Understanding Polymer Processing Hanser Publications

HARPER DEMARION

Morphology, Deformation and Fracture Structures Carl Hanser Verlag GmbH Co KG
Understanding Polymer ProcessingProcesses and Governing EquationsHanser Gardner Publications
Rheology of Polymeric Systems Hanser Pub Incorporated
The book is intended to reveal the correlation between the chemical structure and the physical characteristics of plastics necessary for appropriate material selection, design, and processing. The entire spectrum of plastics is addressed, including thermoplastics, thermosets, elastomers, and blends. One of the special features is the extensive discussion and explanation of the interdependence between polymer structure and properties and processing. Polymeric Materials contains several application-oriented examples and is presented at an intermediate level for both practicing plastic engineers and advanced engineering students. Contents: · General Characteristics of Polymeric Materials · Molecular Structure and Synthesis of Polymers · Structure of Polymeric Materials · Thermomechanical Properties · Mechanical Behaviour · Aging and Stabilization · Overview of Selected Polymeric Materials · Guide Values of the Physical Properties
Plastics Packaging Understanding Polymer ProcessingProcesses and Governing Equations
Initially published "to bridge the gap between theory and practice in extrusion," this 5th edition of Polymer Extrusion continues to serve the practicing polymer engineer and chemist, providing the theoretical and the practical tools for successful extrusion operations. In its revised and expanded form, it also incorporates the many new developments in extrusion theory and machinery over the last years. Contents · Different Types of Extruders · Extruder Hardware · Instrumentation and Control · Fundamental Principles · Important Polymer Properties · Functional Process Analysis · Extruder Screw Design · Die Design · Twin Screw Extruders · Troubleshooting Extruders · Modeling and Simulation of the Extrusion Process
Materials Science of Polymers for Engineers Carl Hanser Verlag GmbH Co KG
This unified approach to polymer materials science is divided in three major sections:
Processes and Governing Equations Hanser Gardner Publications
Prior extrusion books are based on barrel rotation physics—this is the first book that focuses on the actual physics of the process—screw rotation physics. In the first nine chapters, theories and math models are developed. Then, these models are used to solve actual commercial problems in the remainder of the book. Realistic case studies are presented that are unique in that they describe the problem as viewed by a typical plant engineer and provide the actual dimensions of the screws. Overall, there is not a book on the market with this level of detail and disclosure. The new knowledge in this book will be highly useful for production engineers, technical service engineers working with customers, consultants specializing in troubleshooting and process design, and process researchers and designers that are responsible for processes that running at maximum rates and maximum profitability. The second edition is brought up to date with a significant amount of new content, as well as minor improvements and correction of errors throughout.The new content includes transfer lines, percolation theory, fillers, and several more case studies.
Properties, Processing, Applications, and Regulations Carl Hanser Verlag GmbH Co KG
This three-part textbook is written for a two-semester polymer processing series in mechanical or chemical engineering. The first and second part are designed for a senior- to grad-level course introducing polymer processing, and the third part is for a graduate course on simulation in polymer processing. Throughout the book, many applications are presented in form of examples and illustrations. These will also serve the practicing engineer as a guide when determining important parameters and factors during the design process or when optimizing a process.
Understanding Polymer Processing Carl Hanser Verlag GmbH Co KG
