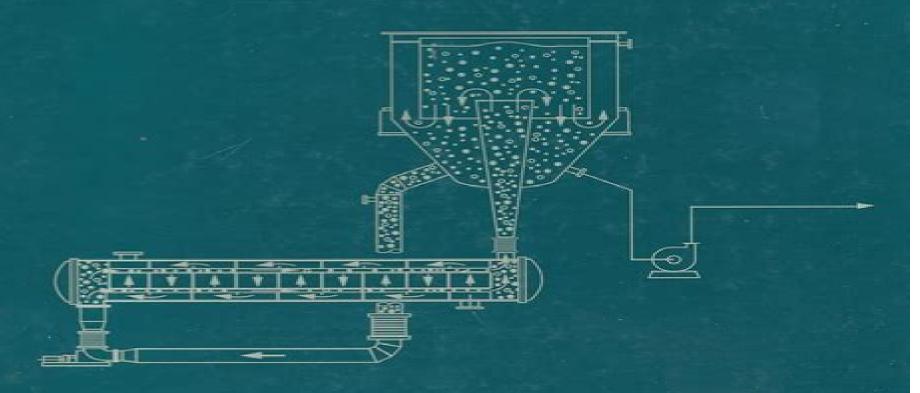
Handbook of Industrial Crystallization

Butterworth-Heinemann Series in Chemical Engineering

Allan S. Myerson



Handbook Of Industrial Crystallization

Hsien-Hsin Tung, Edward L.
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McCauley

Handbook Of Industrial Crystallization:

Handbook of Industrial Crystallization Allan S. Myerson, 1993 This volume covers all aspects of industrial crystallization including material related to both fundamentals and applications It provides an introduction to the field for newcomers and a reference to those involved in the various aspects of industrial crystallization Handbook of Industrial <u>Crystallization</u> Allan Myerson, 2002-01-08 Crystallization is an important separation and purification process used in industries ranging from bulk commodity chemicals to specialty chemicals and pharmaceuticals In recent years a number of environmental applications have also come to rely on crystallization in waste treatment and recycling processes The authors provide an introduction to the field of newcomers and a reference to those involved in the various aspects of industrial crystallization It is a complete volume covering all aspects of industrial crystallization including material related to both fundamentals and applications This new edition presents detailed material on crystallization of biomolecules precipitation impurity crystal interactions solubility and design Provides an ideal introduction for industrial crystallization newcomers Serves as a worthwhile reference to anyone involved in the fieldCovers all aspects of industrial crystallization in a single complete volume Industrial Crystallization Alison Lewis, Marcelo Seckler, Herman Kramer, Gerda van Rosmalen, 2015-07-02 A comprehensive overview of industrial crystallization its theory and practice including recent advances real world case studies and worked examples **Handbook of Continuous Crystallization Nima** Yazdanpanah, Zoltan K Nagy, 2020-02-04 Continuous crystallization is an area of intense research with particular respect to the pharmaceutical industry and fine chemicals Improvements in continuous crystallization technologies offer chemical industries significant financial gains through reduced expenditure and operational costs and consistent product quality Written by well known leaders in the field The Handbook of Continuous Crystallization presents fundamental and applied knowledge with attention paid to application and scaling up and the burgeoning area of process intensification Beginning with concepts around crystallization techniques and control strategies the reader will learn about experimental methods and computational tools Case studies spanning fine and bulk chemicals the pharmaceutical industry and employing new mathematical tools put theory into context SME Mineral Processing and Extractive Metallurgy Handbook Courtney A. Young, 2019-02-01 This landmark publication distills the body of knowledge that characterizes mineral processing and extractive metallurgy as disciplinary fields It will inspire and inform current and future generations of minerals and metallurgy professionals Mineral processing and extractive metallurgy are atypical disciplines requiring a combination of knowledge experience and art Investing in this trove of valuable information is a must for all those involved in the industry students engineers mill managers and operators More than 192 internationally recognized experts have contributed to the handbook s 128 thought provoking chapters that examine nearly every aspect of mineral processing and extractive metallurgy This inclusive reference addresses the magnitude of traditional industry topics and also addresses the new

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Industrial Chemical Separation Timothy C. Frank, Bruce S. Holden, 2023-08-07 A fresh new treatment written by industry insiders this work gives readers a remarkably clear view into the world of chemical separation The authors review distillation extraction adsorption crystallization and the use of membranes providing historical perspective explaining key features and offering insights from personal experience The book is for engineers and chemists with current or future responsibility for chemical separation on a commercial scale in its design operation or improvement or for anyone wanting to learn more about chemical separation from an industrial point of view The result is a compelling survey of popular technologies and the profession one that brings the art and craft of chemical separation to life Ever wonder how popular separation technologies came about how a particular process functions or how mass transfer units differ from theoretical stages Or perhaps you want some pointers on how to begin solving a separation problem You will find clear explanations and valuable insights into these and other aspects of industrial practice in this refreshing new survey Crystallization of Organic Compounds Hsien-Hsin Tung, Edward L. Paul, Michael Midler, James A. McCauley, 2023-07-05 Crystallization of Organic Compounds Practical resource covering applications of crystallization principles with methodologies case studies and numerous industrial examples for emphasis Based on the authors hands on experiences as process engineers through the use of case studies and examples of crystallization processes ranging from laboratory development through manufacturing

