
Handbook Of Refinery Desulfurization Chemical Industries

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*Petroleum Refining Design and
Applications Handbook* John Wiley &

Sons

For the first time, an essential reference for the multi-billion dollar petrochemical industry that covers the complex topics involved in refining.

Refinery Feedstocks CRC Press

A reference that details the pertinent chemical reactions and emphasizes the plant design and operations of petroleum processing procedures. The handbook is divided into four sections: products, refining, manufacturing processes, and treating processes.

Wherever possible, shortcut methods of calculation

Handbook of Petroleum Refining Elsevier

Advances in Synthesis Gas: Methods, Technologies and Applications: Syngas Purification and Separation considers different common and novel processes

for the purification of produced syngas, such as absorption, adsorption, membrane, cryogenic distillation and particulate separation technologies in addition to thermal and oxidative processes for tar removal. The role of various catalysts or materials in absorption, adsorption and membrane processes are discussed in separate chapters to address each in more detail. Introduces various adsorption and absorption techniques for purifying syngas Describes syngas purification by various membranes Discusses novel technologies for syngas purification *Refining Processes Handbook* John Wiley & Sons

Many oil production processes present a significant challenge to the oil and gas field processing facilities and equipment

design. The optimization of the sequential operations of handling the oil-gas mixture can be a major factor in increasing oil and gas production rates and reducing operating costs. Petroleum and Gas Field Processing provides an all-inclusive guide to surface petroleum operations and solves these and other problems encountered in the field processing of oil and gas. Fully revised and updated to reflect major changes over the past decade or so, this second edition builds on the success attained in the first edition. It delivers an expanded and updated treatment that covers the principles and procedures related to the processing of reservoir fluids for the separation, handling, treatment, and production of quality petroleum oil and gas products. With five new chapters,

this second edition covers additional subjects, in particular natural gas, economics and profitability, oil field chemicals, and piping and pumps. The book also contains worked-out examples and case studies from a variety of oil field operations.

Introduction to Petroleum Biotechnology

John Wiley & Sons

Fouling in Refineries is an important and ongoing problem that directly affects energy efficiency resulting in increased costs, production losses, and even unit shutdown, requiring costly expenditures to clean up equipment and return capacity to positive levels. This text addresses this common challenge for the hydrocarbon processing community within each unit of the refinery. As refineries today face a greater challenge

of accepting harder to process heavier crudes and the ongoing flow of the lighter shale oil feedstocks, resulting in bigger challenges to balance product stability within their process equipment, this text seeks to inform all relative refinery personnel on how to monitor fouling, characterize the deposits, and follow all available treatments. With basic modeling and chemistry of fouling and each unit covered, users will learn how to operate at maximum production rates and elongate the efficiency of their refinery's capacity. Presents an understanding of the breakdown of fouling per refinery unit, including distillation and coking units Provides all the factors, crude types, and refining blends that cause fouling, especially the unconventional feedstocks and high acid

crudes used today Helps users develop an analysis-based treatment and control strategy that empowers them to operate refinery equipment at a level that prevents fouling from occurring
Encyclopedia of Renewable Energy
McGraw Hill Professional
Highlighting the major economic and industrial changes in the lubrication industry since the first edition, Synthetics, Mineral Oils, and Bio-Based Lubricants: Chemistry and Technology, Third Edition highlights the major economic and industrial changes in the lubrication industry and outlines the state of the art in each major lubricant application area. Chapters cover the use of lubricant fluids, growth or decline of market areas and applications, potential new applications, production capacities,

and regulatory issues, including biodegradability, toxicity, and food production equipment lubrication. The highly-anticipated third edition features new and updated chapters including those on automatic and continuously variable transmission fluids, fluids for food-grade applications, oil-soluble polyalkylene glycols, functional bio-based lubricant base stocks, farnesene-derived polyolefins, estolides, bio-based lubricants from soybean oil, and trends in construction equipment lubrication. Features include: Contains an index of terms, acronyms, and analytical testing methods. Presents the latest conventions for describing upgraded mineral oil base fluids. Considers all the major lubrication areas: engine oils, industrial lubricants, food-grade

applications, greases, and space-age applications. Includes individual chapters on lubricant applications—such as environmentally friendly, disk drive, and magnetizable fluids—for major market areas around the globe. In a single, unique volume, Synthetics, Mineral Oils, and Bio-Based Lubricants: Chemistry and Technology, Third Edition offers property and performance information of fluids, theoretical and practical background to their current applications, and strong indicators for global market trends that will influence the industry for years to come.

