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Low-Temperature Behavior of Metals

Guest Editor:

Prof. Dr. Jae Myung Lee
1. Department of Naval Architecture & Ocean Engineering, Pusan National University, Busan, Korea
2. Hydrogen Ship Technology Center, Pusan National University, Busan, Korea

Deadline for manuscript submissions:
closed (28 February 2022)

Message from the Guest Editor

Dear Colleagues,

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.

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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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mdpi.com/journal/metals
metals@mdpi.com
𝕏@Metals_MDPI