

Special Issue

Nano-Mechanical Behavior and Phase Transformation of High Strength Steels

Message from the Guest Editors

The competitiveness of steels lies in their vast property space, particularly in the domain of high strength and good ductility (or toughness), which derives from the versatile constituting phases such as bainite, martensite, ferrite, pearlite, austenite, and many others. The size of constituting phases in high strength steels spans over a few orders of magnitude. With the development of load- and depth-sensing nano-mechanical testing techniques, the respective mechanical behaviors of constituting phases in steels have been gradually revealed in recent decades. The present Special Issue is thus set up to rejuvenate this research direction to deepen the understanding of the microstructure–property relation of advanced high strength steels so that new steel grades can be designed to tackle the tough problems (e.g., the strength–ductility/toughness trade-off) on the resource-limited Earth.

Guest Editors

Prof. Dr. Binbin He

Department of Mechanical and Energy Engineering, Southern University of Science and Technology, Shenzhen 518055, China

Dr. Zhiyuan Liang

Songshan Lake Materials Laboratory, Dongguan 523808, China

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Editorial Office

MDPI, Grosspeteranlage 5

4052 Basel, Switzerland

Tel: +41 61 683 77 34

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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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Prof. Dr. Hugo F. Lopez

Department of Materials Science and Engineering, College of Engineering & Applied Science, University of Wisconsin-Milwaukee, 3200 N. Cramer Street, Milwaukee, WI 53211, USA

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Beijing Advanced Innovation Center of Materials Genome Engineering, State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 30 Xueyuan Road, Beijing 100083, China

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