

The Chemistry And Technology Of Petroleum Fourth Edition Chemical Industries

Recognizing the habit ways to get this book **The Chemistry And Technology Of Petroleum Fourth Edition Chemical Industries** is additionally useful. You have remained in right site to begin getting this info. get the The Chemistry And Technology Of Petroleum Fourth Edition Chemical Industries partner that we allow here and check out the link.

You could purchase guide The Chemistry And Technology Of Petroleum Fourth Edition Chemical Industries or get it as soon as feasible. You could quickly download this The Chemistry And Technology Of Petroleum Fourth Edition Chemical Industries after getting deal. So, taking into account you require the book swiftly, you can straight acquire it. Its as a result unquestionably easy and thus fats, isnt it? You have to favor to in this express

Lubricant Base Oil and Wax Processing - Avilino Sequeira 1994-08-09

Provides state-of-the-art information on all processes currently used to manufacture lubricant base oils and waxes-offering practical, timesaving solutions for specific on-the-job problems. Furnishes helpful lists of conversion factors, construction cost data, and process licensors, as well as a glossary of essential petroleum processing terms.

The Chemistry and Technology of Petroleum - James G. Speight 2006-10-31

Refineries must not only adapt to evolving environmental regulations for cleaner product specifications and processing, but also find ways to meet the increasing demand for petroleum products, particularly for liquid fuels and petrochemical feedstocks. The Chemistry and Technology of Petroleum, Fourth Edition offers a 21st century perspective

An Introduction to Petroleum Technology, Economics, and Politics - James G. Speight 2011-09-19

The perfect primer for both the layperson and the engineer, for the new hire and the old hand, describing, in easy-to-understand language, one of the biggest and most lucrative industries in the world. There is only one substance known to mankind that can cause wars, influence global economies, and make entire countries rich: petroleum. One teaspoon of the stuff carries enough energy to power a ton truck up a hill. It's in the news every single day, it influences our

lives in ways that we cannot fathom, and it is the most important commodity in the world. But how much does the average person, even the average engineer, know about it? This book describes the petroleum industry, in easy-to-understand language, for both the layperson and engineer alike. From the economics of searching for oil and gas to the pitfalls of drilling and production, getting it out of the ground, into pipelines, into refineries, and, finally, into your gas tank, this book covers the petroleum industry like no other treatment before. There is coverage of pricing and the economics of this very important resource, as well, which is useful not only to engineers, but to economists and, really, anyone who uses it. From jet fuel to gasoline to natural gas and plastics, petroleum is one of the integral products of our lives. We are practically bathed in it from birth, our food is protected by it, and it even has healing properties. Learn all about this incredible substance and its fascinating history and highly debated future. An Introduction to Petroleum Technology, Economics, and Politics: Gives a thorough summary of the petroleum and natural gas industry, from prospect to production to pipeline New technologies, such as directional and underbalanced drilling, are covered, in easy-to-understand language Useful not only for newcomers and laypersons, but for engineers and students, particularly those for whom English is a second language Examines the basics of pricing and valuation
Encyclopedic Dictionary of Named Processes in

Chemical Technology, Fourth Edition - Alan E. Comyns 2014-02-21

Since the third edition of this reference was completed, there have been major changes in the global chemical industry. With less emphasis on new processes for making basic chemicals and more emphasis on pollution prevention and waste disposal, petrochemical processes are giving way to biochemical processes. These changes are reflected in the new processes being developed, many of which have their own names. In addition, niche improvements are still being made in petrochemistry, and some of these processes have new names as well.

Gathering and defining a large portion of special named processes that may fall outside standard chemical texts or be scattered among industry manuals, *Encyclopedic Dictionary of Named Processes in Chemical Technology, Fourth Edition* provides a single-source reference on an extensive array of named processes. It provides concise descriptions of those processes in chemical technology that are known by special names that are not self-explanatory. While overviews of the chemical technology industry are present in other books, most of the names defined within this volume are unique to this compilation. This reference includes named processes in current commercial use around the world, processes that have been or are being piloted on a substantial scale, and even obsolete processes that have been important in the past. The length of the dictionary entries reflects their importance and topicality. The text includes references that document the origins of the processes and review the latest developments. Written by a highly experienced and respected author, this user-friendly text is presented in a practical dictionary format that is useful for a broad audience including industrial chemists and engineers.

