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Computational Mechanics of Fatigue and Fracture in Metallic Materials

Guest Editors:

Prof. Dr. José César de Sá
Mechanical Department, Faculty of Engineering, University of Porto, 4200-465 Porto, Portugal

Dr. Abílio M. P. De Jesus
Department of Mechanical Engineering, Faculty of Engineering, University of Porto, 4200-465 Porto, Portugal

Deadline for manuscript submissions:
closed (28 February 2023)

Message from the Guest Editors

Conventional damage and fatigue models and fracture criteria in many situations fail to accurately predict ductile and fatigue failure, especially for complex loading paths and for new advanced materials. There is the space and need, for new ideas and proposals to tackle those limitations.

A diverse variety of topics may be addressed for fatigue crack initiation and propagation and fracture modeling, comprising:

- Theoretical and numerical aspects related to advanced fully coupled constitutive equations;
- New mathematical formulations and numerical solution strategies for continuous/discontinuous transition, size effects, mesh dependence, solution schemes involving nonlocal methods, phase–field models, cohesive zone models, XFEM and GFEM approaches;
- Multiscale strategies for modeling fatigue crack initiation and growth and fracture, scale-bridging, and model order reduction techniques;

and various related topics.

This Special Issue aims to address multiple associated aspects, ranging from constitutive model proposals to numerical solution strategies for fatigue crack initiation, propagation, and fracture. We look forward to your contribution.

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Special Issue

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Editors-in-Chief

Prof. Dr. Hugo F. Lopez
Department of Materials Science and Engineering, College of Engineering & Applied Science, University of Wisconsin-Milwaukee, 3200 N. Cramer Street, Milwaukee, WI 53211, USA

Prof. Dr. Yong Zhang
Beijing Advanced Innovation Center of Materials Genome Engineering, State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 30 Xueyuan Road, Beijing 100083, China

Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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Contact Us

Metals Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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