

Lanxess Heat Transfer Fluids Diphyl Aii Home

While many books cover solid phase synthesis and combinatorial synthesis, this one is unique in its exclusive coverage of the other aspects of solid-phase synthesis. As such, it contains everything you need to know -- from supported reagents, to scavengers, resins, and the synthesis of biomolecules and natural products. An invaluable companion for all chemists and biochemists working in university research and industry.

Neben der Festigkeitsberechnung von Rohrleitungs-Bauteilen sind Planung und Auslegung von Rohrleitungs-Anlagen wichtige Aufgaben der Fachgebiete Apparatebau, Strömungstechnik, Verfahrenstechnik und Wärmetechnik. Dieses Buch behandelt hauptsächlich Stahlrohrleitungen, die nicht im Erdreich verlegt sind, wie sie in der Industrie eingesetzt werden. Für die Auslegung von Rohrleitungsanlagen notwendige Sinnbilder und Gleichungen sind ebenso dargestellt wie Tabellen und Diagramme zum Abschätzen von Elastizität, Rohrleitungsdruckverlusten und Dämmdicken: Planungsgrundlagen, Kennzeichnung und Abmessung von Rohrleitungselementen, Rohrverlegung, Strömungstechnik, Temperaturdämmung, Bauvorschriften und Prüfungen, Konstruktions- und Planungsrichtlinien, Kostenermittlung.

Natural and synthetic water soluble polymers are used in a wide range of familiar industrial and consumer products, including coatings and inks, papers, adhesives, cosmetics and personal care products. They perform a variety of functions without which these products would be significantly more expensive, less effective or both. Written for research, development and formulation chemists, technologists and engineers at graduate level and beyond in the fine and specialty chemicals, polymers, food and pharmaceutical industries, the Handbook of Industrial Water Soluble Polymers deals specifically with the functional properties of both natural and synthetic water soluble polymers. By taking a function based approach, rather than a "polymer specific" approach the book illustrates how polymer structure leads to effect, and shows how different polymer types can be employed to achieve appropriate product properties.

Process Safety Calculations, Second Edition remains to be an essential guide for students and practitioners in process safety engineering who are working on calculating and predicting risks and consequences. The book focuses on calculation procedures based on basic chemistry, thermodynamics, fluid dynamics, conservation equations, kinetics and practical models. It provides helpful calculations to demonstrate compliance with regulations and standards, such as Seveso directive(s)/COMAH, CLP regulation, ATEX directives, PED directives, REACH regulation, OSHA/NIOSH and UK ALARP, along with risk and consequence assessment, stoichiometry, thermodynamics, stress analysis and fluid-dynamics. This fully revised, updated and expanded second edition follows the same organization as the first, including the original three main parts, Fundamentals, Consequence Assessment and Quantitative Risk Assessment. However, the latter part is significantly expanded, including an appendix consisting of five fundamental thematic areas belonging to the risk assessment framework, including in-depth calculations methodologies for some fundamental monothematic macro-areas of process safety. Revised, updated and expanded new edition that includes newly developing areas of process safety that are relevant to QRA Provides engineering fundamentals to enable readers to properly approach the subject of process safety Includes a remarkable and broad numbers of calculation examples, which are completely resolved and fully explained Develops the QRA subject, consistently with the methodology applied in the big projects

The rubber industry is a vital part of the world economy. In this age of constantly changing economics and raw material "shortages of the week," this book should help the reader understand the overall technical and economic problems that are emerging which are beginning to affect the overall availability of many raw materials, chemical intermediates and

final rubber products on the world scene. This book is truly unique in that it is the only one that traces all the important organic and inorganic synthesis routes for the manufacture of synthetic rubbers, various fillers, plasticizers, oils, curatives, antidegradants, adhesion promoters, flame retardants, tackifiers, and blowing agents through their respective intermediates to the base raw materials from earth extractions and agriculture.

Chemical nomenclature is used to identify a chemical species by means of written or spoken words and enables a common language for communication amongst chemists. Nomenclature for chemical compounds additionally contains an explicit or implied relationship to the structure of the compound, in order that the reader or listener can deduce the structure from the name. This purpose requires a system of principles and rules, the application of which gives rise to a systematic nomenclature. Of course, a wide range of traditional names, semisystematic or trivial, are also in use for a core group of common compounds. Detailing the latest rules and international practice, this new volume can be considered a guide to the essential organic chemical nomenclature, commonly described as the "Blue Book". An invaluable source of information for organic chemists everywhere and the definitive guide for scientists working in academia or industry, for scientific publishers of books, journals and databases, and for organisations requiring internationally approved nomenclature in a legal or regulatory environment.

