Special Issue

Tool Steels

Message from the Guest Editor

Steel tools have been fabricated from the very beginning of the iron age, and tools, including weapons, were, for millennia, the main applications of iron alloys. For a long time, the development of tool steels has been focused on strength, toughness and fatigue performance, at the relevant service temperatures, and, on steelmaking and forming technologies and on final heat treatments, which has allowed to achieve such performances. Furthermore, more recently, considerable efforts have been devoted to processing by powder metallurgy, surface modification, and additive manufacturing techniques. This Special Issue will seek to encompass (but not limit to) the following topics on tool steels: Elemental composition; production methods, including bulk steelmaking, powder metallurgy, and additive manufacturing; microstructures, including phase equilibria and transformations, thermal stability; bulk mechanical performance, including strength, toughness, fracture mechanics, and fatigue behavior; surface modification technologies, including thermo-chemical surface transformation techniques; resistance to environmental degradation, including wet and hot corrosion, hydrogen embrittlement.

Guest Editor

Dr. Paolo Matteis

Department of Applied Science and Technology, Turin Technical University (Politecnico di Torino), IT-10129 Turin (Torino), Italy

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

mdpi.com/journal/metals

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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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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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