Special Issue

Transition Metal Compounds: Structure, Magnetism and Applications

Message from the Guest Editor

Electron-electron interactions primarily determine the material system, while the coupling between different degrees of freedom—charge, spin, and orbital—further governs its microscopic details, thereby giving rise to a range of magnetic phenomena. Among the various material systems, transition metal compounds, characterized by their unique d-electron behavior, serve as a paradigmatic platform for studying strong correlation effects. This has led to groundbreaking discoveries such as high-temperature superconductivity, giant magnetoresistance, and the quantum Hall effect, as well as recent advances in spin chemistry. By harnessing these physical effects, transition metal compounds could be employed in technological applications such as high-temperature superconducting magnets, spintronic devices, and electrochemical catalysts, promoting innovation in information and energy technology. This Special Issue of *Magnetochemistry* aims to publish research that presents recent achievements related to the development, study and understanding of the structure, magnetism, and applications of transition metal compounds.

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