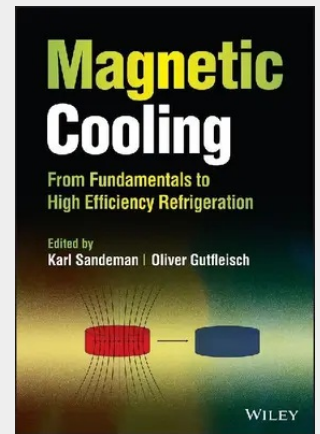


## Magnetic Cooling

From Fundamentals to High Efficiency Refrigeration

Explore novel solutions for energy-efficient refrigeration As climate change continues to impact the earth and how humans interact with it, new approaches to everyday processes are becoming ever more critical. According to some estimates, roughly 15% of the total worldwide energy consumption is related to refrigeration—air conditioning, refrigeration, freezing, or chilling. As the planet's temperature continues to rise, these technological advances will only be more crucial. As it stands now, conventional cooling relies on a compression/expression refrigeration cycle, and as such is a high-energy-demanding industry. More, many chemicals used as refrigerants eventually enter into the environment, with increased global warming as a result. Magnetic Cooling offers an important alternative to traditional methods of refrigeration; heating metals when magnetized and cooling them when demagnetized allows for a system that is 20-30% more energy efficient than conventional cooling. Examining the most up-to-date research in this cutting-edge field, the book emphasizes both the properties of candidate refrigerants—from their fundamental magnetism to their machinability and processing—and the developments in regenerator, magnetizing magnet, and heat design. With an approach that covers essentially all aspects relating to key magnetic materials, this reference is a crucial resource to build towards a greener future. Magnetic Cooling readers will also find: - A topic with direct impact on society as energy-efficient cooling is required both in domestic and industrial settings - Contributions from leading researchers in every relevant sub-discipline presented - Sections focused on the basics of the topic relating, such as magnetocaloric effect, thermodynamics of the magnetic cooling cycle, active magnet regenerators, and industrial synthesis - Focused discussion of provisions necessary for this methodology, including raw materials, material analysis, and novel and nanoscale resources - Information on the state of the market, complete with industry comparisons and forecasts Magnetic Cooling is a useful reference for researchers working in magnetic materials, particularly those who work in physics, materials science, engineering, and chemistry. It will be of particular interest to refrigeration and air conditioning industry engineers.

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