Coal-Fired Power Generation Handbook - James G. Speight 2013-05-21

The most complete and up-to-date handbook on power generation from coal, this book covers all of today's new, cleaner methods for creating electricity from coal, the environmental challenges and concerns involved in its production, and developing technologies. It describes new technologies that could virtually eliminate the sulfur, nitrogen, and mercury

pollutants released when coal is burned for electricity generation. In addition, the text details technologies for greenhouse gases capture from coal-fired power plants, as well as for preventing such emissions from contributing to global warming.

The Refinery of the Future - James G. Speight 2010-12-21

As feedstocks to refineries change, there must be an accompanying change in refinery technology. This means a movement from conventional means of refining heavy feedstocks using (typically) coking technologies to more innovative processes that will coax the last drips of liquid fuels from the feedstock. This book presents the evolution of refinery processes during the last century and as well as the means by which refinery processes will evolve during the next three-to-five decades. Chapters contain material relevant to (1) comparisons of current feedstocks with heavy oil and bio-feedstocks; (2) evolution of refineries since the 1950s, (3) properties and refinability of heavy oil and bio-feedstocks, (4) thermal processes vs.

hydroprocesses, and (5) evolution of products to match the environmental market. Process innovations that have influenced refinery processing over the past three decades are presented, as well as the relevant patents that have the potential for incorporation into future refineries. • Comparison of current feedstocks with heavy oil and bio-feedstocks. • Evolution of refineries over the past three decades. • Properties and refinability of heavy oil and bio-feedstocks. • Thermal processes vs.

Hydroprocesses. • Evolution of products to match the environmental market. Investigates the engineering and plant design challenges presented by heavy oil and bio-feedstocks Explores the legislative and regulatory climate, including increasingly stringent environmental requirements Examines the trade-offs of thermal processes vs. hydroprocesses

The Biofuels Handbook - James G Speight 2011-07-05

Petroleum-based fuels are well-established products that have served industry and consumers for more than one hundred years. However petroleum, once considered inexhaustible, is now being depleted at a rapid rate. As the amount of available petroleum

decreases, the need for alternative technologies to produce liquid fuels that could potentially help prolong the liquid fuels culture and mitigate the forthcoming effects of the shortage of transportation fuels is being sought. The dynamics are now coming into place for the establishment of a synthetic fuels industry; the processes for recovery of raw materials and processing options have to change to increase the efficiency of oil production and it is up to various levels of government not only to promote the establishment of such an industry but to recognise the need for available and variable technology. This timely handbook is written to assist the reader in understanding the options that available for the production of synthetic fuel from biological sources. Each chapter contains tables of the chemical and physical properties of the fuels and fuel sources. It is essential that the properties of such materials be presented in order to assist the researcher to understand the nature of the feedstocks as well as the nature of the products. If a product cannot be employed for its hope-for-use, it is not a desirable product and must be changed accordingly. Such plans can only be made when the properties of the original product are understood. The fuels considered include conventional and unconventional fuel sources; the production and properties of fuels from biomass, crops, wood, domestic and industrial waste and landfill gas.

Fundamentals of Petroleum and Petrochemical Engineering - Uttam Ray Chaudhuri 2016-04-19
The supply of petroleum continues to dwindle at an alarming rate, yet it is the source of a range of products- from gasoline and diesel to plastic, rubber, and synthetic fiber. Critical to the future of this commodity is that we learn to use it more judiciously and efficiently. *Fundamentals of Petroleum and Petrochemical Engineering* provides a holi

Handbook of Industrial Hydrocarbon

Processes - James G. Speight 2010-12-24

Written by an author with over 38 years of experience in the chemical and petrochemical process industry, this handbook will present an analysis of the process steps used to produce industrial hydrocarbons from various raw materials. It is the first book to offer a thorough analysis of external factors effecting production such as: cost, availability and environmental

legislation. An A-Z list of raw materials and their properties are presented along with a commentary regarding their cost and availability. Specific processing operations described in the book include: distillation, thermal cracking and coking, catalytic methods, hydroprocesses, thermal and catalytic reforming, isomerization, alkylation processes, polymerization processes, solvent processes, water removal, fractionation and acid gas removal. Flow diagrams and descriptions of more than 250 leading-edge process technologies An analysis of chemical reactions and process steps that are required to produce chemicals from various raw materials Properties, availability and environmental impact of various raw materials used in hydrocarbon processing
Advances in Potato Chemistry and Technology - Jaspreet Singh 2009-07-22