The Chemistry and Technology of Petroleum IGI Global

This book presents a detailed and practical description of various processes – dewatering, desalting, and

distillation – that prepare refinery feedstocks for different conversion processes they will go through. Relevant process data are provided, and process operations are fully described. This accessible guide is written for managers, professionals, and technicians as well as graduate students transitioning into the refining industry. Key Features:

- Describes feedstock evaluation and the effects of elemental, chemical, and fractional composition.
- Details the equipment and components and possible impacts due to composition.
- Explores the process options and parameters involved in dewatering, desalting, and distillation.
- Considers next-generation processes and developments.

Handbook of Petroleum Refining Processes, Fourth Edition Gulf

Professional Publishing
Petroleum refining and process engineering is constantly changing. No new refineries are being built, but companies all over the world are still expanding or re-purposing huge percentages of their refineries every year, year after year. Rather than building entirely new plants, companies are spending billions of dollars in the research and development of new processes that can save time and money by being more efficient and environmentally safer. Biodesulfurization is one of those processes, and nowhere else it is covered more thoroughly or with more up-to-date research of the new advances than in this new volume from Wiley-Scrivener. Crude oil consists of hydrocarbons, along with other

minerals and trace elements. Sulfur is the most abundant element after carbon and hydrogen, then comes after it nitrogen, and they usually concentrated in the higher boiling fractions of the crude oil. The presence of sulfur compounds causes the corrosion of refining facilities and catalysts poisoning. Moreover, the presence of nitrogen-compounds directly impacts the refining processes via; poisoning the cracking catalysts and inhibiting the hydrodesulfurization catalysts. In addition, both have bad impacts on the environment, throughout the sulfur and nitrogen oxide emissions. Removing this sulfur and nitrogen from the refining process protects equipment and the environment and creates a more efficient and cost-effective process.

Besides the obvious benefits to biodesulfurization, there are new regulations in place within the industry with which companies will, over the next decade or longer, spend literally tens, if not hundreds, of billions of dollars to comply. Whether for the veteran engineer needing to update his or her library, the beginning engineer just learning about biodesulfurization, or even the student in a chemical engineering class, this outstanding new volume is a must-have. Especially it covers also the bioupgrading of crude oil and its fractions, biodenitrogenation technology and application of nanotechnology on both biodesulfurization and denitrogenation technologies.

Introduction to Process Control, Third

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

Refining Processes Handbook Gulf Professional Publishing

There is a renaissance that is occurring in chemical and process engineering, and it is crucial for today's scientists, engineers, technicians, and operators to stay current. With so many changes over the last few decades in equipment and processes, petroleum refining is almost a living document, constantly needing updating. With no new refineries being built, companies are spending their capital re-tooling and adding on to existing plants. Refineries are like small cities, today, as they grow bigger and bigger and more and more complex. A huge percentage of a refinery can be changed, literally, from year to year, to account for the type of crude being refined or to integrate new equipment or processes. This book is the most up-to-date and comprehensive coverage of the

most significant and recent changes to petroleum refining, presenting the state-of-the-art to the engineer, scientist, or student. Useful as a textbook, this is also an excellent, handy go-to reference for the veteran engineer, a volume no chemical or process engineering library should be without. Written by one of the world's foremost authorities, this book sets the standard for the industry and is an integral part of the petroleum refining renaissance. It is truly a must-have for any practicing engineer or student in this area.

