

# Gas Liquid And Liquid Liquid Separators

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Encyclopedia of Chemical Processing and Design - John J. McKetta Jr 1989-11-27

"Written by engineers for engineers (with over 150 International Editorial Advisory Board members), this highly lauded resource provides up-to-the-minute information on the chemical processes, methods, practices, products, and standards in the chemical, and related, industries. "

Petroleum and Gas Field Processing - H.K. Abdel-Aal 2003-07-03

The immediate product extracted from oil and gas wells consists of mixtures of oil, gas, and water that is difficult to transport, requiring a certain amount of field processing. This reference analyzes principles and procedures related to the processing of reservoir fluids for the separation, handling, treatment, and production of quality petroleum oil and gas products. It details strategies in equipment selection and system design, field development and operation, and process simulation and control to increase plant productivity and safety and avoid losses during purification, treatment, storage, and export. Providing guidelines for developing efficient and economical treatment systems, the book features solved design examples that demonstrate the application of developed design equations as well as review problems and exercises of key engineering concepts in petroleum field development and operation.

Handbook of Natural Gas Transmission and Processing - Saeid Mokhatab 2018-10-16

Written by an internationally-recognized team of natural gas industry experts, the fourth edition of Handbook of Natural Gas Transmission and Processing is a unique, well-researched, and comprehensive work on the design and operation aspects of natural gas transmission and processing. Six new chapters have been added to include detailed discussion of the thermodynamic and energy efficiency of relevant processes, and recent developments in treating super-rich gas, high CO<sub>2</sub> content gas, and high nitrogen content gas with other contaminants. The new material describes technologies for processing today's unconventional gases, providing a fresh approach in solving today's gas processing challenges including greenhouse gas emissions. The updated edition is an excellent platform for gas processors and educators to understand the basic principles and innovative designs necessary to meet today's environmental and sustainability requirement while delivering acceptable project economics. Covers all technical and operational aspects of natural gas transmission and processing. Provides pivotal updates on the latest technologies, applications, and solutions. Helps to understand today's natural gas resources, and the best gas processing technologies. Offers design optimization and advice on the design and operation of gas plants.

**Gas Cyclones and Swirl Tubes** - Alex C. Hoffmann 2013-11-11

This book has been conceived to provide guidance on the theory and design of cyclone systems. For those new to the topic, a cyclone is, in its most basic form, a stationary mechanical device that utilizes centrifugal force to separate solid or liquid particles from a carrier gas. Gas enters near the top via a tangential or vaned inlet, which gives rise to an axially descending spiral of gas and a centrifugal force field that causes the incoming particles to concentrate along, and spiral down, the inner walls of the separator. The thus-segregated particulate phase is allowed to exit out an underflow pipe while the gas phase constricts, and - in most separators - reverses its axial direction of flow and exits out a separate overflow pipe. Cyclones are applied in both heavy and light industrial applications and may be designed as either classifiers or separators. Their applications are as plentiful as they are varied. Examples include their use in the separation or classification of powder coatings, plastic fines, sawdust, wood chips, sand, sintered/powdered metal, plastic and metal pellets, rock and mineral screenings, carbon fines, grain products, pulverized coal, chalk, coal and coal ash, catalyst and petroleum coke fines, mist entrained off of various processing units and liquid components from scrubbing and drilling operations. They have even been

applied to separate foam into its component gas and liquid phases in recent years.

*A Mathematical Investigation of Water Droplet Trajectories* - Irving Langmuir 1946

SEPARATORS: Mihir's Process Engineering Guidebook - Mihir Patel

This book outlines the normal process design procedure for definition of Separators parameters along with guidelines and specific criteria for development of Separators sizing by the Process Engineer. It covers the main features of the design of Separators systems. Similarly, effort has been taken to include salient points and information for knowledge augmentation and usage in engineering by the process engineers. This guidebook is same as Vol I Chapter 9 from Overall Handbook i.e. "Mihir's Handbook of Chemical Process Engineering". Full version can be purchased at [www.chemicalprocessengineering.com](http://www.chemicalprocessengineering.com)

