Special Issue

Advances in Nuclear Reactor Pressure Vessel Steels

Message from the Guest Editor

Nuclear Reactor Pressure Vessel Steels are one of the most sophisticated products of the steel industry. During their long lifetimes (nowadays 60–80 years are the requirement) they are exposed to high neutron and gamma radiation at elevated temperatures, low cycle fatigue, and corrosion. They must maintain the required safety properties (first of all, fracture toughness) during the whole service life. The mechanical properties of thick forged rings are changing in the function of the distance from the surface, since the cooling rate at quenching is much slower at the middle section than at the surface. The main environmental factor determining the safe lifetime is neutron radiation and it contributed with thermal embrittlement, low cycle fatigue, and sometimes with corrosion. Advanced nuclear pressure vessel steel production includes the development of the production technology and material science and aging assessment. Papers on the development of new type or further developed steels for the present and future generation of pressure vessels are welcomed.

Guest Editor

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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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