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Nota di contenuto	Thermodynamics of Magnetocaloric Energy Conversion --

Magnetocaloric materials for freezing, cooling, heat pump and power generation applications -- Magnetic field sources -- Magnetocaloric regenerators and Working fluids -- Magnetocaloric fluids -- Special heat transfer mechanisms – Thermal diodes -- Overview of existing magnetocaloric prototype devices -- Theoretical concepts and design issues for magnetocaloric prototypes -- Economic and ecologic aspects of the magnetocaloric energy conversion -- Alternative Solid State Energy Conversion.

Sommario/riassunto

This book provides the latest research on a new alternative form of technology, the magnetocaloric energy conversion. This area of research concerns magnetic refrigeration and cooling, magnetic heat pumping, and magnetic power generation. The book’s systematic approach offers the theoretical basis of magnetocaloric energy conversion and its various sub domains, and this is supported with the practical examples. Besides these fundamentals, the book also introduces potential solutions to engineering problems in magnetocalorics and to alternative technologies of solid state energy conversion. The aim of the book is therefore to provide engineers with the most up-to-date information, and also to facilitate the understanding, design and construction of future magnetocaloric energy conversion devices. The magnetocaloric energy conversion represents an alternative to compressor based refrigerators and heat pumps. It is a serious alternative to power generation with low enthalpy heat sources. This green technology offers an opportunity to use environmentally friendly solid refrigerants, and the potentially high energy efficiency follows the trends of future energy conversion devices. This book is intended for postgraduate students and researchers of refrigeration, heat pumping, power generation alternatives, heat regenerators and advanced heat transfer mechanisms.