Liquid Membranes - Vladimir S Kislik 2009-08-31

Liquid Membranes: Principles and Applications in Chemical Separations and Wastewater Treatment discusses the principles and applications of the liquid membrane (LM) separation processes in organic and inorganic chemistry, analytical chemistry, biochemistry, biomedical engineering, gas separation, and wastewater treatment. It presents updated, useful, and systematized information on new LM separation technologies, along with new developments in the field. It provides an overview of LMs and LM processes, and it examines the mechanisms and kinetics of carrier-facilitated transport through LMs. It also discusses active transport, driven by oxidation-reduction, catalytic, and bioconversion reactions on the LM interfaces; modifications of supported LMs; bulk aqueous hybrid LM processes with water-soluble carriers; emulsion LMs and their applications; and progress in LM science and engineering. This book will be of value to students and young researchers who are new to separation science and technology, as well as to scientists and engineers involved in the research and development of separation technologies, LM separations, and membrane reactors. - Provides comprehensive knowledge-based information on the principles and applications of a variety of liquid membrane separation processes. - Contains a critical analysis of new technologies published in the last 15 years.

*Fluid Mechanics, Heat Transfer, and Mass Transfer* - K. S. Raju 2011-04-20

This broad-based book covers the three major areas of Chemical Engineering. Most of the books in the market involve one of the individual areas, namely, Fluid Mechanics, Heat Transfer or Mass Transfer, rather than all the three. This book presents this material in a single source. This avoids the user having to refer to a number of books to obtain information. Most published books covering all the three areas in a single source emphasize theory rather than practical issues. This book is written with emphasis on practice with brief theoretical concepts in the form of questions and answers, not adopting stereo-typed question-answer approach practiced in certain books in the market, bridging the two areas of theory and practice with respect to the core areas of chemical engineering. Most parts of the book are easily understandable by those who are not experts in the field. Fluid Mechanics chapters include basics on non-Newtonian systems which, for instance find importance in polymer and food processing, flow through piping, flow measurement, pumps, mixing technology and fluidization and two phase flow. For example it covers types of pumps and valves, membranes and areas of their use, different equipment commonly used in chemical industry and their merits and drawbacks. Heat Transfer chapters cover the basics involved in conduction, convection and radiation, with emphasis on insulation, heat exchangers, evaporators, condensers, reboilers and fired heaters. Design methods, performance, operational issues and maintenance problems are highlighted. Topics such as heat pipes, heat pumps, heat tracing, steam traps, refrigeration, cooling of electronic devices, NO<sub>x</sub> control find place in the book. Mass

transfer chapters cover basics such as diffusion, theories, analogies, mass transfer coefficients and mass transfer with chemical reaction, equipment such as tray and packed columns, column internals including structural packings, design, operational and installation issues, drums and separators are discussed in good detail. Absorption, distillation, extraction and leaching with applications and design methods, including emerging practices involving Divided Wall and Petluk column arrangements, multicomponent separations, supercritical solvent extraction find place in the book.

Code of Federal Regulations - 2016

Special edition of the Federal Register, containing a codification of documents of general applicability and future effect ... with ancillaries.

Industrial Catalytic Processes for Fine and Specialty Chemicals - Sunil S Joshi 2016-04-12

Industrial Catalytic Processes for Fine and Specialty Chemicals provides a comprehensive methodology and state-of-the art toolbox for industrial catalysis. The book begins by introducing the reader to the interesting, challenging, and important field of catalysis and catalytic processes. The fundamentals of catalysis and catalytic processes are fully covered before delving into the important industrial applications of catalysis and catalytic processes, with an emphasis on green and sustainable technologies. Several case studies illustrate new and sustainable ways of designing catalysts and catalytic processes. The intended audience of the book includes researchers in academia and industry, as well as chemical engineers, process development chemists, and technologists working in chemical industries and industrial research laboratories. Discusses the fundamentals of catalytic processes, catalyst preparation and characterization, and reaction engineering Outlines the homogeneous catalytic processes as they apply to specialty chemicals Introduces industrial catalysis and catalytic processes for fine chemicals Includes a number of case studies to demonstrate the various processes and methods for designing green catalysts

