14th International Fatigue Congress (IFC14)

Proposed Session

Title: ***Very High Cycle Fatigue: Experimental methods, specimens and machines, and damage mechanisms***

Session Organizers:

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Abstract

Grasping the complex phenomenon associated with fatigue testing at extreme number of cycles is crucial for designing and ensuring the reliability of aerospace, automotive, and structural components. This session will address the advancements on Very High Cycle Fatigue (VHCF) regime through comprehensive experimental methodologies, innovative specimen design and modelling techniques, and detailed analysis of damage mechanisms and predictive models. The intricate nature of the required experimental and analytical approaches has significant challenges to accurately study a wide range of materials. By bridging High Cycle Fatigue (HCF) and VHCF, we can enhance our ability to characterize material behavior, predict and mitigate structural failure, and ultimately safeguard long-term integrity and durability of engineering systems.

Contributions are invited in (but not limited to) the following areas:

- Advanced testing methods and characterization techniques
- Damage mechanisms and predictive models
- Machine learning applications in VHCF
- Multiaxial HCF and VHCF
- Size and environmental effects

The session also welcomes contributions on novel modeling approaches, application case studies, and interdisciplinary research on the advance implementation of VHCF experimental and theoretical approaches.