Read free Propylene production via propane dehydrogenation pdh (Read Only)

Technology Economics: Propylene Via Propane Dehydrogenation Technology Economics: Propylene Via Propane Dehydrogenation Propylene Production Via Propane Dehydrogenation Propylene Production Via Propane Dehydrogenation Propylene Production from Propane - Cost Analysis - Propylene E32A Propylene Production Cost Analysis - Overview - Propylene AA01 Propylene Production Cost Analysis - Overview - Propylene AA01 Catalysis for Clean Energy and Environmental Sustainability Sustainable Inorganic Chemistry Technology Economics: Ethylene Production Via Ethanol Dehydration Research Economics: Green Ethylene from Ethanol Membranes on Polyolefins Plants Vent Recovery Propylene Production from Propane - Cost Analysis - Propylene E31A Chemistry of Dehydrogenation Reactions and Its Applications 30th European Symposium on Computer Aided Chemical Engineering Catalysis by Precious Metals, Past and Future Sustainable Chemistry Research Heterogeneous Nanocatalysis for Energy and Environmental Sustainability, Volume 1 Chemical Technologies and Processes State-of-the-Art Materials Science in Belgium 2017 Current Trends and Future Developments on (Bio-) Membranes Micro-Mesoporous Metallosilicates Green Catalysis and Reaction Engineering The Changing Landscape of Hydrocarbon Feedstocks for Chemical Production Petrochemistry 13th International Symposium on Process SystemsEngineering – PSE 2018, July 1-5 2018 Chemical Reaction Technology Advances in Catalysis Petrochemical Catalyst Materials, Processes, and Emerging Technologies Leveraging Synergies Between Refining and Petrochemical Processes Pd-based Membranes Palladium Membrane Technology for Hydrogen Production, Carbon Capture and Other Applications Annual Energy Outlook 2016 With Projections to 2040 Monetizing Natural Gas in the New “New Deal” Economy Advances in Neural Computation, Machine Learning, and Cognitive Research IV Membrane Engineering for the Treatment of

Gases Volume 2 Efficient Petrochemical Processes Metal Oxides in Heterogeneous Catalysis

Membrane Reactor Engineering Modern Petrochemical Technology

Technology Economics: Propylene Via Propane Dehydrogenation

2013-03-26

the growing exploitation of shale gas in the united states raised the propane availability reducing its prices this coupled with growing demand for propylene made of the propane dehydrogenation pdh a promising alternative for on purpose propylene production the technical aspects of a pdh process similar to the lummus catofin technology are reviewed the analysis also includes estimates for both the capital investment and the operating costs of typical plants on the us gulf coast and in china this study follows the same pattern as all technology economics studies developed by intratec about technology economics technology economics studies are advisory services ordered by leading chemical companies which are disclosed to public after an agreeded upon period of time all technology economics studies are based on the same rigorous methodology and well defined structure encompassing process flow diagrams and material balances raw material and utility consumptions major equipment sizing inside and outside battery limits capital costs detailed fixed and variable manufacturing expenses

Technology Economics: Propylene Via Propane Dehydrogenation

2013-03-26

a comprehensive study about on purpose propylene production via propane dehydrogenation pdh a promising alternative that arises from the growing availability of low cost propane in the united states due to the exploitation of shale gas in the country the technical aspects of a pdh process similar to the uop oleflex technology are reviewed the analysis also includes estimates for both the capital investment and the operating costs of typical plants on the us gulf coast and in china this study follows the same pattern as all technology economics studies developed by intratec about technology economics technology economics studies are advisory services ordered by

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Propylene Production Via Propane Dehydrogenation