Microreactors for Gas/Liquid Reactions - Kristin Hecht 2014-01-01

The widespread adoption of microreactors has been hindered by a lack of knowledge regarding rules and parameters needed for their design. This dissertation deals with the investigation of interfacial area and liquid mass transport in microreactors for gas/liquid reactions. Observations of a reduction in conversion occurring when changing from a glass laboratory device to a stainless steel process device motivated investigations into the effect of material and surface properties on the gas/liquid flow and reaction. This work takes a look inside the machined microstructures produced at the Institute for Micro Process Engineering of the Karlsruhe Institute of Technology and investigates the nature of the solid surfaces resulting from the machining process—the surface roughness and the contact angle of the resulting surface. The effect of wettability on gas/liquid flow in microreactors has been investigated in capillaries of various materials. The absorption of carbon dioxide into aqueous solutions of sodium hydroxide has been used to investigate gas/liquid flow and reaction in capillaries and in a microstructured falling film reactor. Under certain limiting assumptions depending upon the exact rates of reaction and transport, values of the interfacial area and liquid mass transport coefficient can be derived from measurements of reaction. This dissertation contributes a small step towards a better understanding of how measurements of the interfacial area and mass transfer coefficient can be performed, demonstrates why the effect of material wettability cannot be ignored, and provides a stronger basis for further work in the development of general correlations describing microstructured gas/liquid reactors.

Rules of Thumb in Engineering Practice - Donald R. Woods 2007-06-27

An immense treasure trove containing hundreds of equipment symptoms, arranged so as to allow swift identification and elimination of the causes. These rules of thumb are the result of preserving and structuring the immense knowledge of experienced engineers collected and compiled by the author - an experienced engineer himself - into an invaluable book that helps younger engineers find their way from symptoms to causes. This sourcebook is unrivalled in its depth and breadth of coverage, listing five important aspects for each piece of equipment: \* area of application \* sizing guidelines \* capital cost including difficult-to-find installation factors \* principles of good practice, and \* good approaches to troubleshooting. Extensive cross-referencing takes into account that some items of equipment are used for many different purposes, and covers not only the most familiar types, but special care has been taken to also include less common ones. Consistent terminology and SI units are used throughout the book, while a detailed index quickly and reliably directs readers, thus aiding engineers in their everyday work at chemical

plants: from keywords to solutions in a matter of minutes.

**Offshore Processing of CO<sub>2</sub>-Rich Natural Gas with Supersonic Separator** - José Luiz de Medeiros 2018-12-31

This book introduces a new and powerful approach based on rigorous process simulations conducted with professional simulators like HYSYS to predict the performance of supersonic separators (SS). The book addresses the utilization of SSs for the offshore processing of CO<sub>2</sub>-rich natural gas as an alternative to Joule-Thomson expansion, glycol absorption, membrane permeation and chemical absorption. It describes and analyzes the conventional offshore processing of CO<sub>2</sub>-rich natural gas, discussing the advantages of SS in terms of cost and power consumption. The book offers a comprehensive framework for modeling SS units, describing the physical principles of SS in detail. The thermodynamic multiphase sound speed is also discussed at the light shed by a classical analysis based on the Landau Model of phase transitions. A complete framework is presented for modelling and simulating SS units within HYSYS environment. A special chapter is dedicated to the performance of SSs for removing CO<sub>2</sub> from CO<sub>2</sub>-rich natural gas, taking into account the limitations of CO<sub>2</sub> freeze-out in various scenarios of gas feed in terms of CO<sub>2</sub> content, pressure and temperature.

Solid/ Liquid Separation - Stephen Tarleton 2005-09-26

Solid/fluid separation is a major element in the processes performed in pharmaceutical, food, beverage, water, pulp and paper industries. Several books now exist on the more esoteric aspects of the techniques, but accounts of the fundamental principles involved are few. Written by two well-known chemical engineers, this book reviews the scientific and engineering bases for solid/fluid separation processes in an approachable style. Coverage focuses on fluid dynamics, gravity, centrifugal and membrane separations, filter cake formation, de-liquoring and washing. Complete with an extensive bibliography to allow readers to pursue topics in greater depth. This book will... \*Help readers to understand how filtration processes work \*Facilitate the application of knowledge to start-up and existing processes, helping readers to improve process performance \*Help ensure your equipment is appropriate for its purpose and is working optimally, saving time and money Another volume currently available from the set is: Wakeman & Tarleton: Solid/ Fluid Separation Processes: Equipment Scale-up for Liquid Filtration ISBN: 185617 4204 This book will... \*Help readers to understand how filtration processes work \*Facilitate the application of knowledge to start-up and existing processes, helping readers to improve process performance \*Help ensure your equipment is appropriate for its purpose and is working optimally, saving time and money

