

## **Gpsa 13th Edition 2012**

Towards a New Evolutionary Computation  
Petroleum Refining  
Future Energy  
Chemical Process Design and Simulation: Aspen Plus and Aspen Hysys Applications  
The Power of Global Performance Indicators  
IMEchE Engineers' Databook  
Enhanced Oil Recovery Field Case Studies  
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Psychiatry and the Legacies of Eugenics  
Drug Discovery in Africa  
Design of Oil-handling Systems and Facilities  
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Natural Gas Hydrates  
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Handbook of Petroleum Processing  
Air Dispersion Modeling  
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Working Guide to Pump and Pumping Stations  
Gas Purification  
Properties of Petroleum Fluids, 3rd Edition  
Systematic Methods of Chemical Process Design  
Advanced Membrane Science and Technology for Sustainable Energy and Environmental Applications  
Acid Gas Extraction for Disposal and Related Topics  
Engineering Data Book  
Rigging Engineering Basics  
Steam Tables  
Modeling of Processes and Reactors for Upgrading of Heavy Petroleum  
Handbook of Liquefied Natural Gas  
Fundamentals of Natural Gas Processing  
Steam, Its Generation and Use

### **Towards a New Evolutionary Computation**

#### **Petroleum Refining**

Enhanced Oil Recovery Field Case Studies bridges the gap between theory and practice in a range of real-world EOR settings. Areas covered include steam and polymer flooding, use of foam, in situ combustion, microorganisms, "smart water"-based EOR in carbonates and sandstones, and many more. Oil industry professionals know that the key to a successful enhanced oil recovery project lies in anticipating the differences between plans and the realities found in the field. This book aids that effort, providing valuable case studies from more than 250 EOR pilot and field applications in a variety of oil fields. The case studies cover practical problems, underlying theoretical and modeling methods, operational parameters, solutions and sensitivity studies, and performance optimization strategies, benefitting academicians and oil company practitioners alike. Strikes an ideal balance between theory and practice  
Focuses on practical problems, underlying theoretical and modeling methods, and operational parameters  
Designed for technical professionals, covering the fundamental as well as the advanced aspects of EOR

#### **Future Energy**

With this volume's clear presentation, you will understand the basic concepts and techniques needed to DESIGN, SPECIFY, and OPERATE oilfield surface production

facilities and operations

## **Chemical Process Design and Simulation: Aspen Plus and Aspen Hysys Applications**

Shows how global ratings and rankings shape political agendas and influence states' behavior, reframing how we think about power.

## **The Power of Global Performance Indicators**

For four decades, *Petroleum Refining* has guided thousands of readers toward a reliable understanding of the field, and through the years has become the standard text in many schools and universities around the world offering petroleum refining classes, for self-study, training, and as a reference for industry professionals. The sixth edition of this perennial bestseller continues in the tradition set by Jim Gary as the most modern and authoritative guide in the field. Updated and expanded to reflect new technologies, methods, and topics, the book includes new discussion on the business and economics of refining, cost estimation and complexity, crude origins and properties, fuel specifications, and updates on technology, process units, and catalysts. The first half of the book is written for a general audience to introduce the primary economic and market characteristics of the industry and to describe the inputs and outputs of refining. Most of this material is new to this edition and can be read independently or in parallel with the rest of the text. In the second half of the book, a technical review of the main process units of a refinery is provided, beginning with distillation and covering each of the primary conversion and treatment processes. Much of this material was reorganized, updated, and rewritten with greater emphasis on reaction chemistry and the role of catalysis in applications. *Petroleum Refining: Technology, Economics, and Markets* is a book written for users, the practitioners of refining, and all those who want to learn more about the field.

## **IMechE Engineers' Databook**

This is the fifth volume in a series of books focusing on natural gas engineering, focusing on the extraction and disposal of acid gas. This volume includes information for both upstream and downstream operations, including chapters on modeling, carbon capture, chemical and thermodynamic models, and much more. Written by some of the most well-known and respected chemical and process engineers working with natural gas today, the chapters in this important volume represent the most cutting-edge and state-of-the-art processes and operations being used in the field. Not available anywhere else, this volume is a must-have for any chemical engineer, chemist, or process engineer working with natural gas. There are updates of new technologies in other related areas of natural gas, in addition to the extraction and disposal of acid gas, including testing, reservoir simulations, acid gas injection, and natural gas hydrate formations. *Advances in Natural Gas Engineering* is an ongoing series of books meant to form the basis for the working library of any engineer working in natural gas today. Every volume is a must-have for any engineer or library.