In the global effort to access markets through standardization, the reality in the plastics industry is that many quality professionals are inexperienced in the application of appropriate rheological test methods. This book is aimed at people who set up, manage, or perform tests in industrial quality control laboratories. No previous expertise in the areas of polymer science, quality control, or rheology is necessary for this book to be of practical use to the reader.The basics of rheology and statistical process control are presented, along with examples showing how these can be used to solve production problems involving product quality.Included with the book is a CD-ROM that contains practical examples.
Elastic Behavior of Polymer Melts Carl Hanser Verlag GmbH Co KG
The manufacturing process for preparing very thin polymer products has developed into what is arguably the largest outlet for synthetic polymers. The central theme of this volume is the developments in process hardware and operating techniques that permit increasingly high production rates, optimum property development, unusual degrees of molecular orientation, and the coextrusion of multi-layer, multi-component film and sheet. The strong relationships and the interdependence of these developments on the achievements in polymer design, such as rheology and mechanical and optical properties, are also discussed. Contents: · Film Processing Overview and Introductory Rheology · Flat Die Analysis · Spiral Die Analysis · Die Control System of Film Thickness Distribution · Kinematics, Dynamics and Physical Properties of Blown Film · Bubble Instability: Experimental Evaluation · Optical Properties and Structural Characteristics of Tubular Film · Theoretical Analysis of Film Deformation Behavior in Casting · Analysis of Draw Resonance Instability in the Film Casting Process · Multilayer Films · Biaxially Oriented Films · Influence of Processing Conditions on Structure and Physical Properties of Biaxially Stretched Engineering Thermoplastics · Theoretical Analysis of Tentering Process · Double Bubble Tubular Film Process System and Theoretical Analysis of Stress Development and Scale-up Rule
Reactive Extrusion Carl Hanser Verlag GmbH Co KG
Handbook of Thermoplastic Elastomers, Second Edition presents a comprehensive working knowledge of thermoplastic elastomers (TPEs), providing an essential introduction for those learning the basics, but also detailed engineering data and best practice guidance for those already involved in polymerization, processing, and part manufacture. TPEs use short, cost-effective production cycles, with reduced energy consumption compared to other polymers, and are used in a range of industries including automotive, medical, construction and many more. This handbook provides all the practical information engineers need to successfully utilize this material group in their products, as well as the required knowledge to thoroughly ground themselves in the fundamental chemistry of TPEs. The data tables included in this book assist engineers and scientists in both selecting and processing the materials for a given product or application. In the second edition of this handbook, all chapters have been reviewed and updated. New polymers and applications have been added — particularly in the growing automotive and medical fields — and changes in chemistry and processing technology are covered. Provides essential knowledge of the chemistry, processing, properties, and applications for both new and established technical professionals in any industry utilizing TPEs Datasheets provide "at-a-glance" processing and technical information for a wide range of commercial TPEs and compounds, saving readers the need to contact suppliers Includes data on additional materials and applications, particularly in automotive and medical industries
Structure Modification and Improvement of Properties Elsevier
This thorough text covers thermoforming processes and products. It moves from a relatively simple approach to more technical in-depth consideration, featuring examples and guidelines to illustrate all technical aspects.
Understanding Thermoforming Carl Hanser Verlag GmbH Co KG
This book provides an overview of the injection molding process and all its related aspects, such as material behavior, machine and mold design. Although the book is highly useful to advanced professionals, it is written in clear, simple language to enable beginners to understand the