The Hydrocyclone - D. Bradley 2013-10-22

The Hydrocyclone reviews data on the theoretical, design, and performance aspects of the liquid cyclone, hydraulic cyclone, or hydrocyclone. The book aims to be a source of reference to those who are in industries employing the use and application of the hydrocyclone. The text covers the historical development of the cyclone; flow pattern and distribution of velocities within the cyclone body; operational characteristics and areas of application in different phase separations; and the operating and design variables affecting the performance of the hydrocyclone. Categories of cyclone; commercially available cyclone equipment; and the specific industrial applications of the hydrocyclone are also surveyed. The text will be of practical use to industrial engineers, mechanical engineers, plant operators, miners, and researchers.

**How to Make Your Own Soap** - Sally Hornsey 2014-06-19

This book will guide you through creating your own liquid and bar soap. Design and create bars of soap using traditional methods that incorporate moisturising oils and butters, and make fun and funky glycerine soaps that look almost too fabulous to use. If you prefer liquid soaps then this book also explains how to create liquid and cream soaps from scratch as well as how to design body washes using many of the easily obtainable surfactants. In this book you will discover how to: · Choose soap making ingredients that will be most beneficial for your skin type · Design and create a range of soapy products including hand and body washes · Scent your soaps using essential and fragrance oils · Make glycerine melt and pour soap from scratch · Understand different soap making methods and techniques

**Advances in Fluid Mechanics XII** - S. Hernández 2018-10-30

Containing papers from the 12th International Conference on Advances in Fluid Mechanics, this book covers a wide range of topics including basic formulations and their computer modelling as well as the relationship between experimental and analytical results. The emphasis

is on new applications and research currently in progress. The field of fluid mechanics is vast and has numerous and diverse applications. The contained research works discuss new studies in fluid mechanics and present the latest applications in the field. A wide range of topics are covered including, Computational methods; Boundary elements and other mesh reduction methods; Fluid structure interaction; Cooling of electronic devices; Environmental fluid dynamics; Industrial applications; Energy systems; Nano and micro fluids; Turbulent and complex flows; Jets; Droplet and spray dynamics; Bubble dynamics; Multiphase fluid flow; Pumping and fluid transportation; Experimental measurements; Rheology; Chemical reaction flow; Hydroelectromagnetic flow; High speed flow; Wave theory; Energy conversion systems.

Surface Production Operations - K. Arnold 1999

Liquid-Gas and Solid-Gas Separators - Jean-Paul Duroudier 2016-11-08  
Liquid-Gas and Solid-Gas Separators, part of the Industrial Equipment for Chemical Engineering set, details the magnetic properties of solids and their separation in a magnetic field. After a thorough description of the electronic filter and its functioning, numerical examples are given for the functioning of Venturi (which is a convergent-divergent). The centrifugal separator with superimposed plates theory is also developed alongside the screw-mud-pump. The author also provides the methods needed for understanding the equipment used in applied thermodynamics in the hope of encouraging students and engineers to self build the programs they need. Chapters are complemented with appendices that provide additional information and associated references. Presents a comprehensive example of a real-world simulation of a venturi Examines a centrifugal decanter designed to separate the components of a liquid-solid Details the magnetic properties of solids and their separation in a magnetic field

Liquid-liquid Systems - N. N. Kulov 1996

Liquid-Liquid Systems

**Fluid Dynamics of Packed Columns** - Jerzy Mackowiak 2009-12-10  
The first German edition of the book "Fluid dynamics of packed columns with modern random and structured packings for gas/liquid systems" was published in 1991. It sold out within a few years. Added to this were numerous enquiries, in particular within the industry, prompting me to publish a second, extended edition. A packed column remains the core element of any diffusional separation process. This underlines the need for basic design principles for packed columns, which enhance the design process by making it more accurate and reliable. The SBD (suspended bed of droplets) model introduced in the first German edition of the book was well received by the experts and is now used by a large number of companies in the industry, as it offers improved reliability in the fluid dynamic design of packed columns. For the purpose of facilitating the design process, the SBD model was integrated into the simulation programme ChemCAD. The software programme FDPACK, which is available for Windows, has certainly contributed to the widespread use of the SBD model. The programme is very user-friendly and the calculation results are presented in tabular as well as graphic form, showing good load, pressure drop and hold-up diagrams in the entire operating range.