Petroleum Biodegradation and Oil Spill Bioremediation CRC Press

Finally, there is a one-stop reference book for the petroleum engineer which offers practical, easy-to-understand responses to complicated technical

questions. This is a must-have for any engineer or non-engineer working in the petroleum industry, anyone studying petroleum engineering, or any reference library. Written by one of the most well-known and prolific petroleum engineering writers who has ever lived, this modern classic is sure to become a staple of any engineer's library and a handy reference in the field. Whether open on your desk, on the hood of your truck at the well, or on an offshore platform, this is the only book available that covers the petroleum engineer's rules of thumb that have been compiled over decades. Some of these "rules," until now, have been "unspoken but everyone knows," while others are meant to help guide the engineer through some of the more recent

breakthroughs in the industry's technology, such as hydraulic fracturing and enhanced oil recovery. The book covers every aspect of crude oil, natural gas, refining, recovery, and any other area of petroleum engineering that is useful for the engineer to know or to be able to refer to, offering practical solutions to everyday engineering problems and a comprehensive reference work that will stand the test of time and provide aid to its readers. If there is only one reference work you buy in petroleum engineering, this is it.

Petroleum and Gas Field Processing

Elsevier

Comprehensive Energy Systems provides a unified source of information covering the entire spectrum of energy, one of the most significant issues

humanity has to face. This comprehensive book describes traditional and novel energy systems, from single generation to multi-generation, also covering theory and applications. In addition, it also presents high-level coverage on energy policies, strategies, environmental impacts and sustainable development. No other published work covers such breadth of topics in similar depth. High-level sections include Energy Fundamentals, Energy Materials, Energy Production, Energy Conversion, and Energy Management. Offers the most comprehensive resource available on the topic of energy systems Presents an authoritative resource authored and edited by leading experts in the field Consolidates information currently

scattered in publications from different research fields (engineering as well as physics, chemistry, environmental sciences and economics), thus ensuring a common standard and language
Lubricant Additives Gulf Professional Publishing

As a follow-up to the Handbook of Gasification Technology, also from Wiley-Scrivener, Synthesis Gas goes into more depth on how the products from this important technology can reduce our global carbon footprint and lead the United States, and other countries, toward energy independence. The environmental benefits are very high, and, along with carbon capture and renewable fuels, synthesis gas (or syngas) is a huge step toward environmental sustainability. Synthesis

gas is one of the most important advancements that has ever occurred in energy production. Using this technology, for example, coal, biomass, waste products, or a combination of two or more of these can be gasified into a product that has roughly half the carbon footprint of coal alone. Used on a massive scale, just think of the potential for reducing carbon emissions! Synthesis Gas covers all aspects of the technology, from the chemistry, processes, and production, to the products, feedstocks, and even safety in the plant. Whether a veteran engineer or scientist using it as a reference or a professor using it as a textbook, this outstanding new volume is a must-have for any library.

Handbook of Spent Hydroprocessing Catalysts CRC Press

In an effort to reduce dependency on fossil fuel resources, biomass could essentially be converted into chemicals using high capacity processes. The Fischer-Tropsch Synthesis (FTS) pathway has been chosen as the focus of this book as it is a mature area, and unlike other pathways such as pyrolysis, FTS is a potential way of producing fuel/hydrocarbons with no sulfur, no nitrogen, and no heavy metals contamination, making it a good choice. Integrating technological development and business development rationales to highlight the key technological developments that are necessary to industrialize biofuels on a global scale, this book focusses on the key challenges that still hinder the effective biomass use and the realization of zero fossil fuel

use. Traditional biomass to hydrocarbons pathways are covered, showcasing how they are tailored to yield a specific group of chemicals with the aim of reducing downstream processes. New developments are considered, including process synthesis, catalysts, and reactors, etc. Providing an up-to-date overview of the production of specialty chemicals and fuels from biomass via the Fischer-Tropsch Synthesis pathway, this title makes an excellent addition to the libraries of academics and practitioners working in catalysis and chemical engineering.

