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EXPERIMENTAL VALIDATION OF PHASE-FIELD MODELS FOR SOLID, FLUID AND POROUS MEDIA TRACK NUMBER (2100)

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ABSTRACT

In the field of computational mechanics, the phase-field method (PFM) has emerged as a powerful tool to simulate evolving interfacial problems. Due to the simplicity of representing evolving phases via implicit function representation, PFM has contributed to solving challenging engineering problems such as the modeling of brittle and ductile fracture, hydraulic fracture modeling in fluid-saturated and unsaturated porous media, phase-transitions such as crystallization and melting materials in free or porous material. In spite of the excellent capacity to capture complex geometrical changes, such as branching and coalescence in fracture mechanics, proper validation of phase field models against real experiments or lower-scale numerical experiments is still a big challenge. In particular, the physical underpinning and corresponding inverse problems that recover the length scale parameter(s), remains a matter of debate in the computational mechanics community. This mini-symposium aims to provide a forum for presenting and discussing recent advances and challenges related to the experimental validation of PFM via comparison with real or lower-scale experimental results. This includes approaches related to the PF parameter estimation and numerical issues that affect the results quality.

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