Oil and Gas Production Handbook: An Introduction to Oil and Gas Production - Havard Devold 2013

**Energy Carriers And Conversion Systems With Emphasis On Hydrogen - Volume I** - Tokio Ohta 2009-07-22

Energy Carriers and Conversion Systems is a component of Encyclopedia of Energy Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty Encyclopedias. The Theme on Energy Carriers and Conversion Systems with contributions from distinguished experts in the field discusses energy matters of great relevance to our world such as: Historical Background, Systematic Concept, General Sketch, and Key Technologies; Water Splitting Science and Technology; Hydrogen Storage and Transportation; Fuels Cells and Other Applications. These volumes are aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

Solvent Recovery Handbook - Ian McN. Smallwood 2002

The pressure is on to cut plant emissions while still maintaining a cost-effective operation. Choosing the best solvent, being aware of potential problems, and the recovery of solvents has never been so important. Traditionally, solvents had been chosen on the basis of whether they can

do the job effectively and economically. However, with regulations on exposure to solvent vapors becoming more stringent, selecting the solvent that meets regulatory, efficiency, and economical criteria as early as possible in the process has become paramount. Solvent Recovery Handbook, Second Edition sets out the physical properties of the fifty most commonly used solvents. The book supplies information on their behavior during and after use, health and fire hazards, the photochemical ozone creation potential (POCP), and recovery processes including practical aspects of the design and operation of batch stills. It delivers state-of-the art coverage of every available recovery and disposal technology - including removing solvents from gas, water, and residues, separating used solvents, and drying solvents. What's more, you'll find fact-filled sections on the latest equipment, safe effective operating procedures, choosing solvents with recovery in mind, and much more. Updated and expanded, Ian Smallwood's Solvent Recovery Handbook, Second Edition hands you all the practical tools you need to efficiently and cost-effectively process harmful organic solvents after recapture.

**Solid-Liquid Separation** - Ladislav Svarovsky 2013-10-22

Solid-Liquid Separation, Third Edition reviews the equipment and principles involved in the separation of solids and liquids from a suspension. Some important aspects of solid-liquid separation such as washing, flotation, membrane separation, and magnetic separation are discussed. This book is comprised of 23 chapters and begins with an overview of solid-liquid separation processes and the principles involved, including flotation, gravity sedimentation, cake filtration, and deep bed filtration. The following chapters focus on the characterization of particles suspended in liquids; the efficiency of separation of particles from fluids; coagulation and flocculation; gravity thickening; and the operating characteristics, optimum design criteria, and applications of hydrocyclones. The reader is also introduced to various solid-liquid separation processes such as centrifugal sedimentation, screening, and filtration, along with the use of filter aids. Countercurrent washing of solids and problems associated with fine particle recycling are also considered. The final chapter is devoted to the thermodynamics of particle-fluid interaction. This monograph will be useful to chemical engineers and process engineers, particularly those in plant operation, plant design, or equipment testing and commissioning. It can also be used as a textbook for both undergraduate and postgraduate students.

Gas Well Deliquification - James F. Lea 2011-08-30

Liquid loading can reduce production and shorten the lifecycle of a well costing a company millions in revenue. A handy guide on the latest techniques, equipment, and chemicals used in de-watering gas wells, Gas Well Deliquification, 2nd Edition continues to be the engineer's choice for recognizing and minimizing the effects of liquid loading. The 2nd Edition serves as a guide discussing the most frequently used methods and tools used to diagnose liquid loading problems and reduce the detrimental effects of liquid loading on gas production. With new extensive chapters on Coal Bed Methane and Production this is the essential reference for operating engineers, reservoir engineers, consulting engineers and service companies who supply gas well equipment. It provides managers with a comprehensive look into the methods of successful Production Automation as well as tools for the profitable use, production and supervision of coal bed gases. • Turnkey solutions for the problems of liquid loading interference • Based on decades of practical, easy to use methods of de-watering gas wells • Expands on the 1st edition's useful reference with new methods for utilizing Production Automation and managing Coal Bed Methane  
Gas Cyclones and Swirl Tubes - Alex C. Hoffmann 2002-05-28

