Special Issue

Magnetocaloric Effect and Giant Negative Thermal Expansion

Message from the Guest Editors

The magnetocaloric effect (MCE) is among the most intriguing topics in materials science due to its most straightforward application in magnetic refrigeration. The discovery of giant MCE materials, such as NiMn-based Heusler alloys, Gd5Si2Ge2, FeRh, La(Fe,Si)13, Eu2In, and MnCoGe/MnNiGe-based compounds has promoted the developing of the solid-state magnetic refrigeration technique. A common feature of these materials is the strong spin-lattice coupling with the magnetostructural or magnetoelastic first-order magnetic transitions. The giant MCE materials can show negative thermal expansion (NTE) or positive thermal expansion (PTE), depending entirely on the characteristics of the magnetostructural/magnetoelastic transition. Meanwhile, common side effects related to hysteresis and irreversibility can be controlled and tuned by compositional adjustments, chemical/external pressure, or magnetic field. The purpose of the present Special Issue is to exhibit the recent development on different magnetocaloric materials and pave the way for further studies in this very active research field. Both reviews and original research articles are welcome.

Guest Editors

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Message from the Editor-in-Chief

Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

Editor-in-Chief

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