COLOSSAL MAGNETORESISTANCE, CHARGE ORDERING and RELATED PROPERTIES of MANGANESE OXIDES

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COLOSSAL MAGNETORESISTANCE, CHARGE ORDERING and RELATED PROPERTIES of MANGANESE OXIDES

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PREFACE

Metal oxides constitute the most amazing class of materials with a wide range of properties. They exhibit a variety of phenomena such as ferroelectricity, ferromagnetism, superconductivity and so on. The area of metal oxides became specially important after the discovery of high-temperature superconductivity which created a great sensation. In the last four years, a new aspect of metal oxide has come to the fore. This has to do with colossal magnetoresistance exhibited by certain manganese oxides, in particular rare earth manganates of perovskite structure. Some of these oxides exhibit magnetoresistance to the tune of 100%. Since 1993, there has been intense activity in the area of colossal magnetoresistance in manganese oxides and related systems, part of the motivation being the potential technological applications. Studies of colossal magnetoresistance have led to many other new phenomena and properties such as charge-ordering and orbital ordering.

In view of the importance of colossal magnetoresistance, charge-ordering and related phenomena exhibited by manganese oxides to the physics and chemistry of solid materials, we considered it worthwhile to bring out a volume of contributed articles by leading experts. We believe that this small volume consisting of eleven articles nearly represents the present status of a subject which is growing rapidly. We start with a review on the status and then include contributions covering the present status of the subject by a number of experts. We trust that this volume will be of great use to students, teachers and practitioners of solid state physics and chemistry as well as material science.

C.N.R. Rao

B. Raveau

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