This book has been conceived to provide guidance on the theory and design of cyclone systems. For those new to the topic, a cyclone is, in its most basic form, a stationary mechanical device that utilizes centrifugal force to separate solid or liquid particles from a carrier gas. Gas enters near the top via a tangential or vaned inlet, which gives rise to an axially descending spiral of gas and a centrifugal force field that causes the incoming particles to concentrate along, and spiral down, the inner walls of the separator. The thus-segregated particulate phase is allowed to exit out an underflow pipe while the gas phase constricts, and - in most separators - reverses its axial direction of flow and exits out a separate overflow pipe. Cyclones are applied in both heavy and light industrial applications and may be designed as either classifiers or separators. Their applications are as plentiful as they are varied. Examples include their use in the separation or classification of powder coatings, plastic fines, sawdust, wood chips, sand, sintered/powdered metal, plastic and metal pellets, rock and mineral screenings, carbon fines, grain products,

pulverized coal, chalk, coal and coal ash, catalyst and petroleum coke fines, mist entrained off of various processing units and liquid components from scrubbing and drilling operations. They have even been applied to separate foam into its component gas and liquid phases in recent years.

**Food Processing Handbook** - James G. Brennan 2012-05-07

The second edition of the Food Processing Handbook presents a comprehensive review of technologies, procedures and innovations in food processing, stressing topics vital to the food industry today and pinpointing the trends in future research and development. Focusing on the technology involved, this handbook describes the principles and the equipment used as well as the changes - physical, chemical, microbiological and organoleptic - that occur during food preservation. In so doing, the text covers in detail such techniques as post-harvest handling, thermal processing, evaporation and dehydration, freezing, irradiation, high-pressure processing, emerging technologies and packaging. Separation and conversion operations widely used in the food industry are also covered as are the processes of baking, extrusion and frying. In addition, it addresses current concerns about the safety of processed foods (including HACCP systems, traceability and hygienic design of plant) and control of food processes, as well as the impact of processing on the environment, water and waste treatment, lean manufacturing and the roles of nanotechnology and fermentation in food processing. This two-volume set is a must-have for scientists and engineers involved in food manufacture, research and development in both industry and academia, as well as students of food-related topics at undergraduate and postgraduate levels. From Reviews on the First Edition: "This work should become a standard text for students of food technology, and is worthy of a place on the bookshelf of anybody involved in the production of foods." Journal of Dairy Technology, August 2008

"This work will serve well as an excellent course resource or reference as it has well-written explanations for those new to the field and detailed equations for those needing greater depth." CHOICE, September 2006

**Gas-Liquid And Liquid-Liquid Separators** - Maurice Stewart 2008-10-02

Gas-Liquid And Liquid-Liquid Separators is practical guide designed to help engineers and operators develop a "feel" for selection, specification, operating parameters, and trouble-shooting separators; form an understanding of the uncertainties and assumptions inherent in operating the equipment. The goal is to help familiarize operators with the knowledge and tools required to understand design flaws and solve everyday operational problems for types of separators. Gas-Liquid And Liquid-Liquid Separators is divided into six parts: Part one and two covers fundamentals such as: physical properties, phase behaviour and calculations. Part three through five is dedicated to topics such as: separator construction, factors affecting separation, vessel operation, and separator operation considerations. Part six is devoted to the ASME codes governing wall thickness determination of vessel weight fabrication, inspection, alteration and repair of separators 500 illustrations Easy to understand calculations methods Guide for protecting downstream equipment Helps reduce the loss of expensive intermediate ends Helps increase product purity

**Energy Efficient Solvents for CO<sub>2</sub> Capture by Gas-Liquid Absorption** - Wojciech M. Budzianowski 2016-12-01

This book reviews and characterises promising single-compound solvents, solvent blends and advanced solvent systems suitable for CO<sub>2</sub> capture applications using gas-liquid absorption. Focusing on energy efficient solvents with minimal adverse environmental impact, the contributions included analyse the major technological advantages, as well as research and development challenges of promising solvents and solvent systems in various sustainable CO<sub>2</sub> capture applications. It provides a valuable source of information for undergraduate and postgraduate students, as well as for chemical engineers and energy specialists.

