

FEMS EUROMAT 23

03 - 07 Sep 2023 (Frankfurt am Main)

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FEMS EUROMAT is the most important international congress in materials science and technology in Europe. It continues a successful congress series promoting the transfer of knowledge and the exchange of experience between academia and industry. **Submission deadline: 31 January 2023**

Area D: Characterization and Modeling

D04: Micro- and Nano-Mechanics- Characterization and Modeling

Small-scale mechanical testing has become a mature and well-established field of research. Nevertheless, the methodologies themselves and the materials under study continuously evolve due to exciting new possibilities in instrumentation and high-performance computing. Specifically, combinations of advanced small-scale mechanical testing, high-resolution 3D imaging, cutting edge in-situ and operando techniques, high-performance computing, data-driven mechanics, advanced multi-scale modeling, and artificial intelligence (AI) algorithms allow exciting new insights into the deformation behavior of materials. This symposium aims at bringing together these fast-growing research communities to support interdisciplinary approaches in micro- and nanomechanics with the objective of gaining insights into small-scale behavior across all material classes, including technical, biological, bio-mimetic, and hierarchical, as well as functional materials and structures.

The targeted topics of the symposium are:

- Mechanical testing at micro- and nano-scales in terms of nanoindentation, μ -bending, μ -pillar compression, and others
- Computational, data-driven, as well as AI-supported micro- and nanomechanics
- Modeling techniques for small-/multi-scale mechanics, including experimental techniques for validation of these models
- Mechanics of nanomaterials and nanostructures, thin films, multiphase materials, as well as hierarchical, bio-(mimetic), and functional materials across the length scales
- Strain rate, fatigue, as well as creep phenomena bridging length scales
- Micro- and nanomechanics of adhesive and cohesive failures
- High-resolution 3D characterization of small structures in relation to mechanical phenomena
- In-situ, operando, and in vitro micro- and nanomechanical testing
- Advanced instrumentation for mechanical testing at micro- and nano-scales

Symposium Organizer



Dr. André Clausner
Fraunhofer Institute IKTS



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