

FEMS EUROMAT23

03 - 07 Sep 2023 (Frankfurt am Main)

euromat2023.com

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. **Extended submission deadline: 15 March 2023**

Area C: Processing

C10: Modeling and Simulation of Materials Processing

This symposium will provide a forum to present the latest developments in the field of theoretical modeling and numerical simulation of materials processing for structural and functional applications. It will bring together academics, researchers, and industry leaders to discuss pathways to leverage multi-scale and multi-physics approaches to solve challenges in materials manufacturing and processing of a broad range of materials, including metals, ceramics, polymers, as well as composites and compositionally/functionally-graded materials.

The scope will be broad in terms of processes, including additive manufacturing, forming, casting, and joining as well as thermomechanical and subtractive post-processes like heat treatments, laser polishing, shot peening, hot isostatic pressing, and machining. Relevant methods involve new physics-based or physics-informed data-driven models linking the microstructure, defects, physico-chemical and tribological properties with the in-process material evolution and response. Typical examples include, but are not limited to, the modeling and simulation of:

- a) microstructure formation and evolution and residual stress development during solidification, solid-state phase transformations and severe plastic deformation (e.g., during machining),
- b) wear and tribology,
- c) manufacturing and synthesis of structural materials, energy materials (e.g., batteries) and magnetic materials.

Relevant scales range from atomic (e.g., molecular dynamics) to macroscopic (solid mechanics, CFD, cellular automata), going through various mesoscale and multiscale approaches (e.g., phase-field, crystal plasticity, etc.). Multiscale, multiphysics and integrated computational materials engineering (ICME) approaches, as well as computational study with direct experimental validation and/or demonstrated technological applications, are particularly encouraged.

[The symposium is cooperating with symposium D10.](#)

Symposium Organizer



Amir Malakizadi
Chalmers University of Technology



Damien Turret
IMDEA Materials Institute



Prof. Dr. Bai-Xiang Xu
Technische Universität Darmstadt