**Gas-Liquid and Liquid-Liquid Separators** - A. K. Nigam 2015-08-01

This practical guide is designed to help engineers and operators develop a "feel" for selection, specification, operating parameters, and trouble-shooting separators; form an understanding of the uncertainties and assumptions inherent in operating the equipment. The goal is to help familiarize operators with the knowledge and tools required to understand design flaws and solve everyday operational problems for types of separators. The most important gas/liquid separations that take place in oil field operation have been investigated. An inventory has been made of the conditions under which the separations have to take place and which requirements have to be fulfilled. The presently available

separator types have been evaluated with respect to the suitability to fulfil the requirements listed above. It appeared that many separator types were not specifically designed for high pressure gas/liquid separation (rather for either atmospheric gas/liquid or high pressure gas/dust separation). It also appeared that in many cases the behaviour of the separator could not be reliably predicted under the conditions of the practical application.

**Bioseparations Science and Engineering** - Roger G. Harrison 2015-01-27

Designed for undergraduates, graduate students, and industry practitioners, Bioseparations Science and Engineering fills a critical need in the field of bioseparations. Current, comprehensive, and concise, it covers bioseparations unit operations in unprecedented depth. In each of the chapters, the authors use a consistent method of explaining unit operations, starting with a qualitative description noting the significance and general application of the unit operation. They then illustrate the scientific application of the operation, develop the required mathematical theory, and finally, describe the applications of the theory in engineering practice, with an emphasis on design and scaleup. Unique to this text is a chapter dedicated to bioseparations process design and economics, in which a process simulator, SuperPro Designer® is used to analyze and evaluate the production of three important biological products. New to this second edition are updated discussions of moment analysis, computer simulation, membrane chromatography, and evaporation, among others, as well as revised problem sets. Unique features include basic information about bioproducts and engineering analysis and a chapter with bioseparations laboratory exercises. Bioseparations Science and Engineering is ideal for students and professionals working in or studying bioseparations, and is the premier text in the field.

**Chemical Process Design and Simulation: Aspen Plus and Aspen Hysys Applications** - Juma Haydary 2019-01-03

A comprehensive and example oriented text for the study of chemical process design and simulation Chemical Process Design and Simulation is an accessible guide that offers information on the most important principles of chemical engineering design and includes illustrative examples of their application that uses simulation software. A comprehensive and practical resource, the text uses both Aspen Plus and Aspen Hysys simulation software. The author describes the basic methodologies for computer aided design and offers a description of the basic steps of process simulation in Aspen Plus and Aspen Hysys. The text reviews the design and simulation of individual simple unit operations that includes a mathematical model of each unit operation such as reactors, separators, and heat exchangers. The author also explores the design of new plants and simulation of existing plants where conventional chemicals and material mixtures with measurable compositions are used. In addition, to aid in comprehension, solutions to examples of real problems are included. The final section covers plant design and simulation of processes using nonconventional components. This important resource: Includes information on the application of both the Aspen Plus and Aspen Hysys software that enables a comparison of the two software systems Combines the basic theoretical principles of chemical process and design with real-world examples Covers both processes with conventional organic chemicals and processes with more complex materials such as solids, oil blends, polymers and electrolytes Presents examples that are solved using a new version of Aspen software, ASPEN One 9 Written for students and academics in the field of process design, Chemical Process Design and Simulation is a practical and accessible guide to the chemical process design and simulation using proven software.

**Intensification of Liquid-Liquid Processes** - Laurence R. Weatherley 2020-04-16

Explore and review novel techniques for intensifying transport and reaction in liquid-liquid and related systems with this essential toolkit. Topics include discussion of the principles of process intensification, the nexus between process intensification and sustainable engineering, and the fundamentals of liquid-liquid contacting, from an expert with over forty-five years' experience in the field. Providing promising directions for investment and for new research in process intensification, in addition to a unique review of the fundamentals of the topic, this book is the perfect guide for senior undergraduate students, graduate students, developers, and research staff in chemical engineering and biochemical engineering.