2012-06-22

the tight propylene market contributed to the rising of new and novel lower cost chemical processes for on purpose propylene production technologies propane dehydrogenation pdh technology is one of the promising processes that arises to fulfill this need this report analyzes a pdh process similar to uop oleflex it is presented a detailed technical and economic evaluation of a unit located in the us gulf coast also the evaluation is conducted for a plant constructed in brazil and china although china presented the lowest capex the usa presented the most attractive return of investment due to the availability of low price propane obtained from shale gas the rising number of planned plants for both regions confirms such trends about the technology economics program it is a program that provides by way of periodic reports in depth techno economic assessments covering mature process technologies used by the chemical polymer refining and allied industries each report presents the following topics process flow diagrams and description heat and material balances major equipment list equipment cost estimates bulk material and installation costs inside and outside battery limits capital costs process yields raw material and utility consumptions fixed costs contributions process profitability by location

Propylene Production Via Propane Dehydrogenation

2012-09-20

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Propylene Production from Propane - Cost Analysis - Propylene E32A

2016-03-01

this report presents a cost analysis of polymer grade pg propylene production from propane using a dehydrogenation process the process examined is similar to cb i lummus catofin process in this process the dehydrogenation reaction is carried out in a fixed bed reactor this report examines one time costs associated with the construction of a united states based plant and the continuing costs associated with the daily operation of such a plant more specifically it discusses capital investment broken down by total fixed capital required divided in production unit isbl infrastructure

osbl and contingency alternative perspective on the total fixed capital divided in direct costs indirect costs and contingency working capital and costs incurred during industrial plant commissioning and start up production cost broken down by manufacturing variable costs raw materials utilities manufacturing fixed costs maintenance costs operating charges plant overhead local taxes and insurance depreciation and corporate overhead costs raw materials consumption products generation and labor requirements process block flow diagram and description of industrial site installations production unit and infrastructure this report was developed based essentially on the following reference s 1 us patent 20120014846 issued to lummus technology in 2012 2 us patent 8101541 issued to sud chemie in 2012 keywords pg propylene clariant sud chemie propene pdh on purpose propylene production

Propylene Production Cost Analysis - Overview - Propylene AAO1

2016-03-01

this is a free full sample report offered by intratec solutions to demonstrate in advance the type of information you will get when you buy one of our reports offering the same standard and structure types of graphs tables and descriptions that you will find in all of our cost analysis overview reports this report presents alternatives for producing pg propylene from different feedstocks and a cost comparison of these alternatives across different countries more specifically the report compares the costs of pg propylene production through the following pathways pathway 1 propylene production from light naphtha pathway 2 propylene production from ethylene and butenes pathway 3 propylene production from propane with hydrogen generation pathway 1 corresponds to a steam cracker for propylene production ethylene as co product in pathway 2 propylene is produced via metathesis reaction of ethylene with 2 butene present in raffinate 2 feedstock in pathway 3 propane is dehydrogenated to propylene with

hydrogen generated being valued as fuel the analysis presented in this report includes a comparison of the economic potential of the pathways listed above in several countries comprising comparative analysis of capital costs comparative analysis of production costs comparison between product price and raw materials costs of each pathway an overview of each production pathway including raw material s consumption figures and product s generated related technology licensors and block flow diagram of representative industrial processes keywords propene ethene steam cracking pdh propane dehydrogenation olefins conversion technology oct

Propylene Production Cost Analysis - Overview - Propylene AAO1

2016-03

this report presents alternatives for producing pg propylene from different feedstocks and a cost comparison of these alternatives across different countries more specifically the report compares the costs of pg propylene production through the following pathways pathway 1 propylene production from light naphtha pathway 2 propylene production from ethylene and butenes pathway 3 propylene production from propane with hydrogen generation pathway 1 corresponds to a steam cracker for propylene production ethylene as co product in pathway 2 propylene is produced via metathesis reaction of ethylene with 2 butene present in raffinate 2 feedstock in pathway 3 propane is dehydrogenated to propylene with hydrogen generated being valued as fuel the analysis presented in this report includes a comparison of the economic potential of the pathways listed above in several countries comprising comparative analysis of capital costs comparative analysis of production costs comparison between product price and raw materials costs of each pathway an overview of each production pathway including raw material s consumption figures and product s generated related technology licensors and block flow diagram of representative industrial processes keywords propene ethene steam cracking pdh

