

Petroleum Refining Gary Handwerk

Modeling and Simulation of Catalytic Reactors for Petroleum Refining
 Handbook of Petroleum Processing
 Real-Time Optimization
 Fundamentals of Petroleum Refining
 Thermal and Catalytic Processes in Petroleum Refining
 The Refinery of the Future
 Petroleum Refinery Process Modeling
 Sm Petroleum Refining
 Petroleum Refining
 Petroleum Refining
 Characterization and Properties of Petroleum Fractions
 Refining Processes Handbook
 Hydroprocessing for Clean Energy
 PETROLEUM REFINING TECHNOLOGY
 Petroleum Refining Processes
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 Experimental Methods for Evaluation of Hydrotreating Catalysts
 Planning and Integration of Refinery and Petrochemical Operations
 Petroleum Refinery Engineering
 Processing of Heavy Crude Oils
 Handbook of Petroleum Product Analysis
 Handbook of Petroleum Refining
 Chemistry of Fossil Fuels and Biofuels
 Thermal and Catalytic Processes in Petroleum Refining
 Petroleum refining : technology and economics
 American Petroleum Refining
 Encyclopedia of Operations Research and Management Science
 Handbook of Offshore Oil and Gas Operations
 Petroleum Refining Design and Applications Handbook, Volume 5
 Handbook of Petroleum Refining Processes
 EPA Office of Compliance Sector Notebook Project
 Handbook of Natural Gas Analysis
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 Petroleum Refining Design and Applications Handbook, Volume 5
 Introduction to Petroleum Refining
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 Handbook of Petroleum Refining Technology
 Petroleum Refining Design and Applications Handbook, Volume 1

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Modeling and Simulation of Catalytic Reactors for Petroleum Refining John Wiley & Sons

This text examines the thermal and catalytic processes involved in the refining of petroleum including visbreaking, coking, pyrolysis, catalytic cracking, oligomerization, alkylation, hydrofining, hydroisomerization, hydrocracking, and catalytic reforming. It analyzes the thermodynamics, reaction mechanisms, and kinetics of each process, as well as

Handbook of Petroleum Processing Springer Science & Business Media

This fully revised resource presents the latest technologies and processes for petroleum refining from the world's leading producers. Handbook of Petroleum Refining Processes has become a key reference in the chemical and petroleum engineering markets. The book is unique in that it presents licensable technologies for the refining of petroleum and production of environmentally acceptable fuels and petrochemical intermediates. The new edition covers the gamut of global refining technologies in light of recent changes to the sources of these fuels, as well as the most up-to-date global environmental regulations. Contributions come from such major licensors of petroleum refining technology as UOP, Inc., Shell, ExxonMobil Research and Engineering Company (EMRE), Chevron Lummus Global, Phillips 66, Belco, BP, and others. The new edition shifts its emphasis to accommodate

the increased production of shale gas and shale oil which is changing the overall mix of hydrocarbon feeds. Declining conventional crude production and the need for regional energy independence continues to drive demand to use lower-cost, alternate feedstocks such as coal, shale oil, and heavy crude. To use alternate feedstocks in existing refineries, many processes need to be modified. The increase in diesel demand and stricter fuel specifications is driving refiners to look for ways to produce higher yields from existing assets. The book reflects these factors, plus the increase in residue conversion; hydrocracking evolving as a primary conversion process; and hydrotreating increasing as a way to treat virgin and cracked middle distillate streams. Offers detailed description of process chemistry and thermodynamics and product by-product specifications of plants Contributors are drawn from the largest petroleum producers in the world, including Chevron, Shell, ExxonMobil, and UOP Covers the very latest technologies in the field of petroleum refining processes and the shift toward shale gas and oil A complete listing and explanation of licensable global technologies for the refining of petroleum and the production of environmentally acceptable fuels and petrochemical intermediates Provides product-by-product specifications and process economics - capital investment annualized capital costs and the price range for each product

Real-Time Optimization Springer Science & Business Media

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

Fundamentals of Petroleum Refining John Wiley & Sons

Discusses the formation, composition, properties and processing of the principal fossil and biofuels, ideal for graduate students and professionals.

Thermal and Catalytic Processes in Petroleum Refining CRC Press

Modeling and Simulation of Catalytic Reactors for Petroleum Refining deals with fundamental descriptions of the main conversion processes employed in the petroleum refining industry: catalytic hydrotreating, catalytic reforming, and fluid catalytic cracking. Common approaches for modeling of catalytic reactors for steady-state and dynamic simulations are also described and analyzed. Aspects such as thermodynamics, reaction kinetics, process variables, process scheme, and reactor design are discussed in detail from both research and commercial points of view. Results of simulation with the developed models are compared with those determined at pilot plant scale as well as commercial practice. Kinetics data used in the reactor model are either taken from the literature or obtained under controlled experiments at the laboratory.