## **Enhanced Oil Recovery Field Case Studies**

"Steam, Its Generation and Use" by Babcock & Wilcox Company. Published by Good Press. Good Press publishes a wide range of titles that encompasses every genre. From well-known classics & literary fiction and non-fiction to forgotten—or yet undiscovered gems—of world literature, we issue the books that need to be read. Each Good Press edition has been meticulously edited and formatted to boost readability for all e-readers and devices. Our goal is to produce eBooks that are user-friendly and accessible to everyone in a high-quality digital format.

## **Gas Treating**

Drug discovery originating in Africa has the potential to provide significantly improved treatment of endemic diseases such as malaria, tuberculosis and HIV/AIDS. This book critically reviews the current status of drug discovery research and development in Africa, for diseases that are a major threat to the health of people living in Africa. Compiled by leading African and international experts, this book presents the science and strategies of modern drug discovery. It explores how the use of natural products and traditional medicines can benefit from conventional drug discovery approaches, and proposes solutions to current technological, infrastructural, human resources, and economic challenges, which are presented when attempting to engage in full-scale drug discovery. Topics addressed are varied; from African medicinal plants to marine bioprospecting, pharmacogenetics and the use of nanotechnology. This book brings together for the first time a collection of strategies and techniques that need to be considered when developing drugs in an African setting. It is an unprecedented and truly international effort, highlighting the remarkable effort made so far in the area of drug discovery research by African scientists, and scientists from other parts of the world working on African health problems.

## **Global Corruption**

A single reference to all aspects of contemporary air dispersion modeling The practice of air dispersion modeling has changed dramatically in recent years, in large part due to new EPA regulations. Current with the EPA's 40 CFR Part 51, this book serves as a complete reference to both the science and contemporary practice of air dispersion modeling. Throughout the book, author Alex De Visscher guides readers through complex calculations, equation by equation, helping them understand precisely how air dispersion models work, including such popular models as the EPA's AERMOD and CALPUFF. Air Dispersion Modeling begins with a primer that enables readers to quickly grasp basic principles by developing their own air dispersion model. Next, the book offers everything readers need to work with air dispersion models and accurately interpret their results, including: Full chapter dedicated to the meteorological basis of air dispersion Examples throughout the book illustrating how theory translates into practice Extensive discussions of Gaussian, Lagrangian, and Eulerian air dispersion modeling Detailed descriptions of the AERMOD and CALPUFF model formulations This book also includes access to a website with Microsoft Excel and MATLAB files that contain examples of air dispersion model calculations. Readers can work with these

examples to perform their own calculations. With its comprehensive and up-to-date coverage, Air Dispersion Modeling is recommended for environmental engineers and meteorologists who need to perform and evaluate environmental impact assessments. The book's many examples and step-by-step instructions also make it ideal as a textbook for students in the fields of environmental engineering, meteorology, chemical engineering, and environmental sciences.

## **Geopolymer Chemistry and Applications**

San Marcos, one of the largest late prehistoric Pueblo settlements along the Rio Grande, was a significant social, political, and economic hub both before Spanish colonization and through the Pueblo Revolt of 1680. This volume provides the definitive record of a decade of archaeological investigations at San Marcos, ancestral home to Kewa (formerly Santo Domingo) and Cochiti descendants. The contributors address archaeological and historical background, artifact analysis, and population history. They explore possible changes in Pueblo social organization, examine population changes during the occupation, and delineate aspects of Pueblo/Spanish interaction that occur with Spaniards' intrusion into the colony and especially the Galisteo Basin. Highlights include historical context, in-depth consideration of archaeological field and laboratory methods, compositional and stylistic analyses of the famed glaze-paint ceramics, analysis of flaked stone that includes obsidian hydration dating, and discussion of the beginnings of colonial metallurgy and protohistoric Pueblo population change.