propane dehydrogenation olefins conversion technology oct

Catalysis for Clean Energy and Environmental Sustainability

2021-04-01

this book is part of a two volume work that offers a unique blend of information on realistic evaluations of catalyst based synthesis processes using green chemistry principles and the environmental sustainability applications of such processes for biomass conversion refining and petrochemical production the volumes provide a comprehensive resource of state of the art technologies and green chemistry methodologies from researchers academics and chemical and manufacturing industrial scientists the work will be of interest to professors researchers and practitioners in clean energy catalysis green chemistry chemical engineering and manufacturing and environmental sustainability this volume focuses on catalyst synthesis and green chemistry applications for petrochemical and refining processes while most books on the subject focus on catalyst use for conventional crude fuel oriented refineries this book emphasizes recent transitions to petrochemical refineries with the goal of evaluating how green chemistry applications can produce clean energy through petrochemical industrial means the majority of the chapters are contributed by industrial researchers and technicians and address various petrochemical processes including hydrotreating hydrocracking flue gas treatment and isomerization catalysts

Sustainable Inorganic Chemistry

2016-10-17

the earth s natural resources are finite and easily compromised by contamination from industrial chemicals and byproducts from the degradation of consumer products the growing field of green and sustainable chemistry seeks to address this through the development of products and

processes that are environmentally benign while remaining economically viable inorganic chemistry plays a critical role in this endeavor in areas such as resource extraction and isolation renewable energy catalytic processes waste minimization and avoidance and renewable industrial feedstocks sustainable inorganic chemistry presents a comprehensive overview of the many new developments taking place in this rapidly expanding field in articles that discuss fundamental concepts alongside cutting edge developments and applications the volume includes educational reviews from leading scientists on a broad range of topics including inorganic resources sustainable synthetic methods alternative reaction conditions heterogeneous catalysis photocatalysis sustainable nanomaterials renewable and clean fuels water treatment and remediation waste valorization and life cycle sustainability assessment the content from this book will be added online to the encyclopedia of inorganic and bioinorganic chemistry

Technology Economics: Ethylene Production Via Ethanol Dehydration

2013-07-04

ethylene is most frequently produced from petroleum based feedstock however rising oil prices coupled with global concerns about sustainability and global warming have motivated research into ethylene manufacture from renewable sources fermentation derived ethanol has been increasingly used as raw material for renewable ethylene production presenting the primary advantage of being made from co2 removed from the atmosphere the technical aspects of a process to produce ethylene via ethanol dehydration are reviewed as well as the key economic parameters for the profitability of an ethanol dehydration plant this study follows the same pattern as all technology economics studies developed by intratec about technology economics technology economics studies are advisory services ordered by leading chemical companies which are disclosed to public if they allow so all technology economics studies are based on the

same rigorous methodology and well defined structure encompassing process flow diagrams and material balances raw material and utility consumptions major equipment sizing inside and outside battery limits capital costs detailed fixed and variable manufacturing expenses

Research Economics: Green Ethylene from Ethanol

2013-06-24

rising oil prices and global concerns about sustainability and global warming have motivated research into ethylene manufacture from renewable sources this report reviews the production of ethylene from ethanol dehydration in a process based on the patent published by bp chemicals it is presented a technical and economic evaluation of a unit located in the us gulf coast in addition a sensitivity analysis was performed in which the effects of variations in prices and technical parameters on the investment and the operating costs were studied green ethylene must be sold with an increased premium over fossil based ethylene of about 50 in order to make the investment attractive this study follows the same pattern as all research potential studies developed by intratec about research potential research potential studies are advisory services ordered by leading chemical companies which are disclosed to public after an agreeded upon period of time all research potential studies are based on the same rigorous methodology and well defined structure encompassing process flow diagrams and material balances raw material and utility consumptions major equipment sizing inside and outside battery limits capital costs detailed fixed and variable manufacturing expenses sensitivity analysis

