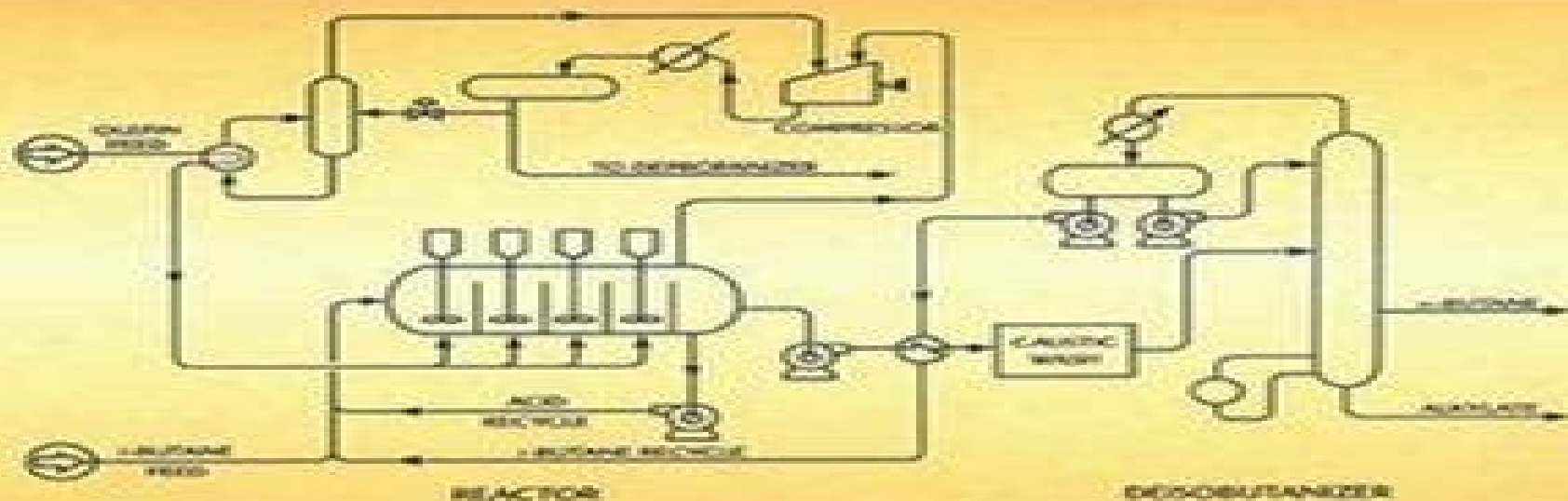


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Fifth Edition



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Petroleum Refining Technology And Economics Fifth Edition

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Petroleum Refining James H. Gary, Glenn E. Handwerk, Mark J. Kaiser, 2007-03-05 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 *Petroleum Refining* James H. Gary, 2007 *Solutions Manual for Petroleum Refining Technology and Economics* James H. Gary, Kaiser Mark J, 2006-11-15 **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 *Elements of Petroleum Refinery Engineering* O.P. Gupta, 2015-12 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 NITs 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

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Petroleum Refining Mark J. Kaiser, Arno de Klerk, James H. Gary, Glenn E. Handwerk, 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

The Refinery of the Future James G. Speight, 2020-07-25 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.

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Heavy Oil Recovery and Upgrading James G. Speight, 2019-02-28. Heavy Oil Recovery and Upgrading covers properties, factors, methods, and all current and upcoming processes, giving engineers new and experienced the full spectrum of recovery choices, including SAGD, horizontal well technology, and hybrid approaches. Moving on to the upgrading and refining of the product, the book also includes information on in situ upgrading, refining options, and hydrogen production. Rounding out with environmental effects, management methods on refinery waste, and the possible future configurations within the refinery, this book provides engineers with a single source to make decisions and manage the full range of challenges. Presents the properties, mechanisms, screening criteria, and field applications for heavy oil enhanced recovery projects. Includes current upgrading options and future methods for refining heavy oil development. Fills in the gaps between literature and practical application for everyday industry reference.

Introduction to Enhanced Recovery Methods for Heavy Oil and Tar Sands James G. Speight, 2016-02-24. Introduction to Enhanced Recovery Methods for Heavy Oil and Tar Sands, Second Edition, explores the importance of enhanced oil recovery (EOR) and how it has grown in recent years thanks to

the increased need to locate unconventional resources such as heavy oil and shale Unfortunately petroleum engineers and managers aren't always well versed in the enhancement methods that are available when needed or the most economically viable solution to maximize their reservoir's productivity This revised new edition presents all the current methods of recovery available including the pros and cons of each Expanded and updated as a great preliminary text for the newcomer to the industry or subject matter this must have EOR guide teaches all the basics needed including all thermal and non thermal methods along with discussions of viscosity sampling and the technologies surrounding offshore applications Enables users to quickly learn how to choose the most efficient recovery method for their reservoir while evaluating economic conditions Presents the differences between each method of recovery with newly added real world case studies from around the world Helps readers stay competitive with the growing need of extracting unconventional resources with new content on how these complex reservoirs interact with injected reservoir fluids