## **Meeting our commitments to gender equality in education**

Fundamentals of Natural Gas Processing explores the natural gas industry from the wellhead to the marketplace. It compiles information from the open literature, meeting proceedings, and experts to accurately depict the state of gas processing technology today and highlight technologies that could become important in the future. This book cov

## **Psychiatry and the Legacies of Eugenics**

From 1928 to 1972, the Alberta Sexual Sterilization Act, Canada's lengthiest eugenic policy, shaped social discourses and medical practice in the province. Sterilization programs - particularly involuntary sterilization programs - were responding both nationally and internationally to social anxieties produced by the perceived connection between mental degeneration and heredity. Psychiatry and the Legacy of Eugenics illustrates how the emerging field of psychiatry and its concerns about inheritable conditions was heavily influenced by eugenic thought and contributed to the longevity of sterilization practices in Western Canada. Using institutional case studies, biographical accounts, and media developments from Western Canada and Europe, contributors trace the impact of eugenics on nursing practices, politics, and social attitudes, while investigating the ways in which eugenics discourses persisted unexpectedly and remained mostly unexamined in psychiatric practice. This volume further extends historical analysis into considerations of contemporary policy and human rights issues through a discussion of disability studies as well as compensation claims for victims of

sterilization. In impressive detail, contributors shed new light on the medical and political influences of eugenics on psychiatry at a key moment in the field's development. With contributions by Ashley Barlow, W. Mikkel Dack, Aleksandra Loewenau, Diana Mansell, Guel A. Russell, Celeste Tuong Vy Sharpe, Henderikus J. Stam, Douglas Wahlsten, Paul J. Weindling, Robert A. Wilson, Gregor Wolbring, and Marc Workman.

## **Drug Discovery in Africa**

This massively updated and expanded fifth edition is the most complete, authoritative engineering treatment of the dehydration and gas purification processes used in industry today. Of great value to design and operations engineers, it gives practical process and equipment design descriptions, basic data, plant performance results, and other detailed information on gas purification processes and hardware. This latest edition incorporates all significant advances in the field since 1985. You will find major new chapters on the rapidly expanding technologies of nitrogen oxide control, with discussions of regulatory requirements and available processes; absorption in physical solvents, covering single component and mixed solvent systems; and membrane permeation, with emphasis on the gas purification applications of membrane units. In addition, new sections cover areas of strong current interest, particularly liquid hydrocarbon treating, Claus plant tail gas treating, thermal oxidation of volatile organic compounds, and sulfur scavenging processes. This volume brings you expanded coverage of alkanolamines for hydrogen sulfide and carbon dioxide removal, the removal and use of ammonia in gas purification, the use of alkaline salt solutions for acid gas removal, and the use of water to absorb gas impurities. The basic technologies and all significant advances in the following areas are thoroughly described: sulfur dioxide removal and recovery processes, processes for converting hydrogen sulfide to sulfur, liquid phase oxidation processes for hydrogen sulfide removal, the absorption of water vapor by dehydrating solutions, gas dehydration and purification by adsorption, and the catalytic and thermal conversion of gas impurities.

## **Design of Oil-handling Systems and Facilities**

This new text represents the most detailed and comprehensive book presenting modern practice and theory relevant to the thermal-flow performance evaluation, design, and optimization of air-cooled heat exchangers and cooling towers. He also provides modern analytical and empirical tools used to evaluate the thermal-flow performance and design of air-cooled heat exchangers and cooling towers. Kroger covers how to prepare improved specifications and evaluate more critical bids with respect to thermal performance of new cooling systems. Further, Kroger explores improvement possibilities with respect to retrofits of existing cooling units as well as possible impacts of plant operations and environmental influences.

## **Air-cooled Heat Exchangers and Cooling Towers**

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.

## **Hydrate Engineering**

## **Gas Pipeline Hydraulics**

Aucune information saisie

## **Network-Oriented Modeling**

Using an applications perspective Thermodynamic Models for Industrial Applications provides a unified framework for the development of various thermodynamic models, ranging from the classical models to some of the most advanced ones. Among these are the Cubic Plus Association Equation of State (CPA EoS) and the Perturbed Chain Statistical Association Fluid Theory (PC-SAFT). These two advanced models are already in widespread use in industry and academia, especially within the oil and gas, chemical and polymer industries. Presenting both classical models such as the Cubic Equations of State and more advanced models such as the CPA, this book provides the critical starting point for choosing the most appropriate calculation method for accurate process simulations. Written by two of the developers of these models, Thermodynamic Models for Industrial Applications emphasizes model selection and model development and includes a useful "which model for which application" guide. It also covers industrial requirements as well as discusses the challenges of thermodynamics in the 21st Century.