Membranes on Polyolefins Plants Vent Recovery

2012-08-02

gas separation by membranes has acquired increasing importance in the petrochemical industry and is now a relatively well established unit operation especially in the monomer recovery of

polymer production processes considering the current tight monomers market polymer degassing steps present potential improvement opportunities through the recovery of vent streams containing monomers the economic analysis presented in this report is based upon the installation of a membrane based propylene recovery unit in a polypropylene plant a unit similar to mtr vaporsep r such measure was demonstrated to be attractive in the us gulf coast due to propylene scarcity which has recently raised its market value the alternative of using such vent streams as fuel showed to be less interesting since fuel prices are low due to natural gas growing offerings about the publication program the improvement economics program is a program that provides by way of periodic reports insightful and unbiased reviews on process improvement opportunities from both a technical and economic perspective each report presents the following topics opportunity description schematics such as flow diagrams technical details such as heat and material balances key performance indicators environmental impact analysis capital and operating costs breakdown alternative solutions overview

Propylene Production from Propane – Cost Analysis – Propylene E31A

2016-03-01

this report presents a cost analysis of polymer grade pg propylene production from propane using a dehydrogenation process the process examined is similar to uop oleflex process in this process the dehydrogenation reaction is carried out in a moving bed reactor this report was developed based essentially on the following reference s 1 us patent 20120108877 issued to uop in 2012 2 us patent 5457256 issued to uop in 1995 keywords pg propylene continuous catalyst regeneration ccr propene pdh on purpose propylene production

Chemistry of Dehydrogenation Reactions and Its Applications

2024-02-21

the present book focuses on advancement in the application of heterogeneous catalytic materials for the dehydrogenative synthesis of valuable organic compounds from substrates such as alcohols and simple aliphatic compounds several heterogeneous transition metals based catalytic materials are explored for the synthesis of valuable chemicals for industrial applications the book provides insight into the application of state of the art technology for energy utilization and clean chemical synthesis features offers a wide overview of dehydrogenation catalytic chemistry catalyzed by transition metals and their compounds helps design novel and more benign and uncomplicated protocols for the synthesis of valuable chemicals from readily available raw materials provides deeper insight into the aspect of dehydrogenation reactions for clean chemical synthesis via a cascade process summarizes new mechanistic details of dehydrogenation reactions experimental side development and applications of dehydrogenation techniques explores alternative solutions for the assimilation and transportation of clean energy in the form of hydrogen energy utilization this book is aimed at graduate students and researchers in chemical engineering chemistry catalysis organic synthesis pharmaceutical chemistry and petrochemistry

30th European Symposium on Computer Aided Chemical Engineering

2020-10-23

30th european symposium on computer aided chemical engineering volume 47 contains the papers presented at the 30th european symposium of computer aided process engineering escape event held in milan italy may 24 27 2020 it is a valuable resource for chemical engineers chemical process engineers researchers in industry and academia students and consultants for

chemical industries presents findings and discussions from the 30th european symposium of computer aided process engineering escape event offers a valuable resource for chemical engineers chemical process engineers researchers in industry and academia students and consultants for chemical industries

Catalysis by Precious Metals, Past and Future

2020-04-15

the future of the precious metals is shiny and resistant although expensive and potentially replaceable by transition metal catalysts precious metal implementation in research and industry shows potential these metals catalyze oxidation and hydrogenation due to their dissociative behavior toward hydrogen and oxygen dehydrogenation isomerization and aromatization etc the precious metal catalysts especially platinum based catalysts are involved in a variety of industrial processes examples include pt rh gauze for nitric acid production the pt al2o3 catalyst for cyclohexane and propylene production and pd al2o3 catalysts for petrochemical hydropurification reactions etc a quick search of the number of published articles in the last five years containing a combination of corresponding metals pt pd ru rh and au and catalysts as keywords indicates the importance of the pt catalysts but also the continuous increase in the contribution of pd and au this special issue reveals the importance of precious metals in catalysis and focuses on mono and bi metallic formulations of any supported precious metals and their promotional catalytic effect of other transition metals the application of precious metals in diverse reactions either homogeneous or heterogeneous and studies of the preparation characterization and applications of the supported precious metal catalysts are presented

