Special Issue

Bainite and Martensite Transformation in Steel

Message from the Guest Editors

Although the discovery of martensite in steels dates back to 1890 and the work of German microscopist Adlof Martens, and although martensitic steels have been produced by mankind as early as 13 centuries BC, bainitic and martensitic transformations are still the topic of vivid research and vigorous debates. This quest for a better understanding of the thermodynamics, kinetics and crystallography of those transformations in steels has opened the way to the development of new steel families that are becoming more and more relevant for the industrial world, the automotive industry in particular. This special issue aims at reviewing the current challenges in the understanding, characterization and modeling of bainite and martensite in steels. It is devoted to the latest research in the development of innovative thermo-mechanical processing of complex-phase or multiphase steels. Fundamental research on the characterization of the thermodynamics, kinetics and crystallography of those transformations are also welcome.

Guest Editors

Prof. Stéphane Godet

Materials Engineering, Characterization, Synthesis and Recycling (4MAT), Université libre de Bruxelles (ULB), 50 Avenue FD Roosevelt CP 165/63, 1050 Brussels, Belgium

Prof. Mohamed Gouné

Université de Bordeaux, Bordeaux, France

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
metals@mdpi.com

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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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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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