scale up Crystallization of Organic Compounds guides readers through the practical applications of crystallization and emphasizes strategies that have proven to be successful enabling readers to avoid common pitfalls that can render standard procedures unsuccessful Most chapters feature multiple examples that guide readers step by step through the crystallization of active pharmaceutical ingredients APIs including an analysis of the major methods of carrying out crystallization operations their strengths and potential issues as well as numerous examples of crystallization processes from development through manufacturing scale Advancements in the field of crystallization have been integrated throughout the book in the newly revised Second Edition to ensure the content adequately reflects current state of the art industrial know hows and practice The new edition also adds chapters addressing downstream operations after the crystallization including filtration washing and drying together with industrial use cases Crystallization of Organic Compounds includes detailed information on Solubility and solid behavior covering phase rule polymorph salt co crystal chiral resolution and in silico solubility prediction and kinetics covering seed supersaturation nucleation crystal growth and model based experimental design Critical issues in the crystallization practice covering oiling out seeding wet milling agglomeration aggregation mixing scale up and quality by design principles Cooling anti solvent evaporation and reactive crystallization process design covering batch and continuous operations with industrial examples Special applications covering crystallization with ultrasound reaction selectivity enhancement and computation fluid dynamics and solid dispersion With highly practical coverage of the subject Crystallization of Organic Compounds is an essential resource for engineers and chemists involved with the development scaling or operation of crystallization process in the pharmaceutical and fine chemical industries particularly those with Food Processing Kshirod Kumar Dash, Sourav Chakraborty, 2021-06-27 In degrees in chemical engineering and chemistry food processing thermal operations are the most common and conventional methods for obtaining and treating different products This book covers basics and advances in thermal processing of food These include drying processes evaporation blanching deep fat frying crystallization extraction and ohmic heating in terms of food engineering and process design aspect It further describes theoretical aspects the basics of rate kinetics and their application for the analysis of food quality indices including practical oriented issues related to food technology Traditional and new extraction techniques are also covered Key features Presents engineering focus on thermal food processing technologies Discusses sub classification for recent trends and relevant industry information examples Different current research oriented results are included as a key parameter Covers advances in drying evaporation blanching crystallization and ohmic heating Includes mathematical modeling and numerical simulations Food Processing Advances in Thermal Technologies is aimed at graduate students and professionals in food engineering food technology and biological systems engineering Fundamentals of Early Clinical Drug **Development** Ahmed F. Abdel-Magid, Stéphane Caron, 2006-08-28 An informative look at the intricacies of today s drug development process Once a discovery organization has identified a potential new drug candidate it is the daunting task of

synthetic organic chemists to identify the chemical process suitable for preparation of this compound in a highly regulated environment Only through a multi layered chemical process that takes into account such factors as safety environmental considerations freedom to operate and cost effectiveness can researchers begin to refine the drug in terms of quality and yield This book covers both recent advances in the design and synthesis of new drugs as well as the myriad other issues facing a new drug candidate as it moves through the development process Utilizing recent case studies the authors provide valuable insights into the complexities of the process from designing new synthetic methodologies and applying new automated techniques for finding optimal reaction conditions to selecting the final drug form and formulation Both novice and active researchers will appreciate the inclusion of chapters on such diverse topics as Cross coupling methods Asymmetric synthesis Automation Chemical Engineering Application of radioisotopes Final form selection Formulations Intellectual property A wealth of real world examples and contributions from leading process scientists engineers and related professionals make this book a valuable addition to the scientific literature Pharmaceutical Salts and Co-crystals Johan Wouters, Luc Quéré, 2011 His unique book focuses on the currently hot topic of Pharmaceutical Salts and Co crystals Combining both reports of the latest academic research and comprehensive overviews of basic principles with more applied contributions from selected experts in industry **Industrial Applications of Molecular Simulations Marc** Meunier, 2016-04-19 The field of quantum and molecular simulations has experienced strong growth since the time of the early software packages A recent study showed a large increase in the number of people publishing papers based on ab initio methods from about 3 000 in 1991 to roughly 20 000 in 2009 with particularly strong growth in East Asia Looking to the futu