## **The Archaeology and History of Pueblo San Marcos**

Gas Treating: Absorption Theory and Practice provides an introduction to the treatment of natural gas, synthesis gas and flue gas, addressing why it is necessary and the challenges involved. The book concentrates in particular on the absorption-desorption process and mass transfer coupled with chemical reaction. Following a general introduction to gas treatment, the chemistry of CO<sub>2</sub>, H<sub>2</sub>S and amine systems is described, and selected topics from physical chemistry with relevance to gas treating are presented. Thereafter the absorption process is discussed in detail, column hardware is explained and the traditional mass transfer model mechanisms are presented together with mass transfer correlations. This is followed by the central point of the text in which mass transfer is combined with chemical reaction, highlighting the associated possibilities and problems. Experimental techniques, data analysis and modelling are covered, and the book concludes with a discussion on various process elements which are important in the absorption-desorption process, but are often neglected in its treatment. These include heat exchange, solution management, process flowsheet variations, choice of materials and degradation of absorbents. The text is rounded off with an overview of the current state of research in this field and a discussion of real-world applications. This book is a practical introduction to gas treating for practicing process engineers and chemical engineers working on purification technologies and gas treatment, in particular, those working on CO<sub>2</sub> abatement processes, as well as post-graduate students in process engineering, chemical engineering and chemistry.

## **Fluid Mechanics for Chemical Engineers with Microfluidics and CFD.**

Working Guide to Pumps and Pumping Stations: Calculations and Simulations discusses the application of pumps and pumping stations used in pipelines that transport liquids. It provides an introduction to the basic theory of pumps and how pumps are applied to practical situations using examples of simulations, without extensive mathematical analysis. The book begins with basic concepts such as the types of pumps used in the industry; the properties of liquids; the performance curve; and the Bernoulli equation. It then looks at the factors that affect pump performance and the various methods of calculating pressure loss in piping systems. This is followed by discussions of pump system head curves; applications and economics of centrifugal pumps and pipeline systems; and pump simulation using the software PUMPCALC. In most cases, the theory is explained and followed by solved example problems in both U.S. Customary System (English) and SI (metric) units. Additional practice problems are provided in each chapter as further exercise. This book was designed to be a working guide for engineers and technicians dealing with centrifugal pumps in the water, petroleum, oil, chemical, and process industries. Calculations for their selection, sizing and power output Case studies based on the author's 35 years of field experience Covers all types of pumps Simplified models and simulations

## **Thermodynamic Models for Industrial Applications**

The worldwide petroleum industry is facing a dilemma: the production level of heavy petroleum is higher than that of light petroleum. Heavy crude oils possess

high amounts of impurities (sulfur, nitrogen, metals, and asphaltenes), as well as a high yield of residue with consequent low production of valuable distillates (gasoline and diesel). These characteristics, in turn, are responsible for the low price of heavy petroleum. Additionally, existing refineries are designed to process light crude oil, and heavy oil cannot be refined to 100 percent. One solution to this problem is the installation of plants for heavy oil upgrading before sending this raw material to a refinery. *Modeling of Processes and Reactors for Upgrading of Heavy Petroleum* gives an up-to-date treatment of modeling of reactors employed in the main processes for heavy petroleum upgrading. The book includes fundamental aspects such as thermodynamics, reaction kinetics, chemistry, and process variables. Process schemes for each process are discussed in detail. The author thoroughly describes the development of correlations, reactor models, and kinetic models with the aid of experimental data collected from different reaction scales. The validation of modeling results is performed by comparison with experimental and commercial data taken from the literature or generated in various laboratory scale reactors. Organized into three sections, this book deals with general aspects of properties and upgrading of heavy oils, describes the modeling of non-catalytic processes, as well as the modeling of catalytic processes. Each chapter provides detailed experimental data, explanations of how to determine model parameters, and comparisons with reactor model predictions for different situations, so that readers can adapt their own computer programs. The book includes rigorous treatment of the different topics as well as the step-by-step description of model formulation and application. It is not only an indispensable reference for professionals working in the development of reactor models for the petroleum industry, but also a textbook for full courses in chemical reaction engineering. The author would like to express his sincere appreciation to the Marcos Moshinsky Foundation for the financial support provided by means of a Cátedra de Investigación.

