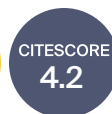




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Special Issue Reprint

Molecular Magnets

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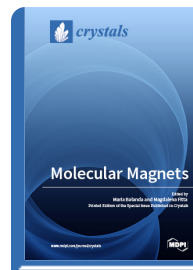
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Molecular magnets show many properties not met in conventional metallic magnetic materials, i.e. low density, transparency to electromagnetic radiation, sensitivity to external stimuli such as light, pressure, temperature, chemical modification or magnetic/electric fields, and others. They can serve as “functional” materials in sensors of different types or be applied in high-density magnetic storage or nanoscale devices. Research into molecule-based materials became more intense at the end of the 20th century and is now an important branch of modern science. The articles in this Special Issue, written by physicists and chemists, reflect the current work on molecular magnets being carried out in several research centers. Theoretical papers in the issue concern the influence of spin anisotropy in the low dimensional lattice of the resulting type of magnet, as well as thermodynamics and magnetic excitations in spin trimers. The impact of external pressure on structural and magnetic properties and its underlying mechanisms is described using the example of Prussian blue analogue data. The other functionality discussed is the magnetocaloric effect, investigated in coordination polymers and high spin clusters. In this issue, new molecular magnets are presented: (i) ferromagnetic high-spin [Mn6] single-molecule magnets, (ii) solvatomagnetic compounds changing their structure and magnetism dependent on water content, and (iii) a family of purely organic magnetic materials. Finally, an advanced calorimetric study of anisotropy in magnetic molecular superconductors is reviewed.



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