

6th EUROSIM Congress on Modelling and Simulation
September 9-13, 2007
Ljubljana, Slovenia
<http://www.eurosim2007.org>



Special session on
**Simulation of multifield and multiscale problems in
structural and material engineering**

Session organizers:

Carlo Callari

Facoltà di Ingegneria
Università degli Studi del Molise
via Duca degli Abruzzi
86039 Termoli (CB), Italy
carlo.callari@unimol.it



Franco Maceri

Dipartimento di Ingegneria Civile
Università di Roma Tor Vergata
Viale del Politecnico 1
00133 Roma, Italy



Scope

Most part of structural and material engineering problems involve multiple scales and fields, thus requiring the proper formulation of simulation techniques within an interdisciplinary approach. The main purpose of this session is to bring together researchers working on multiscale and multifield problems within different theoretical frameworks and with reference to different materials.

Main topics

coupled problems;
enhanced finite elements;
fracture mechanics;
geomaterials;
higher-order continua;
homogenization;
laminated composites;
multi-field thermodynamics;
multi-phase media;
porous solids;
remeshing techniques;
shape memory alloys;
solids with micro-structure;
strain localization.

List of invited presentations:

F. Froio*

Laboratoire des Matériaux et des Structures du
Génie Civil - UMR 113 (LCPC-ENPC-CNRS),
Champs-sur-Marne, France - froio@lpc.frail

Linear micro-elasticity

I. Vardoulakis

Department of Mechanics, Faculty of Applied
Mathematics and Physics, NTUA, Athens.

A. Zervos

School of Civil Engineering and the
Environment, University of Southampton, UK

E. Artioli*

IMATI-CNR, Via Ferrata 1, 27100 Pavia, Italy -
artioli@imati.cnr.it

*A four-node quadrilateral for SMA-fiber
reinforced laminate shell structures
undergoing finite rotations
in small strain state*

F. Auricchio

Department of Structural Mechanics, University
of Pavia, Via Ferrata 1, 27100 Pavia, Italy

E. Sacco

Department of Mechanics, Structures,
Environment and Territory, University of
Cassino, Via G. Di Biasio 43, 03043 Cassino,
Italy

S. Secchi*

CNR, Isib, Padova, Italy Corso Stati Uniti 4,
35127 Padova, Italy - secchi@isib.cnr.it

*Hydraulic crack propagation in
cohesive porous media*

B.A. Schrefler

L. Simoni

Department of Structural and Transportation
Engineering, University of Padova, Via Marzolo
9, 35121 Padova, Italy

C. Callari*

Facoltà di Ingegneria, Università degli Studi del
Molise, via Duca degli Abruzzi, 86039 Termoli
(CB), Italy - carlo.callari@unimol.it

*Simulation of strain localization in multi-
phase solids by a multi-scale approach*

F. Armero

Department of Civil and Environmental
Engineering, University of California, Berkeley
CA 94720, USA

A. Abati

Dipartimento di Ingegneria Civile, Università di
Roma Tor Vergata, Viale del Politecnico 1,
00133 Roma, Italy

(*) Corresponding and presenting authors