



Radiation Effects in Steels and Alloys

Guest Editor:

Prof. Dr. Vladimír Služen

Institute of Nuclear and Physical
Engineering, Slovak University of
Technology in Bratislava,
Bratislava, Slovakia

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Message from the Guest Editor

Radiation damage in steels and alloys is one of the most important damage mechanisms for design materials of nuclear components or facilities. Different particles transfer their energy to atoms, which start to migrate, creating vacancies and different interstitials, being responsible for the formation of defect clusters or various microstructural changes. Such initiated nuclear reactions or transmutation can create alpha particle emitters which can lead to helium gas and its accommodation or movements in the material. All these mechanisms can significantly deteriorate materials' properties and limit the life-time of use. Irradiation with energetic particles can cause a wide range of effects on materials, starting with the formation of point defects, defect clusters, and cavities.

The aim of this Special issue is to preserve and maintain knowledge in this area as well as to extend it with actual results collected at different laboratories in recent years. This is fully in line with the extremely important reliability of material properties and increase of operational safety margin in view of long-term safe operation of nuclear facilities.





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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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Metals Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

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