

RECENT ADVANCES IN COMPUTATIONAL FRACTURE MECHANICS AND FAILURE ANALYSIS

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ABSTRACT

This mini-symposium aims to highlight recent advances in computational methods for fracture mechanics and structural failure analysis. Contributions utilizing state-of-the-art numerical techniques such as FEM, X-FEM, G-FEM, S-FEM, BEM, IGA, Peridynamics, and other emerging approaches are strongly encouraged. In addition, the integration of machine learning (ML) and artificial intelligence (AI) for predictive modeling, surrogate modeling, and model calibration is welcomed. The symposium provides a platform for discussing innovative strategies to model crack initiation, crack propagation, and fracture, as well as structural failure under complex loading and environmental conditions. Applications span a wide spectrum, including aerospace, automotive, naval, nuclear, civil, and mechanical engineering. Both fundamental and applied studies are invited to foster knowledge exchange and promote the development of novel computational frameworks within the mini-symposium.