Special Issue

Low-Temperature Behavior of Metals

Message from the Guest Editor

Metallic materials, as candidate materials to develop cryogenic tanks, have attracted considerable interest due to their excellent mechanical properties at low temperatures and superior corrosion resistance. However, many engineering metals become brittle at low temperatures, and thus, the structures fabricated using these materials may fracture or fail unexpectedly when subjected to stress levels at which the performance may be satisfactory under normal temperatures. Therefore, the design of metal-based structures to be used under low temperatures must be performed considering the characterization and/or modeling of the low-temperature structural response of the material. Moreover, the development and implementation of customized material models (isotropic or kinematic hardening, strain rate based, temperature dependent, etc.) must be implemented considering the material nonlinearity at low temperatures to ensure that the simulations mimic actual conditions. Therefore, this Special Issue seeks the submission of manuscripts pertaining to the following keywords. Full papers, communications, and reviews are welcome.

Guest Editor

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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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