Mini-symposium 5-3 Computational nonlinear materials and couplings

Organizers
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Mini-symposium description
The modeling and simulation based prediction of nonlinear material behavior and couplings is of key relevance for advanced technologies and new developments. This concerns various fields of applications such as advanced production processes, material design, smart and active devices, biomechanical and biomedical systems, to name but a few. State-of-the-art physics-based modeling and simulation of nonlinear material response thereby requires both - advanced computational strategies and methods, such as efficient and robust algorithms for coupled problems, as well as comprehensive material models, such as multi-scale approaches and validated models.

Examples for topics and areas addressed in the mini-symposium are (but are not limited to)

- Advanced inelasticity (plasticity, damage, phase transformations, …)
- Material instabilities
- Micro-macro interactions
- Bulk-interface interactions
- Computational multi-scale modeling
- Data-driven material modeling
- Inverse problems
- Electromechanics
- Magnetomechanics
- Thermomechanics
- Chemomechanics