



Heat Treatment Process and Application of High-Strength Steel

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Message from the Guest Editor

High-strength steels usually require heat treatment processes to realize their mechanical properties. The so-called TRIP effect occurs during the deformation of the retained austenite, resulting in intense strain hardening. Each high-strength steel group requires a typical heat treatment procedure—an intercritical annealing process for TRIP steels whereby a sufficient fraction of retained austenite is stabilised by isothermal holding time in the bainitic transformation region. The Q&P process is another modern method, in which, due to retained austenite's foil-like nature, the ductility of martensitic steels is significantly improved. Due to the properties of high-strength steels, which allow for reducing the weight of the final parts, they are used in a wide range of applications. They can be used not only for car body parts but also other transport technology, as well as structural elements such as bridges, mining platforms, etc.

This Special Issue of Metals focuses on different types of high-strength steels, from the development of their chemical composition to the design of heat and thermomechanical processing for different types of applications.





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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.

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