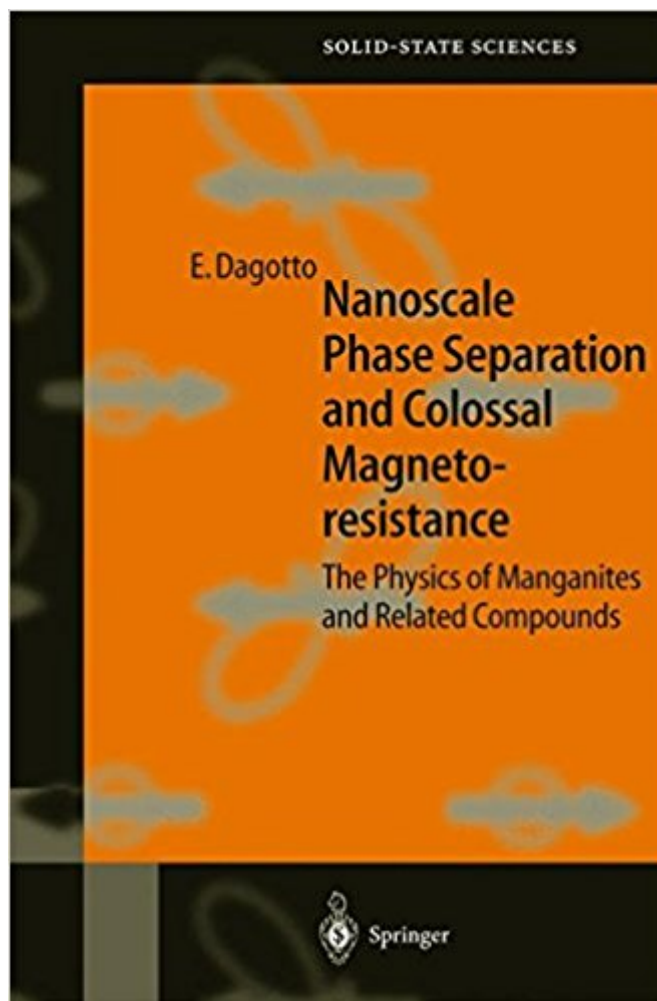


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Nanoscale Phase Separation And Colossal Magnetoresistance



Synopsis

The study of the spontaneous formation of nanostructures in single crystals of several compounds is now a major area of research in strongly correlated electrons. These structures appear to originate in the competition of phases. The book addresses nanoscale phase separation, focusing on the manganese oxides known as manganites that have the colossal magnetoresistance (CMR) effect of potential relevance for device applications. It is argued that the nanostructures are at the heart of the CMR phenomenon. The book contains updated information on manganite research directed to experts, both theorists and experimentalists. However, graduate students or postdocs will find considerable introductory material, including elements of computational physics.

Book Information

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Customer Reviews

From the reviews: "Dagotto has authored a fascinating book that comprehensively presents both the physical properties of manganites and our theoretical understanding of these unusual properties. The publishers have, as usual, produced a durable volume which is well bound, nicely typeset, and nicely illustrated with many useful figures. This is a volume that will prove useful for many years and that will also survive extensive use. As such it is highly recommended to the reader who wants an in-depth view of the manganites." (Gary J. Long and Fernande Grandjean, *Physicalia*, Vol. 57 (2), 2005) "The book of E. Dagotto, being an original introduction to the physics of manganites, is focused mainly on the problem of nanoscale phase

separation of these materials. The book provides a solid knowledge of the foundations of the correlation effects and the present status of the field. This book will be also of a great value for researchers already working in the field of strongly correlated systems as well as for these who are interested in new materials for the spintronics." (G. B. Teitelbaum, Applied Magnetic Resonance, Vol. 24 (2), 2003)

The study of the spontaneous formation of nanostructures in single crystals is rapidly developing into a dominant field of research in the subject area known as strongly correlated electrons. The structures appear to originate in the competition of phases. This book addresses nanoscale phase separation, focusing on the manganese oxides with colossal magnetoresistance (CMR). The text argues that nanostructures are at the heart of the CMR phenomenon. Other compounds are also addressed, such as high-temperature superconductors, where similar nanostructures exist. Brief contributions by distinguished researchers are also included. The book contains updated information directed at experts, both theorists and experimentalists. Beginning graduate students or postdocs will also benefit from the introductory material of the early chapters, and the book can be used as a reference for an advanced graduate course.

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