Sustainable Chemistry Research

2023-10-23

this edited book of proceedings is a collection of seventeen selected and peer reviewed contributions from the virtual conference on chemistry and its applications vcca 2022 vcca 2022 was held online from 8th to 12th august 2022 the theme of the conference was resilience and sustainable research through basic sciences 500 participants from 55 countries participated in vcca 2022 this volume 2 reflects the chapters covering computational and industrial aspects

Heterogeneous Nanocatalysis for Energy and Environmental Sustainability, Volume 1

2023-01-04

an essential companion for catalysis researchers and professionals studying economically viable and eco friendly catalytic strategies for energy conversion in the two volume heterogeneous nanocatalysis for energy and environmental sustainability a team of distinguished researchers deliver a comprehensive discussion of fundamental concepts in and practical applications of heterogeneous nanocatalysis for alternative energy production biomass conversion solar energy green fuels h2 production fuel cells electrochemical energy conversion processes co2 conversion clean water and environmental protection the volumes cover the design and catalytic performance of various nanocatalysts including nanosized metals and metal oxides supported metal nanoparticles inverse oxide metal nanocatalysts core shell nanocatalysts nanoporous zeolites nanocarbon composites and metal oxides in confined spaces each chapter contains a critical discussion of the opportunities and challenges posed by the use of nanosized catalysts for practical applications volume 1 energy applications focuses on the conversion of renewable energy biomass solar into green fuels and chemicals ammonia synthesis clean hydrogen production and electrochemical energy conversion processes using a variety of nanosized catalysts it also offers a thorough introduction to heterogeneous catalysis and nanocatalysis as well as a discussion of catalytic active sites at nano scale range comprehensive explorations of

the methods for control and activation of nanosized catalysts practical discussions of c3n4 based nanohybrid catalysts for solar hydrogen production via water splitting nanosized catalysts in visible light photocatalysis for sustainable organic synthesis applications of mxenes in electrocatalysis perfect for researchers postgraduate students chemists and engineers interested in heterogeneous catalysis and nanocatalysis heterogeneous nanocatalysis for energy and environmental sustainability will also earn a place in the libraries of professionals working in alternative energy production biomass conversion solar energy green fuels h2 production fuel cells electrochemical energy conversion processes co2 conversion clean water and environmental protection

Chemical Technologies and Processes

2020-07-20

this book is essential reading for scientists and students interested in both organic and inorganic chemical technology the authors cover the production of chemical reagents as well as trends from adjacent fields including biotechnology and process simulation chemical technologies and processes is of interest to chemical engineers materials scientists as well as chemists in both academia and industry

State-of-the-Art Materials Science in Belgium 2017

2018-10-17

this book is a printed edition of the special issue state of the art materials science in belgium 2017 that was published in materials

Current Trends and Future Developments on (Bio-) Membranes

2020-01-05

current trends and future developments in bio membranes recent advances in metallic membranes presents recent developments in metallic membranes used in membrane reactors to save energy it also offers a comprehensive review of the present state of the art on the fabrication and design of metallic membranes and membrane reactors considering various applications this book focuses on the structure preparation characterization and applications of metallic membranes and membrane reactors as well as transport mechanisms and simulation aspects as recent research has focused on the development of metallic membranes and their applications this book is an ideal reference on different production procedures and their use reviews metallic membranes research and applications outlines the mechanisms of metallic membrane based processes includes structure preparation characterization and properties of metallic membranes highlights various applications of metallic membranes in energy production