The Refinery of the Future CRC Press

Handbook of Offshore Oil and Gas Operations is an authoritative source providing extensive up-to-date coverage of the technology used in the exploration, drilling, production, and operations in an offshore setting. Offshore oil and gas activity is growing at an expansive rate and this must-have training guide covers the full spectrum including geology, types of platforms, exploration methods, production and enhanced recovery methods, pipelines, and environmental management and impact, specifically worldwide advances in study, control, and prevention of the industry's impact on the marine environment and its living resources. In addition, this book provides a go-to glossary for quick reference. Handbook of Offshore Oil and Gas Operations empowers oil and gas engineers and managers to understand and capture on one of the fastest growing markets in the energy sector today. - Quickly become familiar with the oil and gas offshore industry, including deepwater operations - Understand the full spectrum of the business, including environmental impacts and future challenges - Gain knowledge and exposure on critical standards and real-world case studies

Petroleum Refinery Process Modeling Elsevier

For other editions, see Author Catalog.

Sm Petroleum Refining CRC Press

Introduces the reader to the production of the products in a refinery • Introduces the reader to the types of test methods applied to petroleum products, including the need for specifications • Provides detailed explanations for accurately analyzing and characterizing modern petroleum products • Rewritten to include new and evolving test methods • Updates on the evolving test methods and new test methods as well as the various environmental regulations are presented

Petroleum Refining John Wiley & Sons

This work highlights contemporary approaches to resource utilization and provides comprehensive coverage of technological advances in residuum conversion. It illustrates state-of-the-art engineering methods for the refinement of heavy oils, bitumen, and other high-sulphur feedstocks.

Petroleum Refining John Wiley & Sons

Operations Research: 1934-1941," 35, 1, 143-152; "British The goal of the Encyclopedia of Operations Research and Operational Research in World War II," 35, 3, 453-470; Management Science is to provide to decision makers and "U. S. Operations Research in World War II," 35, 6, 910-925; problem solvers in business, industry, government and and the 1984 article by Harold Lardner that appeared in academia a comprehensive overview of the wide range of Operations Research: "The Origin of Operational Research," ideas, methodologies, and synergistic forces that combine to 32, 2, 465-475. form the preeminent decision-aiding fields of operations research and management science (OR/MS). To this end, we The Encyclopedia contains no entries that define the fields enlisted a distinguished international group of academics of operations research and management science. OR and MS and practitioners to contribute articles on subjects for are often equated to one another. If one defines them by the which they are renowned. methodologies they employ, the equation would probably The editors, working with the Encyclopedia's Editorial stand inspection. If one defines them by their historical Advisory Board, surveyed and divided OR/MS into specific developments and the classes of problems they encompass, topics that collectively encompass the foundations, applica the equation becomes fuzzy. The formalism OR grew out of tions, and emerging elements of this ever-changing field. We the operational problems of the British and U. s. military also wanted to establish the close associations that OR/MS efforts in World War II.

Characterization and Properties of Petroleum Fractions John Wiley & Sons

The Refinery of the Future, Second Edition, delivers useful knowledge that will help the engineer understand the processes involved, feedstocks, composition and future technologies. Covering the basic chemistry, commercial processes already in use and future innovation, this reference gives engineers and managers the tools needed to understand refining products, feedstocks, and the processes critical to convert feedstocks to desired outcomes. New information concerning tight shale formations and heavy oil process options is included for today's operations. Rounding out with future uses in shale, bioliquids and refinery configurations, this book gives engineers and refinery managers the knowledge to update and upgrade their refinery assets. - Links basic petrochemical and refinery knowledge into application for today's oil and gas refining industry - Gives insights into the development and applications of refining process technology, along with the types of feedstock and their properties - Updated with a focus on crude oils recovered from tight shale and sandstone formations, along with increased emphasis on heavy oil and tar sand bitumen

Refining Processes Handbook CRC Press

Petroleum refiners must face billion-dollar investments in equipment in order to meet ever-changing environmental requirements. Because the design and construction of new processing units entail several years' lead time, refiners are reluctant to commit these dollars for equipment that may no longer meet certain conditions when the units come on stream. Written by experts with both academic and professional experience in refinery operation, design, and evaluation, *Petroleum Refining Technology and Economics*, Fifth Edition is an essential textbook for students and a vital resource for engineers. This latest edition of a bestselling text provides updated data and addresses changes in refinery feedstock, product distribution, and processing requirements resulting from federal and state legislation. Providing a detailed overview of today's integrated fuels refinery, the book discusses each major refining process as they relate to topics such as feedstock preparation, operating costs, catalysts, yields, finished product properties, and economics. It also contains end-of-chapter problems and an ongoing case study.

