

Special Issue

Irradiation Response and Microstructure Characterization of Metallic Materials

Message from the Guest Editors

Many metallic materials are a combination of high strength and ductility, high electrical and thermal conductivities, and easy to process. Thus, metals are the most widely used structural materials in nuclear reactors, many important components consist of metallic materials, such as reactor pressure vessel (RPV), cladding, breeding blanket, etc. Neutron irradiation produces numerous defects in metallic materials, the migration and aggregation of defects result in various deleterious effects, including void swelling, hardening, element segregation, creep rupture, etc. The performances of metallic materials under irradiations play an important role in the safety and economy of nuclear reactors. In this Special Issue, we will focus on the irradiation responses of metallic materials from both theoretical and experimental investigations, and underlying mechanisms influencing defect behaviors in different metallic materials, as well as the advanced characterization approaches of irradiation effects. We also cover reviews related with current status and concept of advanced nuclear materials and general characteristics of defect behaviors in metallic materials.

Guest Editors

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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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