Micro-Mesoporous Metallosilicates

2024-03-05

micro mesoporous metallosilicates up to date and in depth text bridging the technology gap between fundamental research and industry scale applications of porous materials for catalysis micro mesoporous metallosilicates synthesis characterization and catalytic applications comprehensively introduces the chemistry and catalytic technologies of metallosilicates an important family of microporous crystalline zeolite and heteroatom containing mesoporous materials with a primary focus on design synthesis characterization theoretical studies and catalytic applications of titanosilicates tin silicates germanosilicates and ti mesosilica and more the text covers recent advances in the synthesis of titanosilicates including hydrothermal

synthesis dry gel conversion fluoride assisted synthesis and post synthesis methods along with the synthesis of metallosilicates with two dimensional lamellar structures and their structural modifications as well as applications in selective oxidation reactions the text also discusses synthesis of germanosilicates with specially designed organic structure directing agents synthesis and catalytic applications of heteroatom containing mesoporous silica and dendritic mesoporous silica nanoparticles with unique wrinkled center radial structures overall every important porous metallosilicate and its synthesis characterization pore engineering catalytic application and industrial technique and process are covered specific sample topics discussed in micro mesoporous metallosilicates include chemical post modifications of titanosilicates in terms of the effects on transfer adsorption desorption and surface reactions x ray based techniques ultraviolet visible near infrared spectroscopy raman spectroscopy and solid state nmr spectroscopy theoretical calculation as an effective tool and supplement to understand the catalytic active center structural character and brønsted lewis acidity titanosilicates in the liquid phase epoxidation reaction of propylene and propylene chloride to corresponding epoxides effects of particle sizes oxidation state and location sites of au nanoparticles and epoxidation performance of ti containing materials delivering cutting edge research and bridging the technology gap between fundamental research and industrial applications micro mesoporous metallosilicates is a valuable resource for chemists materials scientists chemical engineers and experienced researchers in related fields

Green Catalysis and Reaction Engineering

2022-09-29

discover tools to perform life cycle analysis lca and develop sustainable chemical technologies in this valuable guide for chemists engineers and practitioners tackling one of the key challenges of modern industrial chemical engineering this book introduces tools to assess the environmental footprint and economics of key chemical processes that make the ingredients of everyday

products such as plastics synthetic fibers detergents and fuels describing diverse industrial processes in detail it provides process flow diagrams including raw material sourcing catalytic reactors separation units process equipment and recycle streams the book clearly explains elements of lca and how various software tools available in the public domain and commercially can be used to perform lca supported by real world practical examples and case studies provided by industrial and academic chemists and chemical engineers this is an essential tool for readers involved in implementing lca and developing next generation sustainable chemical technologies

The Changing Landscape of Hydrocarbon Feedstocks for Chemical Production

2016-12-10

a decade ago the u s chemical industry was in decline of the more than 40 chemical manufacturing plants being built worldwide in the mid 2000s with more than 1 billion in capitalization none were under construction in the united states today as a result of abundant domestic supplies of affordable natural gas and natural gas liquids resulting from the dramatic rise in shale gas production the u s chemical industry has gone from the world s highest cost producer in 2005 to among the lowest cost producers today the low cost and increased supply of natural gas and natural gas liquids provides an opportunity to discover and develop new catalysts and processes to enable the direct conversion of natural gas and natural gas liquids into value added chemicals with a lower carbon footprint the economic implications of developing advanced technologies to utilize and process natural gas and natural gas liquids for chemical production could be significant as commodity intermediate and fine chemicals represent a higher economic value use of shale gas compared with its use as a fuel to better understand the opportunities for catalysis research in an era of shifting feedstocks for chemical production and to identify the gaps in the current research portfolio the national academies of sciences engineering and

medicine conducted an interactive multidisciplinary workshop in march 2016 the goal of this workshop was to identify advances in catalysis that can enable the united states to fully realize the potential of the shale gas revolution for the u s chemical industry and as a result to help target the efforts of u s researchers and funding agencies on those areas of science and technology development that are most critical to achieving these advances this publication summarizes the presentations and discussions from the workshop