## **The Law of Journalism and Mass Communication**

As the demand for global energy increases, fact-based evaluations of alternative energy sources are needed in order to address the growing interest in how energy is produced, provided, and transported in sustainable ways. *Future Energy, Second Edition* provides scientists and decision makers with the knowledge they need to understand the relative importance and magnitude of various energy production methods in order to make the energy decisions needed for sustaining development and dealing with climate change. The second edition of *Future Energy* looks at the present energy situation and extrapolates to future scenarios related to global warming and the increase of carbon dioxide and other greenhouse gases in the atmosphere. This thoroughly revised and updated edition contains over 30 chapters on all aspects of future energy, each chapter updated and expanded by expert scientists and engineers in their respective fields providing an unbiased and balanced view of the future of energy. Provides readers with an up-to-date overview of available energy options, both traditional and renewable, as well as the necessary tools to make informed decisions regarding selection, use, and environmental impacts. Covers a wide spectrum of future energy resources presented in a single book with chapters written by experts of the particular field. Eleven new chapters including chapters on: solar heating, energy resources in developing nations and frontiers in oil and gas, Arctic drilling and unconventional

oil and gas sources, thorium in nuclear fission, ethanol and other options for future transport fuel, fracking, smart grids, new batteries, environmental issues and the energy options for China

## **Natural Gas Hydrates**

Practical guide for lift directors, lift planners, rigging engineers, site superintendents, field engineers, rigging foremen, heavy lift managers, heavy haul planners, crane operators, and advanced riggers

## **Flow Assurance Solids in Oil and Gas Production**

## **Handbook of Petroleum Processing**

This book presents a new approach that can be applied to complex, integrated individual and social human processes. It provides an alternative means of addressing complexity, better suited for its purpose than and effectively complementing traditional strategies involving isolation and separation assumptions. Network-oriented modeling allows high-level cognitive, affective and social models in the form of (cyclic) graphs to be constructed, which can be automatically transformed into executable simulation models. The modeling format used makes it easy to take into account theories and findings about complex cognitive and social processes, which often involve dynamics based on interrelating cycles. Accordingly, it makes it possible to address complex phenomena such as the integration of emotions within cognitive processes of all kinds, of internal simulations of the mental processes of others, and of social phenomena such as shared understandings and collective actions. A variety of sample models - including those for ownership of actions, fear and dreaming, the integration of emotions in joint decision-making based on empathic understanding, and evolving social networks - illustrate the potential of the approach. Dedicated software is available to support building models in a conceptual or graphical manner, transforming them into an executable format and performing simulation experiments. The majority of the material presented has been used and positively evaluated by undergraduate and graduate students and researchers in the cognitive, social and AI domains. Given its detailed coverage, the book is ideally suited as an introduction for graduate and undergraduate students in many different multidisciplinary fields involving cognitive, affective, social, biological, and neuroscience domains.

## **Air Dispersion Modeling**

The precipitation and deposition of solids are a major challenge in the production of oil and gas. Flow assurance solids are formed because of unavoidable changes in temperature, pressure and composition of the oil-gas-water flowstream, from reservoir conditions to processing conditions. The advent of subsea production and the increased exploitation of heavy crudes have made flow assurance issues dominant in ensuring efficient and safe exploitation of hydrocarbon assets. Five troublesome flow assurance solids are described in the book: asphaltene, paraffin

wax, natural gas hydrate, naphthenate and inorganic scale. These big-five solids are presented in stand-alone chapters. Each chapter is designed to be readable without clutter. Derivations of equations and descriptions of supporting details are given in several appendices. The book is intended for professional engineers and natural scientist working in E&P companies, engineering companies, service companies and specialized companies. An understanding of the big-five solids is required throughout the lifetime of oil and gas assets, from early development to abandonment. The technical, safety and environmental risks associated with deposition problems in near-wellbore formations, production tubing, wellhead equipment, flowlines and processing facilities, are relevant for decisions in the oil and gas industry and in outside regulatory and financial entities.

## **Vapor-liquid Equilibrium Data**

This book provides a concise and useful source of up-to-date essential information for the student or practising engineer.

## **Working Guide to Pump and Pumping Stations**

Over the last 20 years, fundamental design concepts and advanced computer modeling have revolutionized process design for chemical engineering. Team work and creative problem solving are still the building blocks of successful design, but new design concepts and novel mathematical programming models based on computer-based tools have taken out much of the guess-work. This book presents the new revolutionary knowledge, taking a systematic approach to design at all levels.

