

Handbook of Vinyl Polymers

*Radical Polymerization,
Process, and Technology*

Second Edition

Edited by
Munmaya K. Mishra
Yusuf Yagci



CRC Press
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Dedication

To my wife, Bidu

Munmaya K. Mishra

To my wife, Emine

Yusuf Yagci

Preface

The field of vinyl polymerization has grown very large indeed. The momentum of extensive investigations on radical vinyl polymerization, undertaken in many laboratories, has carried us to an advanced stage of development. Consequently, we are attempting in this *Handbook of Vinyl Polymers: Radical Polymerization, Process, and Technology* to present current knowledge of the subject in an integrated package.

The book is divided into five sections that include a total of 21 chapters. The first three chapters provide the fundamental aspects; the following 10 chapters offer a detailed description of the radical initiating systems and mechanisms, along with the technical processes. This includes comprehensive information on living polymerization, functionalization polymers, and block and graft copolymers. The book also contains a section on Vinyl Polymer Technology with seven chapters that describe the recent advances on composites, recycling, and processing of vinyl polymers. The book ends with a chapter that presents a variety of data on monomers and polymerization.

It is hoped that this presentation will prove useful to investigators in the area of vinyl polymers. The book offers much that is of value, presenting basic information in addition to providing a unified, interlocking look at recent advances in the field of vinyl polymers. Although selected parts of this discipline have been reviewed in the past, this is the first time that the entire field has been comprehensively and critically examined in a book. However, it would scarcely be possible in a single volume to do justice to all the excellent research in various branches of the subject; selection of the material to be included was difficult and an element of arbitrariness was unavoidable.

This is an interdisciplinary book written for the organic chemist/polymer scientist who wants comprehensive, up-to-date critical information about radical vinyl polymerization and technology, as well as for the industrial researcher who wants to survey the technology of vinyl polymers leading to useful products.

Specifically, this book will serve in the following ways: (1) as a reference book for researchers in vinyl polymers, (2) as a coherent picture of the field and a self-educating introductory and advanced text for the practicing chemist who has little background in vinyl polymers, and (3) as one of a group of textbooks for courses in the graduate-level curriculum devoted to polymer science and engineering.

It would not have been possible to complete a project like this without the help and participation of numerous individuals. We gratefully acknowledge all the contributors who made this book possible. Last, with love and appreciation, we acknowledge our wives Bidu Mishra and Emine Yagci for their timely encouragement, sacrifice, and support during long afternoons, weekends, early mornings, and holidays spent on this book. Without their help and support, this project would never have started or been completed.

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Part I

The Fundamentals of Radical Vinyl Polymerization

