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Metal Fracture Modeling

Guest Editor:

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Deadline for manuscript submissions:
closed (20 October 2019)

Message from the Guest Editor

The increased interest in the understanding of ductile fractures is partly prompted by the fact that the conventional damage models and fracture criteria in many situations fail to accurately predict ductile failure, especially for complex loading paths and for new advanced materials. There is the space, but especially the need, for new ideas and proposals to tackle these limitations and to face the associated computational challenges of ductile damage modelling, at both the micro and the macro scale.

A diverse variety of topics could be addressed, comprising:

- theoretical and numerical aspects related to advanced fully-coupled constitutive equations, including time and space discretization, complex loading conditions involving large plastic straining, non-proportional loading and strain rate effects;
- new mathematical formulations and numerical solution strategies for continuous/discontinuous transitions, size effects, mesh dependence, solution schemes involving non-local methods, phase–field model, XFEM and GFEM approaches;
- multiscale strategies for modelling ductile fracture, scale-bridging, model order reduction techniques, and various related topics.

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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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