Developments in potato chemistry, including identification and use of the functional components of potatoes, genetic improvements and modifications that increase their suitability for food and non-food applications, the use of starch chemistry in non-food industry and methods of sensory and objective measurement have led to new and important uses for this crop. *Advances in Potato Chemistry and Technology* presents the most current information available in one convenient resource. The expert coverage includes details on findings related to potato composition, new methods of quality determination of potato tubers, genetic and agronomic improvements, use of specific potato cultivars and their starches, flours for specific food and non-food applications, and quality measurement methods for potato products. * Covers potato chemistry in detail, providing key understanding of the role of chemical compositions on emerging uses for specific food and non-food applications * Presents coverage of developing areas, related to potato production and processing including genetic modification of potatoes, laboratory and industry scale sophistication, and modern quality measurement techniques to help producers identify appropriate varieties based on anticipated use *Explores novel application uses of potatoes and potato by-products to help producers identify potential areas for development of potato variety and structure

Natural Water Remediation - James G. Speight
2019-08-29

Natural Water Remediation: Chemistry and Technology considers topics such as metal ion solubility controls, pH, carbonate equilibria, adsorption reactions, redox reactions and the kinetics of oxygenation reactions that occur in natural water environments. The book begins with the fundamentals of acid-base and redox chemistry to provide a better understanding of the natural system. Other sections cover the relationships among environmental factors and natural water (including biochemical factors, hydrologic cycles and sources of solutes in the atmosphere). Chemical thermodynamic models, as applied to natural water, are then discussed in detail. Final sections cover self-contained applications concerning composition, quality measurement and analyses for river, lake, reservoir and groundwater sampling. Covers the fundamentals of acid-base and redox chemistry for environmental engineers. Focuses on the practical uses of water, soil mineral and bedrock chemistry and how they impact surface and groundwater. Includes applications concerning composition, quality measurement and analyses for river, lake, reservoir and groundwater sampling.

Handbook of Petroleum Refining - James G. Speight 2016-10-26

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.

Handbook of Natural Gas Transmission and Processing - Saeid Mokhatab 2006

Because natural gas is just that--a gas--it is very difficult to collect, transmit, and process, unlike liquids. You can feel, see, and handle liquids, but not gas. Due to the very bright future of this expanding industry, more books are needed on the shelves of petroleum engineers who are moving from oil to natural gas markets. Most

drilling and petroleum engineers were not schooled specifically as "petroleum engineers," and this creates a dearth of knowledge and expertise in the industrial literature. This gap is usually handled in intracompany ways, through mentoring, company guidelines, and rules of thumb. This book is the "must have" information for the industry today. * First book that treats multiphase flow transmission in great detail * Examines natural gas energy pricing with the aim of answering the relevant questions * Discusses the elements of automating today's gas processing plants and strategies for identifying and quantifying the benefits of automation.

Petroleum Chemistry And Refining - James G. Speight 1997-09-01

Supported by numerous illustrations and references, this book describes the chemistry and physics that occur during the refinery operations, and how the properties of petroleum can be translated into predictability in refinery scenarios. The chapters discuss such topics as: the composition of petroleum, petroleum analysis and evaluation; metals and heteroatoms in petroleum; asphaltenes and the structure of petroleum, thermal chemistry of petroleum constituents; heavy oil upgrading processes; hydrocracking reactions, catalysts, and processes; and instability and incompatibility of petroleum products.

Conditioning Agents for Hair and Skin - Randy Schueller 2020-07-25

Discussing the history, benefits, formulations and future developments of hair and skin conditioning products, this work offers an overview of the subject and unique analysis of the elements of conditioning. It offers the novice chemist a solid foundation of technical knowledge and the seasoned scientist the latest state-of-the-art ingredients and testing procedures used in evaluation.

The Desulfurization of Heavy Oils and Residua - James G. Speight 1999-11-05

"Second Edition expands and updates information on the technological aspects of refining heavy oils, residua, bitumen, and other high-sulfur feedstocks. Focuses on the range of next-generation refining processes."