Fouling in Refineries James G. Speight, 2015-05-14

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

Petroleum Refining Mark J. Kaiser, Arno de Klerk, James H. Gary, Glenn E. Handwerk, 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 Natural Gas James G. Speight, 2018-11-26 **Natural Gas A Basic Handbook Second Edition** provides the reader with a quick and accessible introduction to a fuel source industry that is transforming the energy sector Written at an introductory level but still appropriate for engineers and other technical readers this book provides an overview of natural gas as a fuel source including its origins properties and composition Discussions include the production of natural gas from traditional and unconventional sources the downstream aspects of the natural gas industry including processing storage and transportation and environmental issues and emission controls strategies This book presents an ideal resource on the topic for engineers new to natural gas for advisors and consultants in the natural gas industry and for technical readers interested in learning more about this clean burning fuel source and how it is shaping the energy industry Updated to include newer sources like shale gas Includes new discussions on natural gas hydrates and flow assurance Covers environmental issues Contain expanded coverage of liquefied natural gas LNG **Natural Water Remediation** James G. Speight, 2019-08-30 **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 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 *Ludwig's Applied Process Design for Chemical and Petrochemical Plants Incorporating Process*

Safety Incidents A. Kayode Coker, 2024-06-08 Ludwig's Applied Process Design for Chemical and Petrochemical Plants Incorporating Process Safety Incidents Fifth Edition Volume One is ever evolving and provides improved techniques and fundamental design methodologies to guide the practicing engineer in designing process equipment and applying chemical processes to properly detailed hardware Like its predecessor this new edition continues to present updated information for achieving optimum operational and process conditions and avoiding problems caused by inadequate sizing and lack of internally detailed hardware The volume provides both fundamental theories where applicable and direct application of these theories to applied equations essential in the design effort This approach in presenting design information is essential for troubleshooting process equipment and in executing system performance analysis Volume 1 covers process planning flow sheeting scheduling cost estimation economic factors physical properties of liquids and gases fluid flow mixing of liquids mechanical separations process safety pressure relieving devices metallurgy and corrosion and process optimization The book builds upon Ludwig's classic text to further enhance its use as a chemical engineering process design manual of methods and proven fundamentals This new edition includes new content on three phase separation ejectors and mechanical vacuum systems process safety management HAZOP and hazard analyses and optimization of chemical process blending Provides improved design manual for methods and proven fundamentals of process design with related data and charts Covers a complete range of basic day to day petrochemical operation topics Extensively revised with new materials on Non Newtonian fluids homogeneous and heterogeneous flow and pressure drop ejectors phase separation metallurgy and corrosion and optimization of chemical process blending Presents many examples using Honeywell UniSim Design software developed and executable computer programs and Excel spreadsheet programs Includes case studies of process safety incidents guidance for troubleshooting and checklists Includes Software of Conversion Table and 40 process data sheets in excel format

High Acid Crudes James G. Speight, 2014-04-30 High Acid Crudes quickly gets the refinery manager and all other relative personnel up to date on this particular type of feedstock by providing an overview and relevant details of the identification of high acid crudes and their influence on the refinery's process units especially regarding corrosion potential Covering the types effects on the various refining units and proper acid stripping techniques High Acid Crudes effectively trains refinery personnel with a quick reference guide for day to day use in today's refineries Due to their discounted value but potential for higher production rates refineries are accepting more of high acidic crude feedstocks otherwise referred to as opportunity or challenging crude oils Refining of these resources is still increasing due to high oil prices with China dominating this market and doubling their production of high acid crudes by 2015 Processing these resources can significantly increase any refinery's productivity but knowledge and proper training for the refinery manager and crude supplier is key to reducing the risk that is commonly associated with high acid feedstocks while still maintaining clean production standards Provides an overview of the identification of high acid crudes and their influence on the refinery's

process units Covers the types of high acid crudes effects on the various refining units and proper acid stripping techniques
 Trains refinery personnel as a quick reference guide for day to day use for today s refinery **Handbook of Industrial Hydrocarbon Processes** James G. Speight, 2019-11-21 Handbook of Industrial Hydrocarbon Processes Second Edition provides an analysis of the process steps required to produce hydrocarbons from various raw materials and how the choice of a process depends not only on technology but also on external effects such as social and economic developments political factors affecting the availability of raw materials and environmental legislation This book qualitatively examines chemical processes and plant design by showing the factors determining process structures including the underlying chemistry feedstock product specifications and reactor design The book also compares the processes for different products based on raw materials and manufacturing processes based on their respective applications With the addition of useful flowcharts that present an overview of the chemical processes process design and equipment this book is a valuable resource to industry professionals on how to understand how hydrocarbons are produced from different raw materials and how to develop an instinct for the right process development strategy Provides a qualitative analysis of chemical processes and plant design by showing the factors determining process structures Presents chemical processes in an organized easy to read and understandable manner with the use of useful flowcharts and concise descriptions Includes updates on changes in existing technological and chemical processes as well as possible future improvements or changes to other more economic or more readily available feedstocks **Heavy and Extra-heavy Oil Upgrading Technologies** James G. Speight, 2013-04-12 Unconventional reservoirs of oil and gas represent a huge additional global source of fossil fuels However there is much still to be done to improve techniques for their processing to make recovery and refining of these particular energy sources more cost effective Brief but readable Heavy and Extra heavy Oil Upgrading Technologies provide readers with a strategy for future production the up stream and upgrading the down stream The book provides the reader with an understandable overview of the chemistry and engineering behind the latest developments and technologies in the industry as well as the various environmental regulations Clear and rigorous Heavy and Extra heavy Oil Upgrading Technologies will prove tool for those scientists and engineers already engaged in fossil fuel science and technology as well as scientists non scientists engineers and non engineers who wish to gain a general overview or update of the science and technology of unconventional fossil fuels in general and upgrading technologies in particular The use of microorganisms and a number of physical methods such as ultrasound median microwave cold plasma electrokinetic and monocrystalline intermetallics etc will be discussed for the first time Overview of the chemistry engineering and technology of oil sands Microorganisms and a number of physical methods such as ultrasound median microwave cold plasma electrokinetic and monocrystalline intermetallics Evolving and new environmental regulations regarding oil sands production processes

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