**Science and Technology of Separation Membranes** - Tadashi Uragami 2017-02-10

Offers a comprehensive overview of membrane science and technology

from a single source Written by a renowned author with more than 40 years' experience in membrane science and technology, and polymer science Covers all major current applications of membrane technology in two definitive volumes Includes academic analyses, applications and practical problems for each existing membrane technology Includes novel applications such as membrane reactors, hybrid systems and optical resolution as well as membrane fuel cells

**Natural Gas Processing** - Alireza Bahadori 2014-05-05

Natural gas is considered the dominant worldwide bridge between fossil fuels of today and future resources of tomorrow. Thanks to the recent shale boom in North America, natural gas is in a surplus and quickly becoming a major international commodity. Stay current with conventional and now unconventional gas standards and procedures with *Natural Gas Processing: Technology and Engineering Design*. Covering the entire natural gas process, Bahadori's must-have handbook provides everything you need to know about natural gas, including: Fundamental background on natural gas properties and single/multiphase flow factors How to pinpoint equipment selection criteria, such as US and international standards, codes, and critical design considerations A step-by-step simplification of the major gas processing procedures, like sweetening, dehydration, and sulfur recovery Detailed explanation on plant engineering and design steps for natural gas projects, helping managers and contractors understand how to schedule, plan, and manage a safe and efficient processing plant Covers both conventional and unconventional gas resources such as coal bed methane and shale gas Bridges natural gas processing with basic and advanced engineering design of natural gas projects including real world case studies Digs deeper with practical equipment sizing calculations for flare systems, safety relief valves, and control valves

**Specific Volumes and Phase-boundary Properties of Separator-gas and Liquid-hydrocarbon Mixtures** - C. Kenneth Eilerts 1942

**Proceedings of International Conference on Intelligent Manufacturing and Automation** - Hari Vasudevan 2018-11-04

This book presents the outcomes of the International Conference on Intelligent Manufacturing and Automation (ICIMA 2018) organized by the Departments of Mechanical Engineering and Production Engineering at Dwarkadas J. Sanghvi College of Engineering, Mumbai, and the Indian

Society of Manufacturing Engineers. It includes original research and the latest advances in the field, focusing on automation, mechatronics and robotics; CAD/CAM/CAE/CIM/FMS in manufacturing; product design and development; DFM/DFA/FMEA; MEMS and Nanotechnology; rapid prototyping; computational techniques; industrial engineering; manufacturing process management; modelling and optimization techniques; CRM, MRP and ERP; green, lean, agile and sustainable manufacturing; logistics and supply chain management; quality assurance and environment protection; advanced material processing and characterization; and composite and smart materials.

**Solid/Liquid Separation: Equipment Selection and Process Design** - Steve Tarleton 2006-12-07

In this volume, the third in a set specifically written for the industrial process and chemical engineer, the authors provide the detailed information on filtration equipment and media which allows the reader to then consider the pre-treatment of suspensions, selection of the most appropriate equipment for the task, data analysis and the subsequent design of the processes involved for particular separations. The result is a comprehensive book which is designed to be used frequently and referred to regularly in order to achieve better industrial separations. Successful industrial-scale separation of solids from liquids requires not only a thorough understanding of the principles involved, but also an appreciation of which equipment to use for best effect, and a start-to-finish plan for the various processes involved in the operation. If these factors are all correct, then successful separations should result. Part of 3-volume set Unique approach to industrial separations Internationally-known authors

*Separation Technologies for the Industries of the Future* - National Research Council 1999-02-08

Separation processes—or processes that use physical, chemical, or electrical forces to isolate or concentrate selected constituents of a mixture—are essential to the chemical, petroleum refining, and materials processing industries. In this volume, an expert panel reviews the separation process needs of seven industries and identifies technologies that hold promise for meeting these needs, as well as key technologies that could enable separations. In addition, the book recommends criteria for the selection of separations research projects for the Department of Energy's Office of Industrial Technology.