CRYSTALLIZATION OF POLYMERS, SECOND EDITION

In *Crystallization of Polymers*, second edition, Leo Mandelkern provides a self-contained, comprehensive, and up-to-date treatment of polymer crystallization. All classes of macromolecules are included and the approach is through the basic disciplines of chemistry and physics. The book discusses the thermodynamics and physical properties that accompany the morphological and structural changes that occur when a collection of molecules of very high molecular weight is transformed from one state to another. The first edition of *Crystallization of Polymers* was published in 1964. It was regarded as the most authoritative book in the field. The first edition was composed of three major portions. However, due to the huge amount of research activity in the field since publication of the first edition (involving new theoretical concepts and new experimental instrumentation), this second edition has grown to three volumes.

Volume 2 provides an authoritative account of the kinetics and mechanisms of polymer crystallization, building from the equilibrium concepts presented in Volume 1. As crystalline polymers rarely, if ever, achieve their equilibrium state, this book serves as a bridge between equilibrium concepts and the state that is finally achieved. A comprehensive treatment of surrounding theories is given, and experimental results for simple and complex polymer systems are described in detail.

This book will be an invaluable reference work for all chemists, physicists and materials scientists working in the area of polymer crystallization.

LEO MANDELKERN was born in New York City in 1922 and received his bachelors degree from Cornell University in 1942. After serving in the armed forces during World War II, he returned to Cornell, receiving his Ph.D. in 1949. He remained at Cornell in a post-doctoral capacity until 1952.

Professor Mandelkern was a staff member of the National Bureau of Standards from 1952 to 1962 where he conducted research in the physics and chemistry of polymers. During that time he received the Arthur S. Fleming Award from the Washington DC Junior Chamber of Commerce "As one of the outstanding ten young men in the Federal Service".

In January 1962 he was appointed Professor of Chemistry and Biophysics at the Florida State University, Tallahassee, Florida, where he is still in residence.

He is author of *Crystallization of Polymers*, first edition, published by McGraw-Hill in 1964. He is also author of *Introduction to Macromolecules*, first edition 1972, second edition 1983, published by Springer-Verlag.

Besides the Arthur S. Fleming Award he has been the recipient of many other awards from different scientific societies including the American Chemical Society and the Society of Polymer Science, Japan.

Professor Mandelkern is the author of over 300 papers in peer reviewed journals and has served on the editorial boards of many journals, including the *Journal of the American Chemical Society*, the *Journal of Polymer Science* and *Macromolecules*.

CRYSTALLIZATION OF POLYMERS

SECOND EDITION

Volume 2

Kinetics and mechanisms

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Preface

This volume is concerned with crystallization kinetics and mechanisms and serves a crucial role in understanding the actual crystalline state that develops in polymers under real conditions. Attention is focused on the nonequilibrium aspects of the crystalline state that actually forms. It serves as a bridge to Volume 3 and the discussion of morphology, structure and properties. As the reader will find, there are still some important problems in this area that are in need of resolution. In discussing these, the author has tried to be as objective as possible and has presented the diverse viewpoints. Professor R. G. Alamo and Dr. F. C. Stehling read portions of the manuscript and offered constructive criticisms. However, the contents of the volume are the sole responsibility of the author.

It is a pleasure once again to acknowledge a great debt to Mrs. Annette Franklin for her expert typing of the manuscript and preparing it in final format. The author also acknowledges the contribution of Dr. James A. Haigh for the original calculations that appear throughout the book. Most of the illustrations in final form are due to the efforts of Dick Roche and Steve Leukanech. Their contributions are gratefully acknowledged.

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Tallahassee, Florida
September 2003

Leo Mandelkern