Hydroprocessing for Clean Energy John Wiley & Sons

A comprehensive resource to the origin, properties, and analysis of natural gas and its constituents Handbook of Natural Gas Analysis is a comprehensive guide that includes information on the origin and analysis of natural gas, the standard test methods, and procedures that help with the predictability of gas composition and behavior during gas cleaning operations and use. The author—a noted expert on the topic—also explores the properties and behavior of the various components of natural gas and gas condensate. All chapters are written as stand-alone chapters and they cover a wealth of topics including history and uses; origin and production; composition and properties; recovery, storage, and transportation; properties and analysis of gas stream and gas condensate. The text is designed to help with the identification of quality criteria appropriate analysis and testing that fall under the umbrella of ASTM International. ASTM is an organization that is recognized globally across borders, disciplines and industries and works to improve performance in manufacturing and materials and products. This important guide: Contains detailed information on natural gas and its constituents Offers an analysis of methane, gas hydrates, ethane, propane, butane, and gas condensate Includes information on the behavior of natural gas to aid in the planning for recovery, storage, transportation, and use Covers the test methods that are applicable to natural gas and its constituents Written in accessible and easy-to-understand terms Written for scientists, engineers, analytical chemists who work with natural gas as well as other scientists and engineers in the industry, Handbook of Natural Gas Analysis offers a guide to the analysis, standard test methods, and procedures that aid in the predictability of gas composition and behavior during gas cleaning operations and use.

PETROLEUM REFINING TECHNOLOGY McGraw Hill Professional

This handbook describes and discusses the features that make up the petroleum refining industry. It begins with a description of the crude oils and their nature, and continues with the saleable products from the refining processes, with a review of the environmental impact. There is a complete overview of the processes that make up the refinery with a brief history of those processes. It also describes design technique, operation, and, in the case of catalytic units, the chemistry of the reaction routes. These discussions are supported by calculation procedures and examples, sufficient to enable input to modern computer simulation packages.

Petroleum Refining Processes CRC Press

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 Refining Processes Gulf Professional Publishing

Presents detailed information and study cases on experiments on hydrotreating catalysts for the petroleum industry Catalytic hydrotreating (HDT) is a process used in the petroleum refining industry for upgrading hydrocarbon streams—removing impurities, eliminating metals, converting asphaltene molecules, and hydrocracking heavy fractions. The major applications of HDT in refinery operations include feed pretreatment for conversion processes, post-hydrotreating distillates, and upgrading heavy crude oils. Designing HDT processes and catalysts for successful commercial application requires experimental studies based on appropriate methodologies. *Experimental Methods for Evaluation of Hydrotreating Catalysts* provides detailed descriptions of experiments in different reaction scales for studying the hydrotreating of various petroleum distillates. Emphasizing step-by-step methodologies in each level of experimentation, this comprehensive volume presents numerous examples of evaluation methods, operating conditions, reactor and catalyst types, and process configurations. In-depth chapters describe experimental setup and procedure, analytical methods, calculations, testing and characterization of catalyst and liquid products, and interpretation of experiment data and results. The text describes experimental procedure at different levels of experimentation—glass reactor, batch reactor, continuous stirred tank reactor, and multiple scales of tubular reactors—using model compounds, middle distillates and heavy oil. This authoritative volume: Introduces experimental setups used for conducting research studies, such as type of operation, selection of reactor, and analysis of products Features examples focused on the evaluation of different reaction parameters and catalysts with a variety of petroleum feedstocks Provides experimental data collected from different reaction scales Includes experiments for determining mass transfer limitations and deviation from ideality of flow pattern Presents contributions from leading scientists and researchers in the field of petroleum refining *Experimental Methods for Evaluation of Hydrotreating Catalysts* is an indispensable reference for researchers and professionals working in the area of catalytic hydrotreating, as well as an ideal textbook for courses in fields such as chemical engineering, petrochemical engineering, and biotechnology.