technology. In discussing the various operations related to the injection molding process, emphasis is placed on practical ways of processing and using plastics. This edition is expanded to include all industrially relevant special injection molding techniques developed since the publication of the first edition.

An Introduction John Wiley & Sons

"Rheology in Polymer Processing" introduces the fundamentals of rheology and rheometry as the basis for modeling and computer-aided design in plastics processing. The logically structured content enables the reader to intelligently use the tools of computer-aided design and modeling of plastics processing, with correct interpretation of the results. The book presents difficult and complex issues of rheology and modeling in an accessible way, with particular emphasis on the practical engineering aspects. The software described in the book allows modeling all the important problems of plastics processing. Particular attention is paid to the extrusion process, which is fundamentally important as a processing technology in mass manufacture of plastic parts, and the basis of compounding processes (blending, filling, granulation, and reinforcement). This book is aimed equally at engineers, researchers, and scientists, as well as intermediate students, for whom it will serve as an ideal course book.

Injection Molding Carl Hanser Verlag GmbH Co KG

This book is a clear and concise guide to Additive Manufacturing (AM), now a well-established valuable tool for making models and prototypes, and also a manufacturing method for molds and final parts finding applications in industries such as medicine, car manufacturing, and aerospace engineering. The book was designed as a supporting material for special courses on advanced manufacturing technology, and for supplementing the content of traditional manufacturing lessons. This second edition has been updated to account for the recent explosion of availability of small, inexpensive 3D printers for domestic use, as well as new industrial printers for series production that have come onto the market. Contents: • Basics of 3D Printing Technology • Additive Manufacturing Processes/3D Printing • The Additive Manufacturing Process Chain and Machines for Additive Manufacturing • Applications of Additive Manufacturing • Perspectives and Strategies of Additive Manufacturing • Materials and Design • Glossary of Terms, Abbreviations, and Definitions

Rheology in Plastics Quality Control Hanser Pub Incorporated

Engineering of polymers is not an easy exercise: with evolving technology, it often involves complex concepts and processes. This book is intended to provide the theoretical essentials: understanding of processes, a basis for the use of design software, and much more. The necessary physical concepts such as continuum mechanics, rheological behavior and measurement methods, and thermal science with its application to heating-cooling problems and implications for flow behavior are analyzed in detail. This knowledge is then applied to key processing methods, including single-screw extrusion and extrusion die flow, twin-screw extrusion and its applications, injection molding, calendering, and processes involving stretching. With many exercises with solutions offered throughout the book to reinforce the concepts presented, and extensive illustrations, this is an essential guide for mastering the art of plastics processing. Practical and didactic, Polymer Processing: Principles and Modeling is intended for engineers and technicians of the profession, as well as for advanced students in Polymer Science and Plastics Engineering.

Polymer Processing Hanser Gardner Publications

The increasing importance of plastic materials in packaging makes it mandatory for everyone in this industry to command a basic understanding of the properties of the common packaging plastics.

Polymer Rheology Hanser Gardner Publications

This book is unique in its focus on micromechanical processes of polymers and their role to improve the properties of polymeric materials. It combines the detailed knowledge of structure and morphology of polymers with the explanation and theoretical interpretation of micro- and nanoscopic processes and mechanisms in different polymers. Thus, it offers a better understanding of correlations between structure and property of nearly all polymers used in industrial applications. The knowledge of these correlations is a key for successful development of polymers with improved properties.

Principles and Applications Carl Hanser Verlag GmbH Co KG

Structure and morphology determine the properties of polymeric materials. This atlas provides, with over 2000 high-quality micrographs a comprehensive overview of the structural/morphological diversity of all classes of plastics. All microscopic techniques from light microscopy through scanning and transmission electron microscopy to atomic force microscopy are covered. Another focus is on the changes in plastics morphology occurring under mechanical stress, i.e. the deformation and fracture structures. The extensive visual material will help professionals in research and application fields to determine structure-property correlations of polymeric materials and also improve training and teaching in universities.

Technology of Thermoforming Hanser Publications

This book provides the background needed to understand not only the wide field of polymer processing, but also the emerging technologies associated with the plastics industry in the 21st Century. It combines practical engineering concepts with modeling of realistic polymer processes. Divided into three sections, it provides the reader with a solid knowledge base in polymer materials, polymer processing, and modeling. "Understanding Polymer Processing" is intended for the person who is entering the plastics manufacturing industry and as a textbook for students taking an introductory course in polymer processing. It also serves as a guide to the practicing engineer when choosing a process, determining important parameters and factors during the early stages of process design, and when optimizing such a process. Practical examples illustrating basic concepts are presented throughout the book. New in the second edition is a chapter on additive manufacturing, together with associated examples, as well as improvements and corrections throughout the book. Contents: o Part I - Polymeric Materials This section gives a general introduction to polymers, including mechanical behavior of polymers and melt rheology o Part II Polymer Processing The major polymer processes are introduced in this section, including extrusion, mixing, injection molding, thermoforming, blow molding, film blowing, and many others. o Part III Modeling This last section delivers the tools to allow the engineer to solve back-of-the-envelope polymer processing models. It includes dimensional analysis and scaling, transport phenomena in polymer processing, and modeling polymer processes

Modeling and Simulation Carl Hanser Verlag GmbH Co KG

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Understanding Plastics Testing Carl Hanser Verlag GmbH Co KG

This overview of plastics testing provides an understanding of how polymer structure and morphology affect properties that are important for plastics processing and how to test for these properties. The reader will get an overview of basic material testing, the specific properties tested, and why they are important. The book also provides insight into which tests are useful for predicting the behavior of plastics products after they have been produced and in end-use.