

CATASTROPHIC FAILURE MECHANICS AND NUMERICAL MODELLING

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MINISYMPOSIUM

Catastrophic failure of materials and structures widely exists in nature and industries. Many disastrous factors, including earthquake, storm, flood, tsunami, explosion, etc., can cause sudden destruction or serious damage to large engineering structures, such as aerospace vehicles, high-pressure vessels, high dams, geotechnical structures, bridges, and high buildings, which may result in tremendous loss of properties and human lives. The modeling of material and structural failure has been a great challenge for the community of computational mechanics. This mini-symposium aims to bring together academics and practitioners who are interested in the computational mechanics related to the catastrophic failure of large engineering structures and present their ideas and potential solutions on emerging topics in theoretical and numerical modeling of catastrophic failure of materials and structures. Topics of interest include but not limited to:

- Progress in the research on catastrophic destruction mechanism and failure analysis.
- Identification and spatiotemporal distribution of various disaster factors
- Mechanics theory and numerical methods for material and structural failure subjected to extreme conditions, e.g., FEM, XFEM, IGA, PF, PD, SPH, MPM, DEM, et al.
- Numerical modeling of the effect of disastrous damage factors on structures
- Multiscale methods for complex material behavior
- Coupled multi-physics problems
- Numerical techniques, discretization schemes and software implementation
- Damage mechanism and failure of the large engineering structures
- Indication and criterion of structure failure