FOREWORD

Electronics technology is based on materials such as dielectrics, ferroelectrics, piezoelectrics and superconductors. New materials with enhanced properties are required for progress to be made in the electronics industry. Consequently, research and development of advanced ceramics with potential applications in electronic devices has been intense and a large number of related works have been published accordingly.

The present volume does not pretend to cover the full spectrum of problems related to electronic ceramics. The purpose of the present volume is to address several selected issues in relation to the preparation and properties of ceramic materials for electronics and to present a survey of the progress of the most important areas in this field.

Particular attention in this book is focused on dielectric materials, their preparation and the relationship between their microstructure and properties from the viewpoint of their application for multilayer capacitors. Chemistry and defect chemistry of barium titanate, which is a model ternary oxide of a perovskite-type structure, are reviewed in more detail including preparation of fine powders. Properties of alkaline earth metal titanates, which are the basic components of the dielectrics, are described extensively. Finally, piezoelectric materials and thermistors are reviewed.

Properties of electronic ceramics materials are strongly dependent, if not controlled, by properties of interfaces. Several issues related to ceramic interfaces such as interface chemistry in perovskite-type materials and their structure based on electron microscopy studies are the subject of two papers.

The volume also includes a general description of high T_c oxide superconductors and their defect-related properties.

There are certain intentional overlaps between the chapters in order to give readers an opportunity to confront different viewpoints on the most important issues.

It is a hope that the present volume will be of interest to those involved in the research and development of electronic ceramics. The book is also addressed to students in the field of ceramics and materials science and engineering.

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