Special Issue

Three-Dimensional (3D) Nano Magnetism and Magnetic Materials

Message from the Guest Editor

Advances in synthesis science and characterization techniques combined with novel concepts for microelectronics, magnetic storage, and sensing applications have fueled the appeal of 3D nano magnetism. This vital research area is comprised of magnetic nano structures, nano membranes, and particle assemby, as well as 3D magnetization vector fields driven by vector spin exchange or spin frustration in heterogeneous condensed matter. In these systems, new functionalities emerge owing to the nano scale features of magnetization. The diverse application potential fosters multidisciplinary research where the magnetization may either be of central importance or simply a means to improve functionality. Examples range from magnetic paint and reshapeable magnetic media, to 3D magnetic networks and frustrated systems, and to topological magnetic states, including skyrmions, hopfions, and their derivatives. The emergence of topological magnetic states, on the nano scale, renders magnetic materials in the light of quantum materials, which are envisioned to serve future microelectronics based on neuromorphic computing and racetrack memory applications.

Guest Editor

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Deadline for manuscript submissions

closed (30 June 2020)

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/26678

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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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