Special Issue

Advances in Transition Metal and Rare-Earth Metal Based Alloys, Oxides, Chalcogenides, MXenes, and 2D-Materials

Message from the Guest Editor

Transition-metal elements play important roles in many kinds of three-dimensional and two-dimensional materials such as transition-metal oxides (TMO), transition-metal chalcogenides (TMC), and MXenes (MX). They show diverse characteristics, from Mott-insulators, semiconductors, normal metals, magnetic materials, half-metals, semi-metals, multiferroics, thermoelectrics, topological materials, to superconductors. The underline mechanisms for this wide spectrum include strong correlation, spin–orbit interaction, metal–insulator transitions, charge-orbital ordering, magnetism, and interplays between charge, orbital, spin, and lattice structure degree of freedom. Low-dimensional transition-metal-based materials such as 2D-oxides, TMC, MX, thin films, heterostructures, and surface systems show even wider novel behaviors with high potential applications in future industry. This Special Issue is dedicated to achieve a better understanding regarding the novel properties of these transition-metal-based materials in all dimensions.

Guest Editor

Prof. Dr. Horng-Tay Jeng

Department of Physics, National Tsing Hua University, Hsinchu 30013, Taiwan

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

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

Editor-in-Chief

Prof. Dr. Maryam Tabrizian
1. Department of Biomedical Engineering, Faculty of Medicine and Health Sciences, McGill University, Montreal, QC H3A 2B6, Canada
2. Faculty of Dentistry and Oral Health Sciences, McGill University, 3640 Rue University, Montreal, QC H3A 0C7, Canada

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