Experimental Methods for Evaluation of Hydrotreating Catalysts CRC Press

Fundamentals of Petroleum Refining presents the fundamentals of thermodynamics and kinetics, and it explains the scientific background essential for understanding refinery operations. The text also provides a detailed introduction to refinery engineering topics, ranging from the basic principles and unit operations to overall refinery economics. The book covers important topics, such as clean fuels, gasification, biofuels, and environmental impact of refining, which are not commonly discussed in most refinery textbooks. Throughout the source, problem sets and examples are given to help the reader practice and apply the fundamental principles of refining. Chapters 1-10 can be used as core materials for teaching undergraduate courses. The first two chapters present an introduction to the petroleum refining industry and then focus on feedstocks and products. Thermophysical properties of crude oils and petroleum fractions, including processes of atmospheric and vacuum distillations, are discussed in Chapters 3 and 4. Conversion processes, product blending, and alkylation are covered in chapters 5-10. The remaining chapters discuss hydrogen production, clean fuel production, refining economics and safety, acid gas treatment and removal, and methods for environmental and effluent treatments. This source can serve both professionals and students (on undergraduate and graduate levels) of Chemical and Petroleum Engineering, Chemistry, and Chemical

Technology. Beginners in the engineering field, specifically in the oil and gas industry, may also find this book invaluable. - Provides balanced coverage of fundamental and operational topics - Includes spreadsheets and process simulators for showing trends and simulation case studies - Relates processing to planning and management to give an integrated picture of refining

[Planning and Integration of Refinery and Petrochemical Operations](#) John Wiley & Sons

The last three chapters of this book deal with application of methods presented in previous chapters to estimate various thermodynamic, physical, and transport properties of petroleum fractions. In this chapter, various methods for prediction of physical and thermodynamic properties of pure hydrocarbons and their mixtures, petroleum fractions, crude oils, natural gases, and reservoir fluids are presented. As it was discussed in Chapters 5 and 6, properties of gases may be estimated more accurately than properties of liquids. Theoretical methods of Chapters 5 and 6 for estimation of thermophysical properties generally can be applied to both liquids and gases; however, more accurate properties can be predicted through empirical correlations particularly developed for liquids. When these correlations are developed with some theoretical basis, they are more accurate and have wider range of applications. In this chapter some of these semitheoretical correlations are presented. Methods presented in Chapters 5 and 6 can be used to estimate properties such as density, enthalpy, heat capacity, heat of vaporization, and vapor pressure. Characterization methods of Chapters 2-4 are used to determine the input parameters needed for various predictive methods. One important part of this chapter is prediction of vapor pressure that is needed for vapor-liquid equilibrium calculations of Chapter 9.

Petroleum Refinery Engineering ASTM International

PETROLEUM REFINING With no new refineries having been built in decades, companies continue to build onto or reverse engineer and re-tool existing refineries. With so many changes in the last few years alone, books like this are very much in need. There is truly a renaissance for chemical and process engineering going on right now across multiple industries. This fifth and final volume in the "Petroleum Refining Design and Applications Handbook" set, this book continues 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. Besides the list below, this groundbreaking new volume describes

blending of products from the refinery, applying the ternary diagrams and classifications of crude oils, flash point blending, pour point blending, aniline point blending, smoke point and viscosity blending, cetane and diesel indices. The volume further reviews refinery operational cost, cost allocation of actual usage, project and economic evaluation involving cost estimation, cash flow involving return on investment, net present values, discounted cash flow rate of return, net present values, payback period, inflation and sensitivity analysis, and so on. It reviews global effects on the refining economy, carbon tax, carbon foot print, global warming potential, carbon dioxide equivalent, carbon credit, carbon offset, carbon price, and so on. It reviews sustainability in petroleum refining and alternative fuels (biofuels and so on), impact of the overall greenhouse effects, carbon capture and storage in refineries, process intensification in biodiesel, biofuel from green diesel, acid-gas removal and emerging technologies, carbon capture and storage, gas heated reformer unit, pressure swing adsorption process, steam methane reforming for fuel cells, grey, blue and green hydrogen production, new technologies for carbon capture and storage, carbon clean process design, refinery of the future, refining and petrochemical industry characteristics. The text is packed with Excel spreadsheet calculations and Honeywell UniSim Design software in some examples, and it includes an invaluable glossary of petroleum and petrochemical technical terminologies. 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.

Processing of Heavy Crude Oils John Wiley & Sons

Provides a holistic approach that looks at changing process conditions, possible process design changes, and process technology upgrades Includes process integration techniques for improving process designs and for applying optimization techniques for improving operations focusing on hydroprocessing units. Discusses in details all important aspects of hydroprocessing - including catalytic materials, reaction mechanism, as well as process design, operation and control, troubleshooting and optimization Methods and tools are introduced that have a successful application track record at UOP and many industrial plants in recent years Includes relevant calculations/software/technologies hosted online for purchasers of the book

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