## **Gas Purification**

Petroleum can exist as either a liquid or a gas, either in the reservoir or on the trip to the surface. These properties are the basis for the chemistry of petroleum. This long-awaited new edition to William D. McCain's acclaimed text expands on the various compounds of this essential hydrocarbon. It includes new chapters on petroleum gas condensates and volatile oils, while the discussion on oilfield waters is extended. A vital resource for petroleum engineering students, *The Properties of Petroleum Fluids*, third edition, is equally useful as a reference for practicing engineers. New Features: Two new chapters on gas condensates A new chapter on volatile oils A simplified explanation of phase behavior and an extended discussion of oilfield waters An expanded review of the components of petroleum and the methods of determining its composition

## **Properties of Petroleum Fluids, 3rd Edition**

Estimation of Distribution Algorithms (EDAs) are a set of algorithms in the Evolutionary Computation (EC) field characterized by the use of explicit probability distributions in optimization. Contrarily to other EC techniques such as the broadly known Genetic Algorithms (GAs) in EDAs, the crossover and mutation operators are substituted by the sampling of a distribution previously learnt from the selected individuals. EDAs have experienced a high development that has transformed

them into an established discipline within the EC field. This book attracts the interest of new researchers in the EC field as well as in other optimization disciplines, and that it becomes a reference for all of us working on this topic. The twelve chapters of this book can be divided into those that endeavor to set a sound theoretical basis for EDAs, those that broaden the methodology of EDAs and finally those that have an applied objective.

## **Systematic Methods of Chemical Process Design**

The petroleum industry spends millions of dollars every year to combat the formation of hydrates-the solid, crystalline compounds that form from water and small molecules-that cause problems by plugging transmission lines and damaging equipment. They are a problem in the production, transmission and processing of natural gas, and it is even possible for them to form in the reservoir itself if the conditions are favorable. Natural Gas Hydrates is written for the field engineer working in the natural gas industry. This book explains how, when and where hydrates form, while providing the knowledge necessary to apply remedies in practical applications. New to the second edition, the use of new inhibitors: Kinetic Inhibitors and Anticoagulants and the topic of kinetics of hydrates. How fast do they form? How fast do they melt? New chapters on Hydrates in Nature, hydrates on the seafloor and a new section has also been added regarding the misconceptions about water dew points. Chapters on Hydrate Types and Formers, Computer Methods, Inhibiting Hydrate Formation with Chemicals, Dehydration of Natural Gas and Phase Diagrams Hydrate Dehydration of Natural Gas and Phase Diagrams have been expanded and updated along with the companion website. \* Understand what gas hydrates are, how they form and what can be done to combat their formation \* Avoid the same problems BP experienced with clogged pipelines \* Presents the four most common approaches to evaluate hydrates: heat, depressurization, inhibitor chemicals, and dehydration.

## **Advanced Membrane Science and Technology for Sustainable Energy and Environmental Applications**

What can be done about the major concerns of our Global Economy on energy, global warming, sustainable development, user-friendly processes, and green chemistry? Here is an important contribution to the mastering of these phenomena today. Written by Joseph Davidovits, the inventor and founder of geopolymers science, it is an introduction to the subject for the newcomers, students, engineers and professionals. You will find science, chemistry, formulas and very practical information (including patents' excerpts) covering: - The mineral polymer concept: silicones and geopolymers, - Macromolecular structure of natural silicates and aluminosilicates, - Scientific Tools, X-rays, FTIR, NMR, - The synthesis of mineral geopolymers, Poly(siloxonate) and polysilicate, soluble silicate, Chemistry of (Na, K)oligo-sialates: hydrous alumino-silicate gels and zeolites, Kaolinite / Hydrosodalite-based geopolymer, Metakaolin MK-750-based geopolymer, Calcium-based geopolymer, Rock-based geopolymer, Silica-based geopolymer, Fly ash-based geopolymer, Phosphate-based geopolymer, Organic-mineral geopolymer, - Properties: physical, chemical and long-term durability, - Applications: Quality controls, Development of user-friendly systems, Castable geopolymer, industrial

and decorative applications, Geopolymer / fiber composites, Foamed geopolymer, Geopolymers in ceramic processing, Manufacture of geopolymer cement, Geopolymer concrete, Geopolymers in toxic and radioactive waste management. It is a textbook, a reference book instead of being a collection of scientific papers. Each chapter is followed by a bibliography of the relevant published literature including 75 patents, 120 tables, 360 figures, 550 references, 700 authors cited, representing the most up to date contributions of the scientific community. The industrial applications of geopolymers with engineering procedures and design of processes are also covered in this book.

