. Hence, progress in material science can be made only by understanding and modeling the link between the microstructure and the material behavior at different scales considering the interfaces. This is the scope of the 9th ICACM2016 symposium where special emphasis is placed on understanding the behavior of **heterogeneous materials including porous metallic materials, multi-phase metallic materials, composite materials, oxide-metal systems and hybrid combination of materials.**

Different questions will be addressed and discussed, for example:
What are the relevant scales for gathering data and modeling certain phenomena? Could existing **computational mechanics** methods describe **physical phenomena at the relevant scale**? What are the mechanisms that occur at the **interfaces** in heterogeneous materials? Interfaces include here phase boundaries, oxide-metal interface, fiber-matrix interface, bi-materials interfaces, etc...

Events occurring at elevated temperatures or severe deformation will be also considered thus drawing special attention to the need to better model phase changes in materials. Among the topics of the symposium are **image analysis** and reconstruction of real materials, **statistical characterization** of microstructure and its effect on the physical properties of materials, computational methods, **homogenization** theories. **Stochastic approaches and uncertainties** will be considered in order to take into account the effects of the microstructural randomness.

TOPICS

- Plastic localization, ductility and cracking at interfaces
- Interfaces and their impact on microstructure and properties of materials
- Recent advances in characterizing the interface properties
- Solid-state interface diffusion in metals
- Continuum modeling of solid-state interface
- Interfaces in new advanced systems
- Microstructure reconstruction methods and their contribution in understanding the material behavior at lower scales
- Inverse methods for identification
- Uncertainty management : Bayesian, belief functions, reliability
- Reduced Order Modeling and optimization
- Multiscale data to determine the effective macroscopic behavior that account for the complexity of the microstructure
- Plasticity and Fracture mechanisms: role of microstructure

POSTER SESSION

Oral presentation will be given only by invited speakers.
A poster session is proposed all through the symposium and dedicated time is scheduled for discussion.
The submission of a one page abstract for poster presentation can be performed by email to: icacm2016.rbv@utc.fr using the template available online:
http://icacm2016.rbv.utc.fr

Submission deadline: April, 30, 2016
Notification of acceptance: May, 15, 2016

Online registration:
http://icacm2016.rbv.utc.fr