Transport Phenomena

Fundamentals CRC Press
SUSTAINABLE SOLUTIONS FOR
ENVIRONMENTAL POLLUTIONS This
second volume in a broad,

comprehensive two-volume set, "Sustainable Solutions for Environmental Pollution", concentrates on air, water, and soil reclamation, some of the biggest challenges facing environmental engineers and scientists today. This second, new volume in the two-volume set, Sustainable Solutions for Environmental Pollution, picks up where volume one left off, covering the remediation of air, water, and soil environments. Outlining new methods and technologies for all three environmental scenarios, the authors and editor go above and beyond, introducing naturally-based techniques in addition to changes and advances in more standard methods. Written by some of the most well-known and respected experts in the field, with a

prolific and expert editor, this volume takes a multidisciplinary approach, across many scientific and engineering fields, intending the two-volume set as a "one-stop shop" for all of the advances and emerging techniques and processes in this area. This groundbreaking new volume in this forward-thinking set is the most comprehensive coverage of all of these issues, laying out the latest advances and addressing the most serious current concerns in environmental pollution. Whether for the veteran engineer or the student, this is a must-have for any library. This volume: Offers new concepts and techniques for air, water, and soil environment remediation, including naturally-based solutions Provides a comprehensive coverage of removing heavy chemicals

from the environment Offers new, emerging techniques for pollution prevention Is filled with workable examples and designs that are helpful for practical applications Is useful as a textbook for researchers, students, and faculty for understanding new ideas in this rapidly emerging field AUDIENCE: Petroleum, chemical, process, and environmental engineers, other scientists and engineers working in the area of environmental pollution, and students at the university and graduate level studying these areas.

Chemical Reaction Engineering and Reactor Technology, Second Edition CRC Press

The fourth edition of Transport Phenomena Fundamentals continues with its streamlined approach to the

subject, based on a unified treatment of heat, mass, and momentum transport using a balance equation approach. The new edition includes more worked examples within each chapter and adds confidence-building problems at the end of each chapter. Some numerical solutions are included in an appendix for students to check their comprehension of key concepts. Additional resources online include exercises that can be practiced using a wide range of software programs available for simulating engineering problems, such as, COMSOL®, Maple®, Fluent, Aspen, Mathematica, Python and MATLAB®, lecture notes, and past exams. This edition incorporates a wider range of problems to expand the utility of the text beyond chemical engineering. The text is

divided into two parts, which can be used for teaching a two-term course. Part I covers the balance equation in the context of diffusive transport—momentum, energy, mass, and charge. Each chapter adds a term to the balance equation, highlighting that term's effects on the physical behavior of the system and the underlying mathematical description. Chapters familiarize students with modeling and developing mathematical expressions based on the analysis of a control volume, the derivation of the governing differential equations, and the solution to those equations with appropriate boundary conditions. Part II builds on the diffusive transport balance equation by introducing convective transport terms, focusing on partial, rather than ordinary,

differential equations. The text describes paring down the full, microscopic equations governing the phenomena to simplify the models and develop engineering solutions, and it introduces macroscopic versions of the balance equations for use where the microscopic approach is either too difficult to solve or would yield much more information that is actually required. The text discusses the momentum, Bernoulli, energy, and species continuity equations, including a brief description of how these equations are applied to heat exchangers, continuous contactors, and chemical reactors. The book introduces the three fundamental transport coefficients: the friction factor, the heat transfer coefficient, and the mass transfer coefficient in the context of boundary

layer theory. Laminar flow situations are treated first followed by a discussion of turbulence. The final chapter covers the basics of radiative heat transfer, including concepts such as blackbodies, graybodies, radiation shields, and enclosures.