Petrochemistry

2020-04-06

a comprehensive textbook on petrochemical conversion processes for petroleum and natural gas fractions as produced by refinery operations this innovative textbook provides essential links between the chemical sciences and chemical technology between petrochemistry and hydrocarbon technology the book brings alive key concepts forming the basis of chemical technology and presents a solid background for innovative process development in all chapters the processes described are accompanied by simplified flow schemes encouraging students to think in terms of conceptual process designs petrochemistry petrochemical processing hydrocarbon technology and green engineering introduces students to a variety of topics related to the petrochemical industry hydrocarbon processing fossil fuel resources as well as fuels and chemicals conversion the first chapter covers the fundamentals and principals for designing several of the processes in the book including discussions on thermodynamics chemical kinetics reactor calculations and industrial catalysts the following chapters address recent advances in hydrocarbon technology energy technology and sources of hydrocarbons the book then goes on to discuss the petrochemical industry based on four basic pillars all derived from petroleum and natural gas production of lower alkenes other sources of lower alkenes petrochemicals from c2 c3 alkenes production of btx aromatics chemicals from btx aromatics c1 technology diversification of petrochemicals the growing importance of sustainable technology process intensification and

addressing greenhouse gas emissions is reflected throughout the book written for advanced students working in the areas of petrochemistry hydrocarbon technology natural gas energy materials and technologies alternative fuels and recycling technologies the book is also a valuable reference for industrial practitioners in the oil and gas industry

13th International Symposium on Process SystemsEngineering – PSE 2018, July 1-5 2018

2018-07-19

process systems engineering brings together the international community of researchers and engineers interested in computing based methods in process engineering this conference highlights the contributions of the pse community towards the sustainability of modern society and is based on the 13th international symposium on process systems engineering pse 2018 event held san diego ca july 1 5 2018 the book contains contributions from academia and industry establishing the core products of pse defining the new and changing scope of our results and future challenges plenary and keynote lectures discuss real world challenges globalization energy environment and health and contribute to discussions on the widening scope of pse versus the consolidation of the core topics of pse highlights how the process systems engineering community contributes to the sustainability of modern society establishes the core products of process systems engineering defines the future challenges of process systems engineering

Chemical Reaction Technology

2022-01-19

the book discusses the sciences of operations converting raw materials into desired products on

an industrial scale by applying chemical transformations and other industrial technologies basics of chemical technology combining chemistry physical transport unit operations and chemical reactors are thoroughly prepared for an easy understanding

Advances in Catalysis

2015-12-02

advances in catalysis fills the gap between the journal papers and textbooks across the diverse areas of catalysis research for more than 60 years this series has been dedicated to recording progress in the field of catalysis providing the scientific community with comprehensive and authoritative reviews this series is an invaluable and comprehensive resource for chemical engineers and chemists working in the field of catalysis in both academia and industry authoritative reviews written by experts in the field topics selected reflect progress in the field and include catalyst synthesis catalyst characterization catalytic chemistry reaction engineering computational chemistry and physics insightful and critical articles fully edited to suit various backgrounds

Petrochemical Catalyst Materials, Processes, and Emerging Technologies

2016-02-17

Leveraging Synergies Between Refining and Petrochemical Processes

2020-12-16

leveraging synergies between refining and petrochemical processes provides a detailed description of the interfaces and connections between crude oil refining and petrochemicals it offers a view of global and regional markets and economic opportunities for synergies between these sectors features shows a global and regional market outlook for crude oil refining and petrochemical sectors explores economic and market opportunities for taking advantage of the synergies between both sectors analyzes the technical challenges and opportunities that come with these synergies gives an outlook and prediction of what companies will be able to achieve in the mid term future provides introductory and explanatory material as well as in depth insight into future technology and market developments this book serves as a reference for professionals in chemical engineering oil and gas engineering and industrial chemistry it aims to help engineers and industry professionals understand the challenges and the potential benefits of developing expansion or optimization projects that may bridge the gap between refining and petrochemicals

Pd-based Membranes

2019-03-26

palladium pd based membranes have received a great deal of attention from both academia and industry thanks to their ability to selectively separate hydrogen from gas streams the integration of such membranes with appropriate catalysts in membrane reactors allows for hydrogen production with co2 capture that can be applied in smaller bioenergy or combined heat and power chp plants as well as in large scale power plants pd based membranes are therefore regarded as a key enabling technology ket to facilitate the transition towards a knowledge based low carbon and resource efficient economy this special issue of the journal membranes on pd based membranes overview and perspectives contains nine peer reviewed articles topics include manufacturing techniques understanding of material phenomena module and reactor design novel applications and demonstration efforts and industrial exploitation