Chemical EngineeringThe Chemical EngineerRules of Thumb for Chemical EngineersButterworth-Heinemann

W ALL ARE SURROUNDED by plastic materials and cannot imagine modern life and utilities without the synthetic polymers. And yet, how many of us can distinguish between polyethylene and PVC? After all, most people name any polymer as "Nylon." Is there any distinction between polymers and plastics? This introductory textbook tries to answer these questions and many others. It endeavors to provide the basic information required in modern life about the best utilization of new materials in the plastics era; the chemical sources of synthetic polymers, and the processes in which small "simple" molecules are converted to giant macromolecules, namely, high polymers; and the understanding of the role of these unique structures, their behavior and performance, their mechanical and thermal properties, flow and deformation. As we are mainly interested in the final product, the processing of plastics, through shaping and forming, presents a significant challenge to polymer engineering. All this is broadly discussed, ending with modern issues like composites, ecology and future prediction, followed by up-to-date information and data about old as well as novel high performance polymers. The text is particularly targeted towards senior students of science and engineering (chemical, material, mechanical and others) who may use it as the first window to the world of polymers. At the same time many professionals who are involved in the resin or plastics industry may prefer this approach without elaborate math or overloading.

This volume, of a two volume set on ionic liquids, focuses on the applications of ionic liquids in a growing range of areas. Throughout the 1990s, it seemed that most of the attention in the area of ionic liquids applications was directed toward their use as solvents for organic and transition-metal-catalyzed reactions. Certainly, this interest continues on to the present date, but the most innovative uses of ionic liquids span a much more diverse field than just synthesis. Some of the main topics of coverage include the application of RTILs in various electronic applications (batteries, capacitors, and light-emitting materials), polymers (synthesis and functionalization), nanomaterials (synthesis and stabilization), and separations. More unusual applications can be noted in the fields of biomass utilization, spectroscopy, optics, lubricants, fuels, and refrigerants. It is hoped that the diversity of this volume will serve as an inspiration for even further advances in the use of RTILs.

Covers the following topics: Strategies; Intumescence: Mechanism studies; New intumescent polymeric materials; Flame retarded intumescent textiles; Intumescence - an environmentally friendly process?

Polymers have undoubtedly changed the world through many products that improve our lives. However, additives used to modify the overall characteristics of these materials may not be fully disclosed or understood. These additives may present possible environmental and health hazards. It is important to monitor consumer products for these compounds using high-quality reference materials and dependable analytical techniques. The Handbook for the Chemical Analysis of Plastic and Polymer Additives, Second Edition provides the necessary tools for chemists to obtain a more complete listing of additives present in a particular polymeric matrix. It is designed to serve as a valuable source for those monitoring a polymer/plastic material for regulatory or internal compliance. It also helps analysts to correctly identify the complex nature of the materials that have been added to the polymer/plastic. With 50 additional compounds, this second edition nearly doubles the number of additives in several categories, including processing aids, antistatic compounds, mould release products, and blowing agents. It includes a listing that can be cross-referenced by trade name, chemical name, CAS number, and even key mass unit ions from the GC/MS run. Addressing additives from an analytical viewpoint, this comprehensive handbook helps readers identify the additives in plastics. This information can be used to assess compliance with regulations issued by the FDA, US EPA, EU, and other agencies.

This book summarizes the preparation, characterization and applications of rubber based nano blends. Rubbers from natural and synthetic polymers and their blends are discussed in the individual chapters, including nitrile, polyurethane, chlorosulphonated, polybutadiene, styrene butadiene, polychloroprene rubbers. In each chapter, contributors from academia and industry describe the preparation and characterization of the rubber blends. Therefore, a variety of characterization methods like tensile testing, differential scanning calorimetry, dynamical mechanical analysis, thermogravimetric analysis, electron microscopy, scattering and diffraction techniques, and rheology measurements are utilized. The authors evaluate the properties of the different materials and discuss numerous fields of application, ranging from biomedicine, packaging, coatings and automobile to aerospace.