Chemistry and Technology of Lubricants - R. M. Mortier 1992

Handbook of Petroleum Refining Processes -

Robert A. Meyers 2003-10-14

* 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, Mobil, Shell, Exxon, UOP, and Texaco * Covers the very latest technologies in the field of petroleum refining processes * Completely updated 3rd Edition features 50% all new material

Bioremediation of Petroleum and Petroleum Products -

James G. Speight 2012-11-07
With petroleum-related spills, explosions, and health issues in the headlines almost every day, the issue of remediation of petroleum and petroleum products is taking on increasing importance, for the survival of our environment, our planet, and our future. This book is the first of its kind to explore this difficult issue from an engineering and scientific point of view and offer solutions and reasonable courses of action.
OTS. - United States. Department of Commerce. Office of Technical Services 1972

The Chemistry and Technology of Coal - James G. Speight 2016-11-16

The demand for coal use (for electricity generation) and coal products, particularly liquid fuels and chemical feedstocks, is increasing throughout the world. Traditional markets such as North America and Europe are experiencing a steady increase in demand whereas emerging Asian markets, such as India and China, are witnessing a rapid surge in demand for clean liquid fuels. A detailed and comprehensive overview of the chemistry and technology of coal in the twenty-first century, *The Chemistry and Technology of Coal*, Third Edition also covers the relationship of coal industry processes with environmental regulations as well as the effects of combustion products on the atmosphere. Maintaining and enhancing the clarity of presentation that made the previous editions so popular, this book: Examines the effects of combustion products on the atmosphere Details practical elements of coal evaluation procedures Clarifies misconceptions concerning the organic structure of coal Discusses the physical, thermal, electrical, and mechanical properties of coal Analyzes the development and current status of

combustion and gasification techniques In addition to two new chapters, *Coal Use and the Environment* and *Coal and Energy Security*, much of the material in this edition has been rewritten to incorporate the latest developments in the coal industry. Citations from review articles, patents, other books, and technical articles with substantial introductory material are incorporated into the text for further reference. *The Chemistry and Technology of Coal*, Third Edition maintains its initial premise: to introduce the science of coal, beginning with its formation in the ground to the production of a wide variety of products and petrochemical intermediates in the twenty-first century. The book will prove useful for scientists and engineers already engaged in the coal and/or catalyst manufacturing industry looking for a general overview or update on the clean coal technology as well as professional researchers and students in chemistry and engineering.

Modern Chemical Technology and Emission Control -

M.B. Hocking 2012-12-06
This text of applied chemistry considers the interface between chemistry and chemical engineering, using examples of some of the important processes in industry. Integrated with this is detailed consideration of measures which may be taken for avoidance or control of potential emissions. This new emphasis in applied chemistry has been developed through eight years of experience gained from working in industry in research, development and environmental control fields, plus twelve years of teaching here using this approach. It is aimed primarily towards science and engineering students as well as to environmentalists and practising professionals with responsibilities or an interest in this interface. By providing the appropriate process information back to back with emissions and control data, the potential for process fine-tuning is improved for both raw material efficiency and emission control objectives. This approach also emphasizes integral process changes rather than add-on units for emission control. Add-on units have their place, when rapid action on an urgent emission problem is required, or when control simply is not feasible by process integral changes alone. Obviously fundamental process changes for emission containment are best

conceived at the design stage. However, at whatever stage process modifications are installed, this approach to control should appeal to the industrialist in particular, in that something more substantial than decreased emissions may be gained.

Handbook of Chemical Technology and Pollution Control - Martin B. B. Hocking 2016-04-06

Handbook of Chemical Technology and Pollution Control integrates industrial chemistry with pollution control and environmental chemistry. This unified approach provides practicing professionals and consultants with a concise yet authoritative handbook covering the Key Features, relative importance, and environmental impact of currently operating chemical processes. It also meets the critical needs of students training for industrial careers. *Handbook of Chemical Technology and Pollution Control* considers community, municipal, power generation, industrial, and transportation components of environmental impact. The book covers the major inorganic and organic commodity chemicals; aluminum, iron and steel, and copper production; pulp and paper; fermentation; petroleum production and refining. It also includes key topics and process details for major peterochemicals and large-scale consumer and engineering polymers. This single, convenient volume describes aspects of recycling at the industrial and post-consumer levels, and emphasizes a quantitative approach as used in the author's well-known lifecycle work with disposable and reusable cups.

