

Proposed by the AIMETA group “Mechanics of Materials” (GMA)

Mechanics and Materials 2015, GMA

Organisers:

Lorenzo Bardella*, Roberta Massabò**, Pasquale Vena***

*Università di Brescia

**Università di Genova

***Politecnico di Milano

The mini-symposium “Mechanics and Materials 2015, GMA” is promoted by the AIMETA group Mechanics of Materials (Gruppo Meccanica dei Materiali, GMA). The goal of the GMA is to encourage and foster research and development in the broad field of materials and to provide a forum for networking and technical information exchange for researchers and students interested in material mechanics, science, and engineering.

The aim of the mini-symposium is to bring together scientists from different fields and communities with the purpose of discussing fundamental advances and concepts and identifying future developments. Contributions are sought on both basic and applied topics and presentations are encouraged on:

- Mechanics of new advanced materials with novel or improved properties.
- Materials modeling and simulation with focus on multi-scale and multi-physics phenomena.
- Integrated design and optimization of multi-functional materials/structures for sustainable growth.
- Inspiration by nature: promotion of eco-design, bio-inspiration, natural materials.
- Control of the performance of materials during their life cycle and smart structures.

Papers submitted to the mini-symposium will be organized in:

- **Thematic sessions** (titles will be defined upon submission of abstracts).
- **Specialized sessions**, organized on specific topics (see next pages for details):
 - “Soft Active Materials” organizers Noselli G. and Lucantonio A. (SISSA)
 - “Non-local modeling of materials” organizers Bacigalupo A. (IMT Lucca), Dal Corso F. and Piccolroaz A. (Univ. Trento)
 - “Materials for Tissue Engineering” organizers Barberis F. and Lagazzo A. (Univ. Genova)
 - “Damage Characterization in Composites” organizers Lopresto V. and Langella A. (Univ. Napoli)

Soft Active Materials

Organisers:

Giovanni Noselli*, Alessandro Lucantonio*

*SISSA – International School for Advanced Studies, Trieste

Soft Active Materials comprise both synthetic and natural systems that undergo large deformations in response to non-mechanical stimuli, such as temperature, pH and electromagnetic fields. Typically, such materials display a complex behaviour that arises from their multi-physics and multi-scale nature, and a major thrust in research is devoted to their study, mainly driven by technological applications in the fields of biomedicine and soft-robotics. This session aims at gathering researchers from different disciplines sharing the interest in Soft Active Materials.

Topics of interest include theoretical and experimental aspects concerning:

- stimuli-responsive gels and ionic polymer-metal composites;
- liquid crystal elastomers;
- electroactive and magnetoactive polymers;
- shape memory polymers;
- biological tissues.

Acknowledgements: the organizers acknowledge support of European Research Council through the ERC Advanced Grant 340685 – MicroMotility.

Non-local modelling of materials

Organisers:

Andrea Bacigalupo*, Francesco Dal Corso**, Andrea Piccolroaz**

*IMT Institute for Advanced Studies, Lucca

**University of Trento, Trento

The aim of this mini-symposium is to provide a forum for the presentation and discussion of the most recent analytical, numerical and experimental results in the field of the non-local modelling of materials, as well as novel developments and approaches.

The topics of the mini-symposium include but are not limited to:

- Identification techniques of nonlocal parameters
- Mechanics of defects
- Thermal, plastic and viscous phenomena
- Dispersive wave propagation
- Contact problems

Acknowledgements: support from Marie Skłodowska-Curie actions through research grants “Me-Mic” and “HOTBRICKS”; Italian Ministry of Education, University and Research (Project FIRB 2010) “Structural mechanics models for renewable energy applications” (RBFR107AKG).



Materials for Tissue Engineering

Organisers:

Fabrizio Barberis*, Alberto Lagazzo*

*University of Genoa, Genoa

This mini-symposium is dedicated to tissue engineering applications where the mechanical properties of materials or aspects of structural mechanics may play a significant role.

The suggested topics include

- scaffold design, fabrication, characterization
- electrospinning and membranes
- drug delivery systems
- bone substitute implants

Damage Characterization in Composites

Organisers:

Valentina Lopresto*, Antonio Langella*

*University of Naples "Federico II", Napoli

The aim of this mini-symposium is to pay the attention on a very crucial aspect about composite materials: the internal and external damage. Since their non homogeneous and anisotropic nature, these materials can fail in a wide variety of modes not always visible and simple to investigate. The hope is to highlight and to discuss the most common as well as the new experimental and numerical techniques to understand the failure mechanisms and their interactions.

The topics of the mini-symposium include but are not limited to:

- NDT
- Failure mechanisms and fatigue
- Numerical models
- Impact damage