Separation Process Engineering Phillip C. Wankat,2022-10-24 The Definitive Learner Friendly Guide to Chemical Engineering Separations Extensively Updated Including a New Chapter on Melt Crystallization Efficient separation processes are crucial to addressing many societal problems from developing new medicines to improving energy efficiency and reducing emissions Separation Process Engineering Fifth Edition is the most comprehensive accessible guide to modern separation processes and the fundamentals of mass transfer In this completely updated edition Phillip C Wankat teaches each key concept through detailed realistic examples using actual data with up to date simulation practice spreadsheet based exercises and references Wankat thoroughly covers each separation process including flash column and batch distillation exact calculations and shortcut methods for multicomponent distillation staged and packed column design absorption stripping and more His extensive discussions of mass transfer and diffusion enable faculty to teach separations and mass transfer in a single course And detailed material on liquid liquid extraction adsorption chromatography and ion exchange prepares students for advanced work New and updated content includes melt crystallization steam distillation residue curve analysis batch washing the Shanks system for percolation leaching eutectic systems forward osmosis microfiltration and hybrid separations A full chapter discusses economics and energy conservation including updated equipment costs Over 300

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Aspects series is to generate both a practical handbook as well as a reference allowing the reader to make effective decisions concerning the use of solvents and solvent systems To this end the monograph was created by inviting recognized experts from a number of fields to author relevant sections Specifically 15 chapters have been designed covering the theoretical background of solubility the effect of ionic equilibria and pH on solubilization the use of solvents to effect drug substance crystallization and polymorph selection the use of solvent systems in high throughput screening and early discovery solvent use in preformulation the use of solvents in bio relevant dissolution and permeation experiments solvents and their use as toxicology vehicles solubilizing media and excipients in oral and parenteral formulation development specialized vehicles for protein formulation and solvent systems for topical and pulmonary drug administration. The chapters are organized such that useful decision trees are included together with the scientific underpinning for their application. In addition trends in the use of solvent systems and a balance of current views make this monograph useful to both the novice and experienced researcher and to scientists at all developmental stages from early discovery to late pharmaceutical operations **Industrial Separation** Processes André B. de Haan, H. Burak Eral, Boelo Schuur, 2025-05-06 Separation processes on an industrial scale account for well over half of the capital and operating costs in the chemical industry Knowledge of these processes is key for every student of chemical or process engineering and makes this book with its wealth of exercises and solutions ideally suited to university teaching The Third edition boasts an even greater number of applied examples and updated chapters on drying adsorption and membranes Practical Process Research and Development Neal G. Anderson, 2012-04-09 Designed to provide a comprehensive step by step approach to organic process research and development in the pharmaceutical fine chemical and agricultural chemical industries this book describes the steps taken following synthesis and evaluation to bring key compounds to market in a cost effective manner It describes hands on step by step approaches to solving process development problems including route reagent and solvent selection optimising catalytic reactions chiral syntheses and green chemistry Second Edition highlights Reflects the current thinking in chemical process R D for small molecules Retains similar structure and orientation to the first edition Contains approx 85% new material Primarily new examples work up and prospective considerations for pilot plant and manufacturing scale up Some new expanded topics e g green chemistry genotoxins enzymatic processes Replaces the first edition although the first edition contains useful older examples that readers may refer to Provides insights into generating rugged practical cost effective processes for the chemical preparation of small molecules Breaks down process optimization into route reagent and solvent selection development of reaction conditions workup crystallizations and more Presents guidelines for implementing and troubleshooting processes

Frontiers On Separation Science And Technology, Proceedings Of The 4th International Conference Zhangfa Tong, Sung Hyun Kim, 2004-06-07 This book presents the latest achievements of separation science and technology It highlights the application of separation with regard to problems of current interest such as the protection of the environment

and the development of emerging technology including chemical engineering biotechnology renewable energy sources and recycling of materials Continuous Pharmaceutical Processing Zoltan K Nagy, Arwa El Hagrasy, Jim Litster, 2020-06-10 Continuous pharmaceutical manufacturing is currently receiving much interest from industry and regulatory authorities with the joint aim of allowing rapid access of novel therapeutics and existing medications to the public without compromising high quality Research groups from different academic institutions have significantly contributed to this field with an immense amount of published research addressing a variety of topics related to continuous processing. The book is structured to have individual chapters on the different continuous unit operations involved in drug substance and drug product manufacturing A wide spectrum of topics are covered including basic principles of continuous manufacturing applications of continuous flow chemistry in drug synthesis continuous crystallization continuous drying feeders and blenders roll compaction and continuous wet granulation The underlying theme for each of these chapters is to present to the reader the recent advances in modeling experimental investigations and equipment design as they pertain to each individual unit operation The book also includes chapters on quality by design QbD and process analytical technology PAT for continuous processing process control strategies including new concepts of quality by control QbC real time process management and plant optimization business and supply chain considerations related to continuous manufacturing as well as safety guidelines related to continuous chemistry A separate chapter is dedicated to discussing regulatory aspects of continuous manufacturing with description of current regulatory environment guality GMP aspects as well as regulatory gaps and challenges Our aim from publishing this book is to make it a valuable reference for readers interested in this topic with a desire to gain a fundamental understanding of engineering principles and mechanistic studies utilized in understanding and developing continuous processes In addition our advanced readers and practitioners in this field will find that the technical content of Continuous Pharmaceutical Processing is at the forefront of recent technological advances with coverage of future prospects and challenges for this technology

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