Special Issue

Synthesis, Characterization and Applications of Iron Oxide Nanoparticles

Message from the Guest Editor

Iron oxides can be found in many polymorphic forms that exhibit different magnetic characteristics, catalytic activities, biocompatibilities, and other multifunctional properties. To better understand the interplay between nanoparticles' crystallography and their functional properties, novel chemical or plasma chemical methods for the synthesis of rare forms of iron oxides (beta, epsilon, zeta phase) are required. The nanotoxicity, biocompatibility, and targeted surface functionalization of iron oxide nanoparticles need to be investigated in order to use these nanoparticles in the fields of medicine, catalysis, environmental applications, and multifunctional composite materials. The objective of this Special Issue is to provide a comprehensive overview of novel approaches to the synthesis, the characterization, and applications of iron oxide nanoparticles, with a focus on: novel techniques for the synthesis of rare iron oxides; plasma synthesis of iron oxides; advanced surface functionalization of iron oxide nanoparticles; environmentally friendly applications of iron oxides; and the role and utilization of iron oxides in the exploration of Mars.

Guest Editor

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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.

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