



The Fifth International Conference on Damage Mechanics (ICDM5)

Date: 16th - 18th July 2025

Venue: National University of Singapore

<p>Mini Symposium Title</p>	<p>Creep damage, fatigue and fracture in high-temperature alloys</p>
<p>Short description on the focus of the Mini Symposium</p>	<p>With the increasing demand for carbon neutrality, energy conservation, and emission reduction, high-temperature creep fracture issues are widely present in industrial fields such as aerospace engineering, petrochemical engineering, energy engineering, and nuclear engineering, etc. Significant efforts have been made during the past few decades to construct creep damage, fatigue and fracture models and related computational methods to reveal the creep failure mechanisms, as well to efficiently and accurately predict the life span of different high-temperature alloys and their applied engineering structures.</p> <p>This mini-symposium aims to provide a platform for discussion of the newest development in theoretical models and numerical methods on creep damage, fatigue, and fracture of engineering structures and materials at all stages, length scales, and time scales. This mini-symposium also tries to promote collaborations among academic researchers and industrial engineers to come together and share the latest advancements of developing and applying creep damage, fatigue, and fracture models and related numerical methods in some emerging fields.</p> <p>Potential topics include, but are not limited to, the following:</p> <ol style="list-style-type: none"> 1) Creep damage constitutive model; 2) Creep fatigue lifetime prediction with or without interaction effects; 3) Multiscale theoretical models or computational methods on creep damage, fatigue and fracture; 4) AI based creep damage, fatigue and fracture models and numerical methods including data-driven or physics informed methods; 5) Extensions or applications of AI methods to creep fatigue lifetime predictions; 6) Creep, fatigue and fracture experiments applied to material level or structure level;

	<ul style="list-style-type: none">7) Creep, fatigue and fracture mechanisms and inhibition;8) Damage based creep fatigue models and computational methods;9) Creep damage, fatigue, and fracture analysis under complex or extreme conditions;10) High temperature structural integrity techniques including design rules and evaluation criterions;
Organizers	Yanwei Dai, Beijing University of Technology Yinghua Liu, Tsinghua University