Special Issue

Advances in Research on Radiation Effects in Metals

Message from the Guest Editor

The advent of focused ion beam technology for the preparation of thin foils for micro-analysis and micro-mechanical specimen preparation has facilitated the study of microstructures and test mechanical properties at sub-micrometer scales. Improvements in computing power have aided the use of electron diffraction in back-scatter and transmission modes to map variations in crystal orientation and defect density at small scales. Reductions in specimen size have enabled the study of radiation effects when only a small volume of irradiated material is available as is the case for ion irradiations, or when there are high radiation fields from large specimens after neutron irradiation. There has been a resurgence of interest in nuclear power globally, and the increasing operating temperatures have introduced new challenges for material development. In many cases, the limits of operability (time, neutron spectrum, and temperature) for conventional alloys have yet to be fully explored. While there are several contesting views concerning radiation effects in materials, novel technologies have improved our ability to better understand these processes.

Guest Editor

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Message from the Editor-in-Chief

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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