

## PARAMETERIZATION, VALIDATION, AND UNCERTAINTY QUANTIFICATION IN PLASTICITY AND FAILURE

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### ABSTRACT

Materials models in the form of flow rules, hardening formulations, or damage laws describe the physics of deformation and failure of multiple mechanisms. During deformation different mechanisms activate simultaneously, making it difficult to validate each independently. Instead, models are typically validated concurrently, which can result in spurious compensation of error.

This session will explore the integration of modelling and experimental approaches to identify appropriate strategies to parameterize and validate models. We aim to discuss the origin of materials properties and their modelling combining microstructure, deformation mechanisms, initial and boundary conditions, etc.

We invite modelers and experimentalists working on parameterization and validation of material models, with special emphasis on:

- Uncertainty quantification (UQ), inverse UQ, parameter identifiability analysis,
- Top-down, Bottom-up, and combined information flow in material models and experiments,
- Innovative concepts in validation, improvements to credibility via more extensive validation cases,
- Challenges unique to multi-modal data synthesis in the materials modeling domain,
- Advances in the integration of models and experiments to mitigate model form and model input errors.