

Petrochemical Processes Volume 1 Synthesis Gas Derivatives And Major Hydrocarbons

Petrochemical Processes....Editions OPHRYSPetrochemical Processes....Editions OPHRYSChemistry of Petrochemical ProcessesButterworth-Heinemann

Molecular Sieves - Science and Technology will cover, in a comprehensive manner, the science and technology of zeolites and all related microporous and mesoporous materials. Authored by renowned experts, the contributions will be grouped together topically in such a way that each volume of the book series will be dealing with a specific sub-field. Volume 1 will be entirely devoted to the science of synthesizing molecular sieve materials and include aluminosilicate zeolites, porosils, silica and silica-alumina with ordered mesopores, microporous materials with elements other than silicon and aluminum in the framework and pillared clays.

Chemical Engineering and Chemical Process Technology is a theme component of Encyclopedia of Chemical Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty Encyclopedias. Chemical engineering is a branch of engineering, dealing with processes in which materials undergo changes in their physical or chemical state. These changes may concern size, energy content, composition and/or other application properties. Chemical engineering deals with many processes belonging to chemical industry or related industries (petrochemical, metallurgical, food, pharmaceutical, fine chemicals, coatings and colors, renewable raw materials, biotechnological, etc.), and finds application in manufacturing of such products as acids, alkalis, salts, fuels, fertilizers, crop protection agents, ceramics, glass, paper, colors, dyestuffs, plastics, cosmetics, vitamins and many others. It also plays significant role in environmental protection, biotechnology, nanotechnology, energy production and sustainable economical development. The Theme on Chemical Engineering and Chemical Process Technology deals, in five volumes and covers several topics such as: Fundamentals of Chemical Engineering; Unit Operations – Fluids; Unit Operations – Solids; Chemical Reaction Engineering; Process Development, Modeling, Optimization and Control; Process Management; The Future of Chemical Engineering; Chemical Engineering Education; Main Products, which are then expanded into multiple subtopics, each as a chapter. These five volumes are aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

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

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have

recently been entered into the NASA Scientific and Technical Information Database.

This book describes recent progress in enzyme-driven green syntheses of industrially important molecules. The first three introductory chapters overview recent technological advances in enzymes and cell-based transformations, and green chemistry metrics for synthetic efficiency. The remaining chapters are directed to case studies in biotechnological production of pharmaceuticals (small molecules, natural products and biologics), flavors, fragrance and cosmetics, fine chemicals, value-added chemicals from glucose and biomass, and polymeric materials. The book is aimed to facilitate the industrial applications of this powerful and emerging green technology, and catalyze the advancement of the technology itself.

"The Handbook of Bioplastics & Biocomposites Engineering Applications brings together scientists, from academia and industries, to report on current research and applications, in the bioplastics and biocomposites arena, that integrates pure and applied sciences such as chemistry, engineering and materials science. The Handbook focuses on five main categories of applications: Packaging, Civil Engineering, Biomedical, Automotive, General Engineering"--

The two-volume reference work Chemical Technology and the Environment provides readers with knowledge on contemporary issues in environmental pollution, prevention and control, as well as regulatory, health and safety issues as related to chemical technology. It introduces and expands the knowledge on emerging "green" materials and processes and "greener" energy technology, as well as more general concepts and methodology including sustainable development and chemistry and green chemistry. Based on Wiley's renowned, Kirk-Othmer Encyclopedia of Chemical Technology, this compact reference features the same breadth and quality of coverage and clarity of presentation found in the original.

A comprehensive resource that provides an overview of the uses for common petrochemical building blocks, a review of the marketplaces, and offers a survey of the technology used to make the key petrochemical building blocks.

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

Volume 11 of the Handbook of Green Chemistry series identifies, explains and expands on green chemistry and engineering metrics, describing how the two work together, backed by numerous practical applications. Up-to-date and

authoritative, this ready reference covers the development and application of sustainable chemistry along with engineering metrics in both academia and industry, providing the latest information on fundamental aspects of metrics, practical realizations and example case studies. Additionally, it outlines how metrics have been used to facilitate developments in sustainable and green chemistry. The different concepts of and approaches to metrics are applied to fundamental problems in chemistry and the focus is firmly placed on their use to promote the development and implementation of more sustainable and green chemistry and technology in the production of chemicals and related products. Starting with molecular design, followed by chemical route evaluation, chemical process metrics and product assessment, by the end readers will have a complete set of metrics to choose from as they move a chemical conception to final product. Of high interest to academics and chemists working in industry.

This monography presents the tools available for the follow-up and the analysis of the energy input to the refining and petrochemicals industries. The first part familiarizes the reader with energy accounting in a production plant. This analytic accounting presents separately the quantitative, qualitative and economic aspects of using energy. The second part treats of the thermodynamic analysis of energy input based on the exergy (available work) balances. Apart from leading to a judgement of how efficiently the energy is put to work in the applied technology, the reader also finds a guide to distillation column sequencing and heat exchange network synthesis. The thermoeconomics are also dealt with. This book is written for the practicing engineer in industry and for the postgraduate students.