Showcases the important role of organometallic chemistry in industrial applications and includes practical examples and case studies This comprehensive book takes a practical approach to how organometallic chemistry is being used in industrial applications. It uniquely offers numerous, real-world examples and case studies that aid working R&D researchers as well as Ph.D. and postdoc students preparing to ace interviews in order to enter the workforce. Edited by two world-leading and established industrial chemists, the book covers flow chemistry (catalytic and non-catalytic organometallic chemistry), various cross-coupling reactions (C-C, C-N, and C-B) in classical batch chemistry, conjugate addition reactions, metathesis, and C-H arylation and achiral hydrogenation reactions. Beginning with an overview of the many industrial milestones within the field over the years, Organometallic Chemistry in Industry: A Practical Approach provides chapters covering: the design, development, and execution of a continuous flow enabled API manufacturing route; continuous manufacturing as an enabling technology for low temperature organometallic chemistry;

the development of a nickel-catalyzed enantioselective Mizoroki-Heck coupling; and the development of iron-catalyzed Kumada cross-coupling for the large scale production of Aliskiren intermediates. The book also examines aspects of homogeneous hydrogenation from industrial research; the latest industrial uses of olefin metathesis; and more. -Includes rare industrial case studies difficult to find in current literature -Helps readers successfully carry out their own reactions -Covers topics like flow chemistry, cross-coupling reactions, and dehydrative decarbonylation -Features a foreword by Nobel Laureate R. H. Grubbs -A perfect resource for every R&D researcher in industry -Useful for PhD students and postdocs: excellent preparation for a job interview Organometallic Chemistry in Industry: A Practical Approach is an excellent resource for all chemists, including those working in the pharmaceutical industry and organometallics.

This Rapra Review Report examines the use of biocides in plastics with reference to material types and application requirements. The commonly available biocides are reviewed and details of their strengths and weaknesses are provided. The author reviews the frequently used test methods for fungi and bacteria, and, in an ever-changing regulatory environment, explores the influence of legislation on the current and future use of such biocides. This detailed and state-of-the-art review is supported by an indexed section containing several hundred key references and abstracts selected from the Polymer Library.

The Polymer Blends Handbook is a fundamental reference work on polymer blends, covering all aspects: science, engineering, technology and application. It will appeal to anyone working in the field of blends, researchers as well as engineers. The Handbook is designed to be the source of information on all aspects of polymer blends. To this end the Editors have put together an international group of highly respected contributors, each an expert in his chosen subjects.

This updated edition provides an overview of flame retardants that are in commercial use, were recently used, or are in development. The book is organized polymer-by-polymer and provides a guide to advantages, limitations, and patented and patent-free formulations, with insight into favorable and unfavorable combinations. The targeted readership is the plastics or textile finish compounder and the plastic additives R&D worker, as well as market development and sales. This edition contains, besides a compendium of current flame retardants, updated information relevant to performance testing, mode of action, and safety and regulatory aspects. Industrial or academic researchers will find useful a discussion of unsolved problems with possible new approaches. Both authors have extended, productive experience in both basic and applied research on a wide range of flame retardancy topics.

The fourth edition of Ludwig's Applied Process Design for Chemical and Petrochemical Plants, Volume Three is a core reference for chemical, plant, and process engineers and provides an unrivalled reference on methods, process fundamentals, and supporting design data. New to this edition are expanded chapters on heat transfer plus additional chapters focused on the design of shell and tube heat exchangers, double pipe heat exchangers and air coolers. Heat tracer requirements for pipelines and heat loss from insulated pipelines are covered in this new edition, along with batch heating and cooling of process fluids, process integration, and industrial reactors. The book also looks at the troubleshooting of process equipment and corrosion and metallurgy. Assists engineers in rapidly analyzing problems and finding effective design methods and mechanical specifications Definitive guide to the selection and design of

various equipment types, including heat exchanger sizing and compressor sizing, with established design codes Batch heating and cooling of process fluids supported by Excel programs

Authoritative survey of the natural, modified, and synthetic water-soluble resins and gums now available commercially.

This indispensable book describes lubricant additives, their synthesis, chemistry, and mode of action. All important areas of application are covered, detailing which lubricants are needed for a particular application. Laboratory and field performance data for each application is provided and the design of cost-effective, environmentally friendly technologies is fully explored. This edition includes new chapters on chlorohydrocarbons, foaming chemistry and physics, antifoams for nonaqueous lubricants, hydrogenated styrene–diene viscosity modifiers, alkylated aromatics, and the impact of REACH and GHS on the lubricant industry.