## **Acid Gas Extraction for Disposal and Related Topics**

Membrane materials allow for the selective separation of gas and vapour and for ion transport. Materials research and development continues to drive improvements in the design, manufacture and integration of membrane technologies as critical components in both sustainable energy and clean industry applications. Membrane utilisation offers process simplification and intensification in industry, providing low-cost, and efficient and reliable operation, and contributing towards emissions reductions and energy security. Advanced membrane science and technology for sustainable energy and environmental applications presents a comprehensive review of membrane utilisation and integration within energy and environmental industries. Part one introduces the topic of membrane science and engineering, from the fundamentals of membrane processes and separation to membrane characterization and economic analysis. Part two focuses on membrane utilisation for carbon dioxide (CO<sub>2</sub>) capture in coal and gas power plants, including pre- and post-combustion and oxygen transport technologies. Part three reviews membranes for the petrochemical industry, with chapters covering hydrocarbon fuel, natural gas and synthesis gas processing, as well as advanced biofuels production. Part four covers membranes for alternative energy applications and energy storage, such as membrane technology for redox and lithium batteries, fuel cells and hydrogen production. Finally, part five discusses membranes utilisation in industrial and environmental applications, including microfiltration, ultrafiltration, and forward osmosis, as well as water, wastewater and nuclear power applications. With its distinguished editors and team of expert contributors, Advanced membrane science and technology for sustainable energy and environmental applications is an essential reference for membrane and materials engineers and manufacturers, as well as researchers and academics interested in this field. Presents a comprehensive review of membrane science and technology, focusing on developments and applications in sustainable energy and clean-industry Discusses the fundamentals of membrane processes and separation and membrane characterization and economic analysis Addresses the key issues of membrane utilisation in coal and gas power plants and the petrochemical industry, the use of membranes for alternative energy applications and membrane utilisation in industrial and environmental applications

## **Engineering Data Book Fps**

Liquefied natural gas (LNG) is a commercially attractive phase of the commodity that facilitates the efficient handling and transportation of natural gas around the world. The LNG industry, using technologies proven over decades of development,

continues to expand its markets, diversify its supply chains and increase its share of the global natural gas trade. The Handbook of Liquefied Natural Gas is a timely book as the industry is currently developing new large sources of supply and the technologies have evolved in recent years to enable offshore infrastructure to develop and handle resources in more remote and harsher environments. It is the only book of its kind, covering the many aspects of the LNG supply chain from liquefaction to regasification by addressing the LNG industries' fundamentals and markets, as well as detailed engineering and design principles. A unique, well-documented, and forward-thinking work, this reference book provides an ideal platform for scientists, engineers, and other professionals involved in the LNG industry to gain a better understanding of the key basic and advanced topics relevant to LNG projects in operation and/or in planning and development. Highlights the developments in the natural gas liquefaction industries and the challenges in meeting environmental regulations Provides guidelines in utilizing the full potential of LNG assets Offers advices on LNG plant design and operation based on proven practices and design experience Emphasizes technology selection and innovation with focus on a "fit-for-purpose design Updates code and regulation, safety, and security requirements for LNG applications

## **Rigging Engineering Basics**

The Law of Journalism and Mass Communication, Sixth Edition, by Robert Trager, Susan Dente Ross, and Amy Reynolds offers a clear and engaging introduction to media law with comprehensive coverage and analysis of key cases for future journalists and media professionals. You are introduced to key legal issues at the start of each chapter, building your critical thinking skills before progressing to real-world landmark cases that demonstrate how media law is applied today. Contemporary examples, emerging legal topics, international issues, and cutting-edge research all help you to retain and apply principles of media law in practice. The thoroughly revised Sixth Edition has been reorganized and shortened to 12 chapters, streamlining the content and offering instructors more opportunities for classroom activities. This edition also goes beyond the judiciary—including discussions of tweets and public protests, alcohol ads in university newspapers, global data privacy and cybersecurity, libel on the internet, and free speech on college campuses—to show how the law affects the ways mass communication works and how people perceive and receive that work.