Biomass Processes and Chemicals John Wiley & Sons

This volume offers environmentally friendly technical solutions that can be implemented to solve problems throughout the value chain of the fossil fuel industry. This new book presents an up-to date view of hydrocarbon microbiology and biotechnology, presented by experts around the world with interest in how our expanding understanding of hydrocarbonoclast ecology and physiology can translate to

better tools for bioremediation, oil recovery, bio-upgrading of unconventional crudes, the development of biorefining technologies, and the production of hydrogen and electricity from hydrocarbon wastes. The common theme across the chapters in this book is an interest in how developing hydrocarbon biotechnologies may reduce our impact on the global environment. Written by eminent scientists from both academia and industry, the book starts with a historical perspective on hydrocarbon chemistry and formation, petroleum microbiology, and biotechnology. This is followed by a review of recent research developments in bioremediation and other biotechnologies for hydrocarbons, the principal constituents of petroleum and

natural gas.

Synthesis Gas CRC Press

Petroleum refining involves refining crude petroleum as well as producing raw materials for the petrochemical industry. This book covers current refinery processes and process-types that are likely to come on-stream during the next three to five decades. The book includes (1) comparisons of conventional feedstocks with heavy oil, tar sand bitumen, and bio-feedstocks; (2) properties and refinability of the various feedstocks; (3) thermal processes versus hydroprocesses; and (4) the influence of refining on the environment.

Petroleum Processing Handbook

John Wiley & Sons

ENCYCLOPEDIA OF RENEWABLE ENERGY

Written by a highly respected engineer

and prolific author in the energy sector, this is the single most comprehensive, thorough, and up-to-date reference work on renewable energy. The world's energy industry is and has always been volatile, sometimes controversial, with wild swings upward and downward. This has, historically, been mostly because most of our energy has come from fossil fuels, which is a finite source of energy. Every so often, a technology comes along, like hydrofracturing, that is a game-changer. But is it, really? Aren't we just delaying the inevitable with these temporary price fixes The only REAL game-changer is renewable energy. For decades, renewable energy sources have been sought, developed, and studied. Sometimes wind is at the forefront, sometimes solar, and, for the

last decade or so, there has been a surge in interest for biofeedstocks and biofuels. There are also the “old standbys” of nuclear and geothermal energy, which have both been around for a very long time. This groundbreaking new volume presents these topics and trends in an encyclopedic format, as a go-to reference for the engineer, scientist, student, or even layperson who works in the industry or is simply interested in the topic. Compiled by one of the world’s best-known and respected energy engineers, this is the most comprehensive and up-to-date encyclopedia of renewable energy ever written, a must-have for any library. Encyclopedia of Renewable Energy: Is written in an encyclopedic style,

covering every aspect of renewable energy, including wind, solar, and many other topics Offers a comprehensive coverage of the industry, from the chemical processes of biofeedstocks and biofuels to the machinery and equipment used in the production of fuel and power generation Is filled with workable examples and designs that are helpful for practical applications Covers the state of the art, an invaluable resource for any engineer Audience Engineers across a variety of industries, including wind, solar, process engineering, waste utilization for fuels, and many others, such as process engineers, chemical engineers, electrical engineers, petroleum engineers, civil engineers, and the technicians and other scientists who work in this field

Handbook of Refinery Desulfurization

Gulf Professional Publishing

Over the last several decades, the petroleum industry has experienced significant changes in resource availability, petro-politics, and technological advancements dictated by the changing quality of refinery feedstocks. However, the dependence on fossil fuels as the primary energy source has remained unchanged.

Refinery Feedstocks addresses the problems of changing feedstock availability and properties; the refining process; and solids deposition during refining. This book will take the reader through the various steps that are necessary for crude oil evaluation and refining including the potential for the

use of coal liquids, shale oil, and non-fossil fuel materials (biomass) as refinery feedstocks. Other features: Describes the various types of crude oil and includes a discussion of extra heavy oil and tar sand bitumen Includes basic properties and specifications of crude oil and the significance in refinery operations This book is a handy reference for engineers, scientists, and students who want an update on crude oil refining and on the direction the industry must take to assure the refinability of various feedstocks and the efficiency of the refining processes in the next fifty years. Non-technical readers, with help from the extensive glossary, will also benefit from reading this book.