This book is focused primarily on polymer nanocomposites, based on the author's research experience as well as open literature. The environmental health and safety aspects of nanomaterials and polymer nanocomposites, risk assessment and safety standards, and fire toxicity of polymer nanocomposites, are studied. In the final chapter, a brief overview of opportunities, trends, and challenges of polymer nanocomposites are included. Throughout the book, the theme is developed that polymer nanocomposites are a whole family of polymeric materials whose properties are capable of being tailored to meet specific applications. This volume serves as a general introduction to students and researchers just entering the field and to scholars from other subfields seeking information.

Plastics are the most important class of packaging materials. This successful handbook, now in its second edition, covers all important aspects of plastic packaging and the interdisciplinary knowledge needed by food chemists, pharmaceutical chemists, food technologists, materials scientists, process engineers, and product developers alike. This is an indispensable resource in the search for the optimal plastic packaging. Materials characteristics, additives and their effects, mass transport phenomena, quality assurance, and recent regulatory requirements from FDA and European Commission are covered in detail with ample data.

The Handbook of Adhesive Technology, Second Edition exceeds the ambition of its bestselling forerunner by reexamining the mechanisms driving adhesion, categories of adhesives, techniques for bond formation and evaluation, and major industrial applications. Integrating modern technological innovations into adhesive preparation and application, this greatly expanded and updated edition comprises a total of 26 different adhesive groupings, including three new classes. The second edition features ten new chapters, a 40-page list of resources on adhesives, and abundant figures, tables, equations.

This report presents both short- and long-term approaches to the problem of marine plastic debris and micro plastics. It provides an overview of the latest science and experiences, identifies priority areas of action, and points out areas requiring more research. Improved waste management is urgently needed to reduce the flow of plastic into our oceans.

Rules of Thumb for Chemical Engineers, Sixth Edition, is the most complete guide for chemical and process engineers who need reliable and authoritative solutions to on-the-job problems. The text is comprehensively revised and updated with new data and formulas. The book helps solve process design problems quickly, accurately and safely, with hundreds of common sense techniques, shortcuts and calculations. Its concise sections detail the steps needed to answer critical design questions and challenges. The book discusses physical properties for proprietary materials, pharmaceutical and biopharmaceutical sector heuristics, process design, closed-loop heat transfer systems, heat exchangers, packed columns and structured packings. This book will help you: save time you no longer have to spend on theory or derivations; improve accuracy by exploiting well tested and accepted methods culled from industry experts; and save money by reducing reliance on consultants. The book brings together solutions,

information and work-arounds from engineers in the process industry. Includes new chapters on biotechnology and filtration Incorporates additional tables with typical values and new calculations Features supporting data for selecting and specifying heat transfer equipment Petroleum and chemical engineers are constantly looking for reliable data yet don't have the time to search through multiple sources and articles to get the most accurate pieces of data. The Yaws Handbook of Thermodynamic Properties for Hydrocarbons and Chemicals, 2nd edition brings a one-stop database reference for engineers to quickly gain access on over 12,000 compounds, simple and complex fluids, and an extensive list of properties – all to validate and improve on their thermodynamic modeling. Enhanced with eight new chapters covering more equation of state parameters, Yaws' product continues to remain a go-to source to crosscheck critical properties available on process simulators or PVT software and estimate these properties based on the group contribution methods described in the different chapters. The Yaws Handbook of Thermodynamic Properties for Hydrocarbons and Chemicals, 2nd edition stands as the trusted database to optimize petrochemical processes, equipment, and operations. Provides a reliable database reference for thermodynamic properties, even varied by temperature, as well as simple and complex fluids, mixtures, and property calculations Updated with eight additional new chapters covering a modern platform of practical applications in modelling both pure fluids and mixtures with cubic equations of state Delivers accurate and quick options and solutions to size or simulate petrochemical processes and develop better predictive models

Molten Salt Reactors is a comprehensive reference on the status of molten salt reactor (MSR) research and thorium fuel utilization. There is growing awareness that nuclear energy is needed to complement intermittent energy sources and to avoid pollution from fossil fuels. Light water reactors are complex, expensive, and vulnerable to core melt, steam explosions, and hydrogen explosions, so better technology is needed. MSRs could operate safely at nearly atmospheric pressure and high temperature, yielding efficient electrical power generation, desalination, actinide incineration, hydrogen production, and other industrial heat applications. Coverage includes: Motivation -- why are we interested? Technical issues – reactor physics, thermal hydraulics, materials, environment, ... Generic designs -- thermal, fast, solid fuel, liquid fuel, ... Specific designs – aimed at electrical power, actinide incineration, thorium utilization, ... Worldwide activities in 23 countries Conclusions This book is a collaboration of 58 authors from 23 countries, written in cooperation with the International Thorium Molten Salt Forum. It can serve as a reference for engineers and scientists, and it can be used as a textbook for graduate students and advanced undergrads. Molten Salt Reactors is the only complete review of the technology currently available, making this an essential text for anyone reviewing the use of MSRs and thorium fuel, including students, nuclear researchers, industrial engineers, and policy makers. Written in cooperation with the International Thorium Molten-Salt Forum Covers MSR-specific issues, various reactor designs, and discusses issues such as the environmental impact, non-proliferation, and licensing Includes case studies and examples from experts across the globe

