

Preface

Developing new routes to nanocrystalline materials is a challenging task for solid-state chemists and materials scientists. The book on *Chemistry of Nanocrystalline Oxide Materials (Combustion Synthesis, Properties, and Applications)* is the result of the research work carried out by the authors and their PhD students during the last two and half decades. This book introduces an innovative pathway to the synthesis of oxide materials. The interest in nano-oxides is due to their technological applications in fields like microelectronics, catalysis, coatings, energy storage, and environment protection and remediation. Synthesis of nano-oxides along with their characterization, physicochemical properties, and applications is of interest to students, teachers, researchers, and materials scientists alike.

Chemists carrying out reactions with ions in solution have been practicing nanochemistry for centuries. The technique of making nanocrystalline oxide materials by “combustion process” is an integrated approach, combining both breaking-down and building-up processes of producing nanomaterials. “Catalysis” is a classical example of “nanotechnology.” The solution combustion synthesis method has already made inroads into nanoscience and nanotechnology but never before it has been documented and made available to researchers working in this field. This book is an endeavor to comprehensively put together all the published work of the authors in one treatise. This method of making oxide materials being simple and fast is being practiced by many individuals and groups around the world. No attempt is made here to quote the work done by others.

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We hope the book will serve students and researchers working in the field of Materials Science and Engineering and NanoChemistry.

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