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# Electronic Conduction in Oxides

With 191 Figures

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## Preface

This book is a revised and up-dated translation of *Denki Dendōsei Sankabutsu* (Electronic Conduction in Oxides) published by Shokabo in Tokyo in 1983 as the second volume of the Material Science Series, which was edited for postgraduate students by T. Suzuki, S. Chikazumi, and S. Nakajima.

Since the publication of the first edition, we have witnessed the historic discovery of high- $T_c$  superconductors by J.G. Bednorz and K.A. Müller. The Shokabo edition has thus been thoroughly revised to accommodate the recent developments, and K. Nasu joined as the fourth author.

The constitution of the book is as follows: After a short introductory chapter, Chap. 2 is devoted to a brief review of transport phenomena and electronic states in oxides. It was written by Tsuda. In Chap. 3, the electron-phonon and electron-electron interaction are treated theoretically by Nasu and Yanase. Nasu discusses the present status of theoretical studies of the electron-phonon interaction in solids and Yanase explains the electron correlation. Chapter 4 treats the physics of various representative oxides in detail. Sections 4.1–5 and 4.10 were written by Tsuda and Sects. 4.6–9 by Siratori. This chapter is intended not as an exhaustive review of the properties of each oxide, but rather as an illustration of the concepts which have developed out of the research into transport phenomena in conductive oxides. Many of these concepts are due to N.F. Mott. At the end of Chap. 4, the properties of high- $T_c$  oxides are reviewed by Tsuda. The reader is kindly asked to forgive the inevitable omission of certain important works in this field.

The authors would like to express their gratitude to H. Lotsch for his encouragement to complete this book and to A.M. Lahee for improving the manuscript. One of the authors (KS) is indebted to D. Ihle for his valuable comments on Sect. 4.8.

Finally, we acknowledge with thanks the authors of all the papers referred to in this book.

Tokyo, Okazaki  
Sakai, Toyonaka, October 1990

*N. Tsuda, K. Nasu  
A. Yanase, K. Siratori*

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