



Session description

Chairman name: Prof. Nikolaos Michailidis

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Title of the session: Micro- and nano-mechanical characterization and modelling of advanced materials

Objectives: Advanced materials are used in a broad spectrum of applications in Aerospace, Aviation, Automotive, Medicine and Energy sectors. Multifunctional, smart and composite materials concentrate an attractive combination of properties, i.e. light weight, high stiffness, high strength, and in some cases they are thermo-mechanically triggered to deliver actuation properties. Understanding the science and physics that impact on the mechanical properties of these materials requires a multidisciplinary approach involving advanced experimentation and modeling in micro- and nano-scales.

The topics to be covered by the symposium are:

- Mechanical testing at micro/nano scales
- Multifunctional and smart materials
- Shape memory alloys
- Piezoelectric materials
- Micro/nano composites
- Porous materials
- Mechanical and thermo-mechanical properties
- Micro/nano-mechanics of interfaces
- Micro/nano-mechanics of damage and fracture
- Effective properties
- Constitutive laws
- Modelling and homogenization methods
- RVE, periodic mesh and boundary conditions