Written and edited by experts on specialty elastomers applications in the mechanical and automotive products industries, the Handbook of Specialty Elastomers provides a single source reference for the design of compounds using specialty elastomers. This

book defines specialty elastomers as heat-, oil-, fuel-, and solvent-resistant polymers. Each chapter examines individual elastomers in terms of development history, chemical composition, structure, and properties as well as processing methods, applications, and commercially available products. Covering their applications in the rubber, energy, chemicals, and oil industries, the book also discusses the use of antioxidants, antiozonants, vulcanization agents, plasticizers, and process aids for specialty elastomers. The concluding chapter details considerations and relevant processes—such as molding operations—involved in designing application-specific rubber components. The Handbook of Specialty Elastomers provides comprehensive insight into the processes and challenges of designing rubber formulations and specialty elastomeric components.

This Handbook reviews the chemistry, manufacturing methods, properties and applications of the synthetic polymer foams used in most applications. In addition, a chapter is included on the fundamental principles, which apply to all polymer foams. There is also a chapter on the blowing agents used to expand polymers and a chapter is on microcellular foams - a relatively new development where applications are still being explored.

Wine is a widely consumed beverage due to its unique and pleasant sensory properties. Wine is composed of more than one thousand chemical compounds (e.g., alcohols, esters, acids, terpenoids, phenolic compounds, flavonoids, anthocyanins, minerals, and vitamins, among others) resulting from several chemical and biochemical processes. Microextraction techniques in tandem with high-resolution analytical instruments have been applied by wine researchers to expand the knowledge of wine's chemical composition with the purposes of improving wine quality, supporting winemaker decisions related to the winemaking process, and guaranteeing the authenticity of wine. As a result, we proposed "Chemical/Instrumental Approaches to the Evaluation of Wine Chemistry" as a topic for a Special Issue in *Molecules*. This Special Issue aims to provide an update on state-of-the-art extraction procedures (e.g., solid-phase microextraction (SPME)) and analytical tools (e.g., nuclear magnetic resonance (NMR), inductively coupled plasma mass spectrometry (ICP-MS), ultra-performance liquid chromatography tandem mass spectrometry (UPLC-MS/MS)), emphasizing their use as suitable platforms for the establishment of the chemical composition of wine (volatonic profile, antioxidants, phenolic pattern, and elemental composition, among others). Information related to wine sensorial properties, contaminants, authenticity, and chemometric tools used for data treatment are described in this Issue.

Hydrothermal and Supercritical Water Processes presents an overview on the properties and applications of water at elevated temperatures and pressures. It combines fundamentals with production process aspects. Water is an extraordinary substance. At elevated temperatures (and pressures) its properties change dramatically due to the modifications of the molecular structure of bulk water that varies from a stable three-dimensional network, formed by hydrogen bonds at low and moderate temperatures, to an assembly of separated polar water molecules at high and supercritical temperatures. With varying pressure and temperature, water is turned from a solvent for ionic species to a solvent for polar and non-polar substances. This variability and an enhanced reactivity of water have led to many practical applications

and to even more research activities, related to such areas as energy transfer, extraction of functional molecules, unique chemical reactions, biomass conversion and fuel materials processing, destruction of dangerous compounds and recycling of useful ones, growth of monolithic crystals, and preparation of metallic nanoparticles. This book provides an introduction into the wide range of activities that are possible in aqueous mixtures. It is organized to facilitate understanding of the main features, outlines the main applications, and gives access to further information Summarizes fundamental properties of water for engineering applications Compares process and reactor designs Evaluates processes from thermodynamic, economic, and social impact viewpoints Databook of Plasticizers, Second Edition, contains data on the most important plasticizers in use today, including over 375 generic and commercial plasticizers. The data comes from a range of sources beyond plasticizers' manufacturers, allowing for a detailed comparison of properties between different plasticizers. Over 100 different data fields are provided, from general information, such as molecular structure and formula, to physical properties, health and safety information, ecological properties, and recommendations regarding appropriate use and performance of each plasticizer. The databook is an essential resource for engineers, technicians, and materials scientists responsible for specifying a plasticizer. It provides trustworthy and up-to-date data that is applicable to a range of numerous application areas, such as construction, automotives, food packaging, and more. Enables plastics practitioners to more efficiently select the correct plasticizer for a range of applications Includes 100 data fields for each plasticizer, including physical properties, health and safety information, ecological properties, and specific usage recommendations Contains data on the most important plasticizers currently in use – both commercial products and the chemical compounds used for the manufacture of plasticizers

