



CFRAC 2011

International Conference on Computational Modeling of Fracture and Failure of Materials and Structures

6-8 June 2011 Barcelona, Spain

An IACM Special Interest Conference



<http://congress.cimne.com/CFRAC2011/>

Invited Sessions

Advances in Cohesive-element Modeling of Material Failure
Jean-Francois Molinari, Raul Radovitzky and Marion Chambart
jean-francois.molinari@epfl.ch

Advances in the eXtended Finite Element Method for the Simulation of Fracture Processes
Peter Wriggers and Stefan Löhnert
wriggers@ikm.uni-hannover.de ; loehnert@ikm.uni-hannover.de

Computational Failure Mechanics in Multiphysics Problems
Paul Steinmann and Julia Mergheim
steinmann@ltm.uni-erlangen.de ; julia.mergheim@ltm.uni-erlangen.de

Coupled Fracture and Transfer Processes
Gilles Pijaudier-Cabot and Frédéric Dufour
gilles.pijaudier-cabot@univ-pau.fr ; frederic.dufour@hmg.inpg.fr

Ductile Fracture
I: Modeling of Mechanisms from the Atomic-scale to the Macro-scale
II: Evolution of Damage and the Transition to Fracture
Pierre-Olivier Bouchard, José César de Sá, Alan Needleman and Thomas Pardoen
pierre-olivier.bouchard@mines-paristech.fr ; cesarsa@fe.up.pt ; needle@unt.edu ; thomas.pardoen@uclouvain.be

Dynamic Fracture
I: Discretization Techniques, Multi-scale Models and Adaptive Analysis Methods
II: Fracture Criteria and Damage Models - Nucleation, Extension and Branching
III: Applications to Materials Failure and Engineering Design - Fragmentation, Micro-cracking, Engineering Applications
Alain Combescure, Francisco Armero and Robert Haber
alain.combescure@insa-lyon.fr ; armero@ce.berkeley.edu ; r-haber@illinois.edu

Enriched Finite Element Formulations to Capture Cracks, Material Interfaces and Multiscale Phenomena
Jorge Alfaiate and L.J. Sluys
alfaiate@civil.ist.utl.pt ; L.J.Sluys@tudelft.nl

Fracture Modeling in the Context of Multiphase Materials
Günther Meschke
guenther.meschke@rub.de

Gradient Models
Harm Askes and Antonio Rodriguez-Ferran
H.Askes@sheffield.ac.uk ; antonio.rodriguez-ferran@upc.edu

High Temperature Mismatch and Chemically Induced Cracking and Damage
Kaspar Willam, Ignacio Carol and Erik Schlangen
willam@colorado.edu ; ignacio.carol@upc.edu ; H.E.J.G.Schlengen@tudelft.nl

Modeling Fracture of Concrete at High Loading Rates
Joško Ožbolt
ozbolt@wb.uni-stuttgart.de

Multiscale Modeling and Simulation of Failure Processes
Jacob Fish, Marc Geers and Ron Peerlings
jfishj@rpi.edu ; M.G.D.Geers@tue.nl ; R.H.J.Peerlings@tue.nl

Multiscale Modeling of Composites
Javier Llorca, Carlos D. González and Oliver Allix
javier.llorca@imdea.org ; carlosdaniel.gonzalez@imdea.org and allix@imt.ens-cachan.fr

Novel Discretization Concepts in Fracture and Failure
René de Borst
R.d.Borst@tue.nl

Numerical Modeling of Material Failure in Plain and Reinforced Concrete
Alfredo Huespe and Xavier Oliver
ahuespe@intec.unl.edu.ar ; xavier.oliver@upc.edu

Present and Future of Crack Tracking Algorithms
Anna Pandolfi and Michael Ortiz
pandolfi@stru.polimi.it ; ortiz@aero.caltech.edu

Regularized Failure Models
Milan Jirasek and Nicolas Moës
Milan.Jirasek@fsv.cvut.cz ; nicolas.moes@ec-nantes.fr

Shrinkage Induced Cracking of Concrete
Günter Hofstetter and Tony Jefferson
guenther.hofstetter@uibk.ac.at ; JeffersonAD@cf.ac.uk

Stochastic Models of Material Failure
Miguel Angel Gutierrez and Lori Graham-Brady
m.a.gutierrez@tudelft.nl

CFRAC 2011

Conference Secretariat

International Center for Numerical Methods in Engineering (CIMNE)

Congress Management Department

"La Cup", Campus Norte UPC

C/Jordi Girona, 1-3

08034 Barcelona, Spain

Tel: +34 93 405 46 94 / 97

Fax: +34 93 205 83 47

e-mail: cfrac2011@cimne.upc.edu

web: <http://congress.cimne.com/CFRAC2011/>



Objectives

Designers of engineering structures must answer to ever increasing requests on performance in terms of safety, reliability, durability, low cost and low energy consumption. As new materials and new applications arise, traditional design rules and conventional testing methods become insufficient or inapplicable, which strengthens the role of computational methods in the design process. Numerical tools can accelerate the development of new products and their optimization.