0-12-350811-8 Key Features * Covers historical background and new developments in a single, authoritative handbook * Presents integrated treatment of chemical technology with emission control chemistry * Includes tables throughout that give current and trend data * Considers community, municipal, power generation, industrial, and transportation components of environmental impact * Provides many references to further reading * Contains review questions that offer working experience with the information and concepts

Asphalt Materials Science and Technology - James G. Speight 2015-10-01

Asphalt is a complex but popular civil engineering material. Design engineers must understand these complexities in order to

optimize its use. Whether or not it is used to pave a busy highway, waterproof a rooftop or smooth out an airport runway, *Asphalt Materials Science and Technology* acquaints engineers with the issues and technologies surrounding the proper selection and uses of asphalts. With this book in hand, researchers and engineering will find a valuable guide to the production, use and environmental aspect of asphalt. Covers the Nomenclature and Terminology for Asphalt including: Performance Graded (PG) Binders, Asphalt Cement (AC), Asphalt-Rubber (A-R) Binder, Asphalt Emulsion and Cutback Asphalt Includes Material Selection Considerations, Testing, and applications Biodegradation of Asphalt and environmental aspects of asphalt use

Handbook of Petroleum Refining Processes, Fourth Edition - Robert A. Meyers 2016-03-18

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

Petroleum Refining - Mark J. Kaiser 2019-09-11

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.

Handbook of Refinery Desulfurization - Nour Shafik El-Gendy 2015-09-18

Handbook of Refinery Desulfurization describes the operation of the various desulfurization process units in a petroleum refinery. It also explains the processes that produce raw materials for the petrochemical industry. It illustrates all the possible processes to lower the sulfur contents in petroleum and its fractions to decrease emissions of sulfur oxides. This book introduces you to desulfurization concepts, including biodesulfurization, as well as technology, giving guidance on how to accomplish desulfurization in various refining processes. It contains background chapters on the composition and evaluation of feedstocks and includes diagrams and tables of feedstocks and their respective produce. It also outlines how to decide which method should be employed to remove sulfur from different feedstocks. A practical and thorough discussion of the field, Handbook of Refinery Desulfurization gives you a strong grasp of the various processes involved with industrial desulfurization while giving you pointers on which procedures to use under certain conditions.

The Chemistry and Technology of Petroleum, Fifth Edition - James G. Speight 2014-02-26

With demand for petroleum products increasing worldwide, there is a tendency for existing refineries to seek new approaches to optimize efficiency and throughput. In addition, changes in product specifications due to environmental regulations greatly influence the development of petroleum refining technologies. These factors underlie the need for this fifth edition of *The Chemistry and Technology of Petroleum*, which continues in the tradition of the bestselling fourth edition, proving readers with a detailed overview of the chemistry and technology of petroleum as it evolves into the twenty-first century. The new edition has been updated with the latest developments in the refining industry, including new processes as well as updates on evolving processes and various environmental regulations. The book covers issues related to economics and future refineries, examines the

changing character of refinery feedstock, and offers new discussions on environmental aspects of refining. It contains more than 300 figures and tables, including chemical structures and process flow sheets. A useful reference for scientists and engineers in the petroleum industry as well as in the catalyst manufacturing industry, this book introduces readers to the science and technology of petroleum, beginning with its formation in the ground and culminating in the production of a wide variety of products and petrochemical intermediates.

The Chemistry and Technology of Coal, Third Edition - James G. Speight 2012-09-04

The demand for coal use (for electricity generation) and coal products, particularly liquid fuels and chemical feedstocks, is increasing throughout the world. Traditional markets such as North America and Europe are experiencing a steady increase in demand whereas emerging Asian markets, such as India and China, are witnessing a rapid surge in demand for clean liquid fuels. A detailed and comprehensive overview of the chemistry and technology of coal in the twenty-first century, *The Chemistry and Technology of Coal, Third Edition* also covers the relationship of coal industry processes with environmental regulations as well as the effects of combustion products on the atmosphere. Maintaining and enhancing the clarity of presentation that made the previous editions so popular, this book: Examines the effects of combustion products on the atmosphere Details practical elements of coal evaluation procedures Clarifies misconceptions concerning the organic structure of coal Discusses the physical, thermal, electrical, and mechanical properties of coal Analyzes the development and current status of combustion and gasification techniques In addition to two new chapters, *Coal Use and the Environment* and *Coal and Energy Security*, much of the material in this edition been rewritten to incorporate the latest developments in the coal industry. Citations from review articles, patents, other books, and technical articles with substantial introductory material are incorporated into the text for further reference. *The Chemistry and Technology of Coal, Third Edition* maintains its initial premise: to introduce the science of coal, beginning with its formation in the ground to the production of a