New directions in supercritical fluids science and technology, fluorescence spectroscopy studies of intermolecular interactions in supercritical fluids, solvation structure in supercritical fluid mixtures based on molecular distribution functions, gibbs-ensemble Monte Carlo simulations of phase equilibria in supercritical fluid mixtures, spectroscopic determination of solvent strength and structure in supercritical fluid mixtures, partition coefficients of polyethyle glycols in super critical carbon dioxide, experimental measurement of supercritical fluid-liquid phase equilibrium, vapor-liquid equilibria of fatty acid esters in supercritical fluids, four-phase equilibrium of two ternary organic systems with carbon dioxide, direct viscosity enhancement of carbon dioxide, inverse emulsion polymerization of acrylamide, interaction of polymers with near-critical carbon dioxide, fundamental kinetics of methanol oxidation in supercritical fluids, thermodynamic analysis of corrosion of iron alloys in supercritical water, electrochemical measurements of corrosion of iron alloys in supercritical water, phase and reaction equilibria considerations in the evaluation and operation of supercritical fluid reaction processes, kinetic model for supercritical delignification of wood, gas antisolvent recrystallization solids formation after the expansion of supercritical mixtures, food, pharmaceutical, and environmental applications, design of commercial plant.

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see the original copyright references, library stamps (as most of these works have been housed in our most important libraries around the world), and other notations in the work. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. As a reproduction of a historical artifact, this work may contain missing or blurred pages, poor pictures, errant marks, etc. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.

This book introduces the concept of novel process windows, focusing on cost improvements, safety, energy and eco-efficiency throughout each step of the process. The first part presents the new reactor and process-related technologies, introducing the potential and benefit analysis. The core of the book details scenarios for unusual parameter sets and the new holistic and systemic approach to processing, while the final part analyses the implications for green and cost-efficient processing. With its practical approach, this is invaluable reading for those working in the pharmaceutical, fine chemicals, fuels and oils industries.

This comprehensive textbook describes the synthesis, characterization and technical and engineering applications of polymers. Offering a broad and balanced introduction to the basic concepts of macromolecular chemistry and to the synthesis and physical chemistry of polymers, it is the ideal text for graduate students and advanced Masters students starting out in polymer science. Building on the basic principles of organic chemistry and thermodynamics, it provides an easily understandable and highly accessible introduction to the topic. Step by step, readers will obtain a detailed and well-founded understanding of this vibrant and increasingly important subject area at the intersection between chemistry, physics, engineering and the life sciences. Following an approach different from many other textbooks in the field, the authors, with their varying backgrounds (both from academia and industry), offer a new perspective. Starting with a clear and didactic introduction, the book discusses basic terms and sizes and shapes of polymers and macromolecules. There then follow chapters dedicated to polymers in solutions, molar mass determination, and polymers in the solid state, incl. (partially) crystalline or amorphous polymers as well as their application as engineering materials. Based on this information, the authors explain the most important polymerization methods and techniques. Often neglected in other textbooks, there are chapters on technical polymers, functional polymers, elastomers and liquid crystalline polymers, as well as polymers and the environment. An overview of current trends serves to generate further interest in present and future developments in the field. This book is the English translation of the successful German textbook "Polymere", which was awarded the Chemical Industry in Germany's 2015 literature Prize ("Literaturpreis des Fonds der Chemischen Industrie") for its innovative, novel approach, and its good accessibility and readability, while at the same time providing comprehensive coverage of the field of polymer science.

As the field of tribology has evolved, the lubrication industry is also progressing at an extraordinary rate. Updating the author's bestselling publication, Synthetic Lubricants and High-Performance Functional Fluids, this book features the contributions of over 60

specialists, ten new chapters, and a new title to reflect the evolving nature of the
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