## **Steam Tables**

This extensively updated second edition of the already valuable reference targets research chemists and engineers who have chosen a career in the complex and essential petroleum industry, as well as other professionals just entering the industry who seek a comprehensive and accessible resource on petroleum processing. The handbook describes and discusses the key components and processes that make up the petroleum refining industry. Beginning with the basics of crude oils and their nature, it continues with the commercial products derived from refining and with related issues concerning their environmental impact. More in depth coverage of many topics previously covered in the first edition, such as hydraulic fracturing or fracking as it is often termed, help ensure this reference remains a relevant and up-to-date resource. At its core is a complete overview of

the processes that make up a modern refinery, plus a brief history of the development of processes. Also described in detail are design techniques, operations and in the case of catalytic units, the chemistry of the reaction routes. These discussions are supported by calculation procedures and examples, which enable readers to use today's simulation-software packages. The handbook also covers off-sites and utilities, as well as environmental and safety aspects relevant to the industry. The chapter on refinery planning covers both operational planning and the decision making procedures for new or revamped processes. Major equipment used in the industry is reviewed along with details and examples of the process specifications for each. An extensive glossary and dictionary of the terms and expressions used in petroleum refining, plus appendices supplying data such as converging factors and selected crude oil assays, as well as an example of optimizing a refinery configuration using linear programming are all included to aid the reader. The 2nd edition of the Handbook of Petroleum Processing is an indispensable desk reference for chemists and engineers as well as an essential part of the libraries of universities with a chemical engineering faculty and oil refineries and engineering firms performing support functions or construction.

## **Modeling of Processes and Reactors for Upgrading of Heavy Petroleum**

Steam Tables Thermodynamic Properties of Water Including Vapor, Liquid, and Solid Phases —English Units By Joseph H. Keenan, M.I.T.; Frederick G. Keyes, M.I.T.; Philip G. Hill, Queen's University; and Joan G. Moore, M.I.T. During the past decade a substantial body of experimental data on thermodynamic and transport properties of water has been produced and published by research groups in the USSR, Great Britain, Czechoslovakia, Canada and the United States. This book presents the results of a new and independent correlation of all this new thermodynamic data and all previously existing data. It is a new work to replace the well-known and widely used Keenan and Keyes tables. The tables in this new book are based upon a unique accomplishment. For the first time the whole body of high-quality experimental data on liquid and vapor water has been faithfully represented by a single fundamental equation. From this equation all thermodynamic properties can be calculated for any state. This equation is believed to extrapolate dependably in temperature from the upper limit of precise measurement (about 1500°F) to about 2400°F. Because of the increasing importance to both the practicing engineer and the student of a wide variety of problems that cannot be approximated by steady-flow idealization, internal energies are tabulated for all states: saturated liquid and vapor, compressed liquid, and superheated vapor. A reasonable range of metastable states is covered as extensions of the superheated-vapor and compressed-liquid tables. The Mollier and temperature-entropy charts are extended to substantially higher pressures and temperatures. This book also includes a table for ice-vapor equilibrium, an improved chart of isentropic exponents, charts of Prandtl number, a set of charts of heat capacity of liquid and vapor, and extensive tables of viscosity and thermal conductivity reproduced from the documents of the Sixth International Conference on the Properties of Steam. The book features legible type set by a computer-controlled typesetting machine. This results in accuracy, compactness, and convenience.

## **Handbook of Liquefied Natural Gas**

This book is concerned with the steady state hydraulics of natural gas and other compressible fluids being transported through pipelines. Our main approach is to determine the flow rate possible and compressor station horsepower required within the limitations of pipe strength, based on the pipe materials and grade. It addresses the scenarios where one or more compressors may be required depending on the gas flow rate and if discharge cooling is needed to limit the gas temperatures. The book is the result of over 38 years of the authors' experience on pipelines in North and South America while working for major energy companies such as ARCO, El Paso Energy, etc.

## **Fundamentals of Natural Gas Processing**

Fluid Mechanics for Chemical Engineers, Second Edition, with Microfluidics and CFD, systematically introduces fluid mechanics from the perspective of the chemical engineer who must understand actual physical behavior and solve real-world problems. Building on a first edition that earned Choice Magazine's Outstanding Academic Title award, this edition has been thoroughly updated to reflect the field's latest advances. This second edition contains extensive new coverage of both microfluidics and computational fluid dynamics, systematically demonstrating CFD through detailed examples using FlowLab and COMSOL Multiphysics. The chapter on turbulence has been extensively revised to address more complex and realistic challenges, including turbulent mixing and recirculating flows.

## **Steam, Its Generation and Use**

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