wide variety of products and petrochemical intermediates in the twenty-first century. The book will prove useful for scientists and engineers already engaged in the coal and/or catalyst manufacturing industry looking for a general overview or update on the clean coal technology as well as professional researchers and students in chemistry and engineering. *The Chemistry and Technology of Petroleum, Fourth Edition* - James G. Speight 2006-10-31 Refineries must not only adapt to evolving environmental regulations for cleaner product specifications and processing, but also find ways to meet the increasing demand for petroleum products, particularly for liquid fuels and petrochemical feedstocks. *The Chemistry and Technology of Petroleum, Fourth Edition* offers a 21st century perspective on the development of petroleum refining technologies. Like its bestselling predecessors, this volume traces the science of petroleum from its subterranean formation to the physicochemical properties and the production of numerous products and petrochemical intermediates. Presenting nearly 50 percent new material, this edition emphasizes novel refining approaches that optimize efficiency and throughput. It includes new chapters on heavy oil and tar sand bitumen recovery, deasphalting and dewaxing processes, and environmental aspects of refining, including refinery wastes, regulations, and analysis. The text also features revised and expanded coverage of instability and incompatibility, refinery distillation, thermal cracking, hydrotreating and desulfurization, hydrocracking, and hydrogen production. A unique, well-documented, and forward-thinking work, this book continues to present the most complete coverage of petroleum science, technology, and refining available. *The Chemistry and Technology of Petroleum, Fourth Edition* provides an ideal platform for scientists, engineers, and other professionals to achieve cleaner and more efficient petroleum processing methods.

Fundamentals of Petroleum Refining - Mohamed A. Fahim 2009-11-19

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

Handbook of Petrochemical Processes - James G. Speight 2019-06-13

The petrochemical industry is a scientific and engineering field that encompasses the production of a wide range of chemicals and polymers. The purpose of this book is not only to provide a follow-on to form the later chapters of the highly successful *Chemistry and Technology of Petroleum* 5th Edition but also provides a simplified approach to a very diverse chemical subject dealing with the chemistry and technology of various petroleum and petrochemical process. Following from the introductory chapters, this book provides the

readers with a valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis. Provides readers with a valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis Introduces the reader to the various petrochemical intermediates are generally produced by chemical conversion of primary petrochemicals to form more complicated derivative products The reactions and processes involved in transforming petroleum-based hydrocarbons into the chemicals that form the basis of the multi-billion dollar petrochemical industry are reviewed and described The book includes information on new process developments for the production of raw materials and intermediates for petrochemicals Includes a description of the origin of the raw materials for the petrochemicals industry - including an overview of the coal chemicals industry

Handbook of Oil Spill Science and Technology - Merv Fingas 2015-02-02

Provides a scientific basis for the cleanup and for the assessment of oil spills Enables Non-scientific officers to understand the science they use on a daily basis Multi-disciplinary approach covering fields as diverse as biology, microbiology, chemistry, physics, oceanography and toxicology Covers the science of oil spills from risk analysis to cleanup and through the effects on the environment Includes case studies examining and analyzing spills, such as Tasman Spirit oil spill on the Karachi Coast, and provides lessons to prevent these in the future

Chemistry of Petrochemical Processes - Sami Matar, Ph.D. 2001-07-26

In *Chemistry of Petrochemical Processes*, readers find a handy and valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis. The book reviews and describes the reactions and processes involved in transforming petroleum-based hydrocarbons into the chemicals that form the basis of the multi-billion dollar petrochemical industry. In addition, the book includes information on new process developments for the production of raw materials and intermediates for petrochemicals

that have surfaced since the book's first edition. Provides a quick understanding of the chemical reactions associated with oil and gas processing. Contains insights into petrochemical reactions and products, process technology, and polymer synthesis