This volume describes the characteristics of processes used in petroleum refining: upgrading light fractions (reforming and isomerization), converting distillates (catalytic cracking, hydrocracking, and associated equipment), converting residues (visbreaking, coking hydroconversion), and reducing air and water pollution (white product sweetening, acid gas, stack gas, and waste water treatment). This book is available in French Under the title "le raffinage du pétrole. Tome 3. Procédés de transformation". Contents : 1. Introduction. 2. Basic principles governing chemical changes. 3. Industrial catalysts. 4. Catalytic reforming. 5. Catalytic cracking. 6. Isomerization of light paraffins. 7. Aliphatic alkylation. 8. Olefin etherification. 9. Oligomerization. 10. Hydrocracking. 11. Visbreaking of residues. 12. Coking. 13. Residue hydroconversion. 14. Hydrogen production. 15. White products refining by sweetening. 16. Hydrotreating. 17. Acid gas treatment. 18. Desulfurization of stack gases. 19. Water treatment. References. Index.

The fourth edition of Ludwig's Applied Process Design for Chemical and Petrochemical Plants, Volume Three is a core reference for chemical, plant, and process engineers and provides an unrivalled reference on methods, process fundamentals, and supporting design data. New to this edition are expanded chapters on heat transfer plus additional chapters focused on the design of shell and tube heat exchangers, double pipe heat exchangers and air coolers. Heat tracer requirements for pipelines and heat loss from insulated pipelines are covered in this new edition, along with batch heating and cooling of process fluids, process integration, and industrial reactors. The book also looks at the troubleshooting of process equipment and corrosion and metallurgy. Assists engineers in rapidly analyzing problems and finding effective design methods and mechanical specifications Definitive guide to the selection and design of various equipment types, including heat

exchanger sizing and compressor sizing, with established design codes Batch heating and cooling of process fluids supported by Excel programs

"Frontiers in Medicinal Chemistry" is an Ebook series devoted to the review of areas of important topical interest to medicinal chemists and others in allied disciplines. "Frontiers in Medicinal Chemistry" covers all the areas of medicinal chemistry, incl"

Full coverage of electronics, MEMS, and instrumentation and control in mechanical engineering This second volume of Mechanical Engineers' Handbook covers electronics, MEMS, and instrumentation and control, giving you accessible and in-depth access to the topics you'll encounter in the discipline: computer-aided design, product design for manufacturing and assembly, design optimization, total quality management in mechanical system design, reliability in the mechanical design process for sustainability, life-cycle design, design for remanufacturing processes, signal processing, data acquisition and display systems, and much more. The book provides a quick guide to specialized areas you may encounter in your work, giving you access to the basics of each and pointing you toward trusted resources for further reading, if needed. The accessible information inside offers discussions, examples, and analyses of the topics covered, rather than the straight data, formulas, and calculations you'll find in other handbooks. Presents the most comprehensive coverage of the entire discipline of Mechanical Engineering anywhere in four interrelated books Offers the option of being purchased as a four-book set or as single books Comes in a subscription format through the Wiley Online Library and in electronic and custom formats Engineers at all levels will find Mechanical Engineers' Handbook, Volume 2 an excellent resource they can turn to for the basics of electronics, MEMS, and instrumentation and control.

This title aims to teach how to invent optimal and sustainable chemical processes by making use of systematic conceptual methods and computer simulation techniques. The material covers five sections: process simulation; thermodynamic methods; process synthesis; process integration; and design project including case studies. It is primarily intended as a teaching support for undergraduate and postgraduate students following various process design courses and projects, but will also be of great value to professional engineers interested in the newest design methods. Provides an introduction to the newest design methods. Of great value to undergraduate and postgraduate students as well as professional engineers. Numerous examples illustrate theoretical principles and design issues.

This proceedings book brings together the leading innovations and achievements by leading professionals. It acts as a forum for engineers, scientists, researchers, managers and students from academia and industry to present and discuss progress being made in research and application of computer-aided process engineering.

Having gained considerable experience in process development at the Institut FranCais du PEtrole, the authors present a design framework, a review of the available means of investigation, and several examples illustrating their methodology of industrial process scale up. The salient feature of the book is the fact that it addresses a subject which is vital in view of its economic repercussions, yet relatively unknown in technical and scientific circles, due to the confidentiality surrounding it. Contents: 1. Main guidelines of the methodology. 2. Various types of model. 3. Pilot plants and mock-ups. 4. Experimental techniques. 5. Applications to industrial process development. 6. Conclusions. References. Index.

Keywords: "This two-volume set provides an excellent source of information on the state of the art in femtosecond

spectroscopy. It is an invaluable reference for experts in the field as well as those interested in mastering the experimental and theoretical aspects of ultrafast time-resolved spectroscopy." J Am Chem Soc.

A hands on reference guide for scientists working in the fields of chemistry, physics, materials science, polymer science, solid-state physics, devices, nanotechnology or supramolecular science of carbon nanomaterials. In-depth and comprehensive coverage of topics combined with the perspectives for future research by the contributing authors. An invaluable reference source essential for both beginning and advanced researchers in the field.

