

Special Issue

Radiation Damage in Metallic Nuclear Reactor Materials

Message from the Guest Editors

Metallic nuclear reactor materials are critical for containment of nuclear fuel and fission products, as well as reliable and thermodynamically efficient production of electrical energy from nuclear reactors. In reactors, high fluxes of high-energy neutrons severely damage properties of these metallic materials by producing numerous irradiation defects in materials, leading to degradations of material properties like element segregation, void swelling, hardening and embrittlement of irradiated materials. Irradiation damage in metallic nuclear reactor materials has been identified as one of the serious issues challenging the stable and safe operation of nuclear reactors. Understanding the damage behaviors of metallic nuclear reactor materials and unveiling the underlying damage mechanisms are key to evaluating the performance of metallic materials currently serving in various nuclear reactors. This understanding is also beneficial for development of new-generation irradiation-tolerant nuclear reactor materials.

Guest Editors

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About the Journal

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.

Editor-in-Chief

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