Petroleum Refining - James H. Gary

2001-02-06

Continuing the tradition and high standards set by earlier editions, *Petroleum Refining, Fourth Edition* summarizes recent developments in oil refining processes, addressing topics ranging from basic applications to the implementation of viable operations that meet environmental and economic stipulations. Maintaining the clear and systematic style of presentation that sent the previous editions into more than 25 printings, *Petroleum Refining, Fourth Edition* incorporates valuable statistics on utility data, investment, and operating costs for estimating the economics of refining configurations! Describes petroleum's physical and chemical properties. Satisfies "short-term" demands from recent legal standpoints for creating reformulated fuels. Reviews petroleum-refining technology and all the major refining processes. Considers environmental concerns, the place of reformulated fuels in product distribution, and uses for heavier crude oils and crude oils with higher sulfur and metal contents. Enables complete material balances to be made from physical properties and typical yield data. Advancing the successful features that led to the adoption of previous editions at numerous colleges and universities, including Harvard University, the Colorado School of Mines, the University of Houston, and the University of Pittsburgh, the Fourth Edition also offers End-of-chapter problems, equations, illustrative tables, notes, and bibliographies. An ongoing case-study problem. Convenient and helpful appendices on an economic evaluation problem, terminology, physical properties, analyses of selected crude oils, and photographs. Written by experts combining academic and professional experience, *Petroleum Refining, Fourth Edition* is an essential text for all upper-level undergraduate, graduate, and continuing-education students taking courses in petroleum-refinery processing. It also serves as a helpful resource for chemical, petroleum, refining, and

process design engineers; refinery management personnel; and energy consultants.

Elements of Petroleum Refinery Engineering - O.P. Gupta 2015

This book is targeted to benefit the diploma in engineering students. Degree in engineering students (B.Tech-Chemical Engineering, Petroleum Engineering, Petrochemical Engineering, Aeronautical Engg., AMIE, AMIICHE, students etc. M. Tech students of various disciplines pursuing courses on petroleum refining. Faculty members/ teaching staff of engineering college/IIT's/NIT"s etc. Practicing petroleum engineers/consultants/refiners in various private sector/public sector undertakings, state/central government departments, NGO's etc. Students of foreign universities of developing countries pursuing diploma/degree/postgraduate courses in various engineering disciplines having a paper in petroleum refinery engineering.

Hydroprocessing of Heavy Oils and Residua - Jorge Ancheyta 2007-05-08

Many oil refineries employ hydroprocessing for removing sulfur and other impurities from petroleum feedstocks. Capable of handling heavier feedstocks than other refining techniques, hydroprocessing enables refineries to produce higher quality products from unconventional — and formerly wasted — sources. *Hydroprocessing of Heavy Oils and Residua* illustrates how to obtain maximum yields of high-value products from heavy oils and residue using hydroprocessing technologies. While most resources on hydroprocessing concentrate on gas oil and lower boiling products, this book details the chemistry involved and the process modifications required for the hydroprocessing of heavy crude oils and residua. Emphasizing the use of effective catalysts to ensure cleaner and more efficient industrial fuel processes, the book presents key principles of heterogeneous catalyst preparation, catalyst loading, and reactor systems. It explains how to evaluate and account for catalysts, reactor type, process variables, feedstock type, and feedstock composition in the design of hydroprocessing operations. The text concludes with examples of commercial processes and discusses methods of hydrogen production. To meet the growing demand for

transportation fuels and fuel oil, modern oil refineries must find ways to produce high quality fuel products from increasingly heavy feedstocks. Hydroprocessing of Heavy Oils and Residua contains the fundamental concepts, technologies, and process modifications refineries need to adapt current hydroprocessing technologies for processing heavier feedstocks.

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

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

Petroleum Biodegradation and Oil Spill Bioremediation - Karuna K. Arjoon 2022-12-22
The prime focus of the book is to determine the mechanism, extent, and efficiency of biodegradation processes, as it is necessary to

know the composition of the original crude oil or crude oil product. The technology of bioremediation and the concerns of whether or not bioremediation technologies can accelerate this natural process enough to be considered practical, and, if so, whether they might find a niche as replacements for, or adjuncts to, other crude oil-spill response technologies. This book also introduces the reader to the science of the composition of crude oil and crude oil products is at the core of understanding the chemistry of biodegradation and bioremediation processes.

Process Chemistry of Petroleum Macromolecules
- Irwin A. Wiehe 2008-06-20

Although there is a shortage of light petroleum, there is plenty of heavy petroleum rich in macromolecules available, creating an increasing interest for processes that can convert heavy oils to light oils. *Process Chemistry of Petroleum Macromolecules* provides the scientific basis for such processes, presenting methods to determine improvement potential. Topics include characterization, thermal kinetics, phase behavior, and separation. Revealing that the science of petroleum macromolecules is simpler and more exciting than imagined, it also discusses macromolecules that self-associate, liquid crystalline phases, reactions triggered by phase separation, and both dispersed and dissolved solutes.