The aim of the conference is to gather academic researchers and industrial partners involved in development and application of numerical procedures for fracture and failure simulation of materials and structures.

Conference Topics

- Algorithms for crack propagation and evolving discontinuities
- Coupled experimental-computational identification
- Ductile and large deformation fracture
- Dynamic fracture
- Failure mechanisms in forming processes
- Finite elements with embedded strong discontinuities
- Fracture of composites
- Fracture of nano-structures
- Fragmentation
- Micro-cracking
- Multi-scale analysis for cracks
- Nodally enriched finite element formulations to capture discontinuities, X-FEM, partition of unity methods and others
- Regularization methods
- Strain localization methods
- Transition from damage to fracture

Important Dates

Deadline for presenting a one page abstract	10 January 2011
Acceptance of the contributions	7 February 2011
Deadline for speaker registration and early payment	4 March 2011

Conference Chairmen

J. Oliver, Technical University of Catalonia, Spain
M. Jirasek, Czech Technical University in Prague, Czech Republic
O. Allix, École Normale Supérieure de Cachan, France
N. Moës, École Centrale de Nantes, France

Local Organizing Committee

J. Oliver, E.T.S. d'Enginyers de Camins Canals i Ports de Barcelona, Technical University of Catalonia, Spain
J.C. Cante, E.T.S. d'Enginyeries Industrial i Aeronàutica de Terrassa, Technical University of Catalonia, Spain
R. Weyler, E.T.S. d'Enginyeries Industrial i Aeronàutica de Terrassa, Technical University of Catalonia, Spain
J. Hernandez, CIMNE / E.T.S. d'Enginyeries Industrial i Aeronàutica de Terrassa, Technical University of Catalonia, Spain

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C. González, Instituto Madrileño de Estudios Avanzados, Spain
L. Graham-Brady, Johns Hopkins University, USA
M.A. Gutierrez, Delft University of Technology, The Netherlands
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J. Llorca, IMDEA, Spain
S. Löhnert, Leibniz Universität Hannover, Germany
J. Merghem, University Erlangen-Nuremberg, Germany
G. Meschke, Ruhr-Universität Bochum, Germany
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A. Needleman, University of North Texas, USA
M. Ortiz, California Institute of Technology, USA
J. Özbolt, University of Stuttgart, Germany
A. Pandolfi, Politecnico di Milano, Italy
T. Pardo, Université Catholique de Louvain, Belgium
R. Peerlings, Eindhoven University of Technology, The Netherlands
G. Pijaudier-Cabot, Laboratoire des Fluides Complexes, ISA BTP, France
R. Radovitzky, Massachusetts Institute of Technology, USA
A. Rodriguez-Ferran, Universitat Politècnica de Catalunya, Spain
E. Schlangen, Delft University of Technology, The Netherlands
B. Stuijs, Delft University of Technology, Netherlands
P. Steinmann, University Erlangen-Nuremberg, Germany
K. Willam, University of Colorado at Boulder, USA
P. Wriggers, Leibniz Universität Hannover, Germany

An ECCOMAS Thematic Conference

CFRAC 2011 is one of the Thematic Conferences of the European Community in Computational Methods in Applied Sciences (ECCOMAS) and it has been promoted by the European Committee in Solids and Structural Mechanics (ECSSM) of ECCOMAS. For further information on ECCOMAS visit: www.eccomas.org

CFRAC 2011 is also an IACM Special Interest Conference. More information about IACM in: www.iacm.info

Location

The Conference will take place at the Campus Nord of the Technical University of Catalonia (UPC), Jordi Girona 1-3 (08034) Barcelona.

Registration Fees

The registration fees, including social events, with early registration applicable if received before March 4th. 2011 are:

	Early	Late
Delegates	490 €	590 €
Students	290 €	350 €

The fees will include:

- Conference abstracts book
- Attendance at all scientific sessions
- Coffee breaks and social events

Supporting Organisations

- European Community on Computational Methods in Applied Sciences (ECCOMAS)
- International Association for Computational Mechanics (IACM)
- International Center for Numerical Methods in Engineering (CIMNE) Barcelona, Spain
- Escola Tècnica Superior d'Enginyers de Camins, Canals i Ports, Barcelona, Spain
- Universitat Politècnica de Catalunya (UPC), Spain

Social Programme

A social programme for delegates will be arranged, including a reception and a banquet at a local place of interest, as well as a social programme for accompanying persons.