Many new methods directed to organic and inorganic syntheses of useful intermediates are being developed to specifically address green and sustainable chemistry principles. Highlighting the importance of green metrics, the Green Syntheses series focuses on how to reliably substantiate and validate the level of "greenness" of chemical processes, providing practical synthetic methodologies and metrics for a rigorous proof of "greenness." In Green Syntheses, Volume 1, the first book of its kind, the editors determine appropriate material efficiency green metrics and use them to compare syntheses provided by the chapter authors with those previously published. Presenting a new concept in green chemistry, this book demonstrates what future publications might look like if green principles are followed and also incorporate the important ethical aspect of supplying rigorous procedures in laboratory practice and evidence of greenness of a given synthesis protocol using metrics analysis. This inaugural volume initiates the much-needed transition from stating the 12 guiding principles on the philosophy of green chemistry to the actualization and verification of it. The book addresses primarily the issue of material efficiency metrics, which measure the amount of waste produced relative to desired product. In each contributed example, full experimental details are given showing all quantities of materials used in the procedure. Authors discuss the green merits of their protocols in conjunction with the results of a thorough metrics analysis, allowing for in-depth discussion of insights about synthesis strategy and performance characteristics of the new and prior cited plans.

Fluoropolymers display a wide range of remarkable properties and are used in a number of applications including high performance elastomers, thermoplastics, coatings for optical fibers, and hydrophobic and lipophobic surfaces.

Fluorinated Polymers: Synthesis, Properties, Processing and Simulation covers the fundamentals of different fluorinated polymers. Topics include the kinetics of homopolymerisation and copolymerization, process chemistry, and controlled radical co-polymerisation techniques. Written by internationally recognized academic and industrial contributors, the book will be of interest to those in industry and academia working in the fields of materials science, polymer chemistry and energy applications of polymers. Together with Fluorinated Polymers: Applications, these books provide a complete overview of different fluorinated polymer materials and their uses.

This book deals with the design and integration of chemical processes, emphasizing the conceptual issues that are fundamental to the creation of the process. Chemical process design requires the selection of a series of processing steps and their integration to form a complete manufacturing system. The text emphasizes both the design and selection of the steps as individual operations and their integration. Also, the process will normally operate as part of an integrated manufacturing site consisting of a number of processes serviced by a common utility system. The design of utility systems has been dealt with in the text so that the interactions between processes and the utility system and interactions between different processes through the utility system can be exploited to maximize the performance of the site as a whole. Chemical processing should form part of a sustainable industrial activity. For chemical processing, this means that processes should use raw materials as efficiently as is economic and practicable, both to prevent the production of waste that can be environmentally harmful and to preserve the reserves of raw materials as much as possible. Processes should use as little energy as economic and practicable, both to prevent the build-up of carbon dioxide in the atmosphere from burning fossil fuels and to preserve reserves of fossil fuels. Water must also be consumed in sustainable quantities that do not cause deterioration in the quality of the water source and the long-term quantity of the reserves. Aqueous and atmospheric emissions must not be environmentally harmful, and solid waste to landfill must be avoided. Finally, all aspects of chemical processing must feature good health and safety practice. It is important for the designer to understand the limitations of the methods used in chemical process design. The best way to understand the limitations is to understand the derivations of the equations used and the assumptions on which the equations are based. Where practical, the derivation of the design equations has been included in the text. The book is intended to provide a practical guide to chemical process design and integration for undergraduate and postgraduate students of chemical engineering, practicing process designers and chemical engineers and applied chemists working in process development. Examples have been included throughout the text. Most of these examples do not require specialist software and can be performed on spreadsheet software. Finally, a number of exercises have been added at the end of each chapter to allow the reader to practice the calculation procedures.

In this first volume, the reader will find, collected and condensed, the information needed to characterize, analyze, and evaluate crude oils from different origins and their corresponding petroleum cuts as well. The characteristics and specifications of all the petroleum products along with their simplified process flowsheets are reviewed. Contents: 1. Composition of crude oils and petroleum products. 2. Fractionation and elemental analysis of crude oils and petroleum cuts. 3. Characterization of crude oils and petroleum fractions. 4. Methods for the calculation of hydrocarbon physical properties. 5. Characteristics of petroleum products for energy use (motor fuels - heating fuels). 6. Characteristics of non-fuel petroleum products. 7. Standards and specifications of

petroleum products. 8. Evaluation of crude oils. 9. Additives for motor fuels and lubricants. 10. Introduction to refining. Appendices: Principal characteristics of pure components. Principal standard test methods for petroleum products. References. Index. This text reviews all conversion processes. The reaction mechanisms, the operating conditions and the advantages and disadvantages of each process are carefully analyzed and summarized. Refining flow sheets involving several conversion processes are studied. Concrete results are given and commented upon. The book is designed to help refiners to make technical and economic choices among different processes so as to develop the refining flowsheet that best suits their needs. Contents: I. Processing routes with carbon rejection. General. 1. Physical processes with carbon rejection. 2. Carbon rejecting processes by thermal treatment. II. Resid process without carbon rejection. General. 1. Thermal conversion processes. 2. Catalytic conversion under hydrogen pressure. 3. Resid processing schemes. References.

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