Palladium Membrane Technology for Hydrogen Production, Carbon Capture and Other Applications

2014-10-20

thanks to their outstanding hydrogen selectivity palladium membranes have attracted extensive r d interest they are a potential breakthrough technology for hydrogen production and also have promising applications in the areas of thermochemical biorefining this book summarises key research in palladium membrane technologies with particular focus on the scale up challenges after an introductory chapter part one reviews the fabrication of palladium membranes part two then focuses on palladium membrane module and reactor design the final part of the book reviews the operation of palladium membranes for synthesis gas hydrogen production carbon capture and other applications review of manufacture and design issues for palladium membranes discussion of the applications of palladium membrane technology including solar steam reforming igcc plants ngcc plants chp plants and hydrogen production examples of the technology in operation

Annual Energy Outlook 2016 With Projections to 2040

2017-02-15

the annual energy outlook 2016 presents long term projections of energy supply demand and prices through 2040 the projections focused on u s energy markets are based on results from eia s national energy modeling system which enables eia to make projections under alternative internally consistent sets of assumptions

Monetizing Natural Gas in the New “New Deal” Economy

2021-05-11

natural gas markets have undergone momentous changes worldwide this book updates and expands on the dynamics performance and forward path of expanding natural gas use in the us and worldwide including international trade it brings together major research themes and findings with recent updates and analysis of new trends and developments it also explores many considerations for natural gas market development such as the importance of infrastructure transparent pricing and institutional capacity this book is unique in providing background on the full natural gas value chain as well as information and analysis that can foster scenario building and decision making of particular value are the lessons learned and demonstrated for those countries that aspire to build effective natural gas markets and to expand natural gas development and use

Advances in Neural Computation, Machine Learning, and Cognitive Research IV

2020-10-01

this book describes new theories and applications of artificial neural networks with a special focus on answering questions in neuroscience biology and biophysics and cognitive research it covers a wide range of methods and technologies including deep neural networks large scale neural models brain computer interface signal processing methods as well as models of perception studies on emotion recognition self organization and many more the book includes both selected and invited papers presented at the xxii international conference on neuroinformatics held on october 12 16 2020 moscow russia

Membrane Engineering for the Treatment of Gases Volume 2

2017-10-06

elaborating on recent and future developments in the field of membrane engineering volume 2 is devoted to the main advances in gaseous phase membrane reactors and separators the book covers innovative membranes and new processes and includes new chapters on cost analysis and life cycle assessment together with volume 1 these books form an innovative reference work on membrane engineering and technology in the field of gas separation and gaseous phase membrane reactors

Efficient Petrochemical Processes

2019-10-15

a guide to the design operation control troubleshooting optimization as well as the recent advances in the field of petrochemical processes efficient petrochemical processes technology design and operation is a guide to the tools and methods for energy optimization and process design written by a panel of experts on the topic the book highlights the application of these methods on petrochemical technology such as the aromatics process unit the authors describe practical approaches and tools that focus on improving industrial energy efficiency reducing capital investment and optimizing yields through better design operation and optimization the text is divided into sections that cover the range of essential topics petrochemical technology description process design considerations reaction and separation design process integration process system optimization types of revamps equipment assessment common operating issues and troubleshooting case analysis this important book provides the basic knowledge related to fundamentals design and operation for petrochemical processes applies process integration techniques and optimization techniques that improve process design and operations in the

petrochemical process provides practical methods and tools for industrial practitioners puts the focus on improving industrial energy efficiency reducing capital investment and optimizing yields contains information on the most recent advances in the field written for managers engineers and operators working in process industries as well as university students efficient petrochemical processes technology design and operation explains the most recent advances in the field of petrochemical processes and discusses in detail catalytic and adsorbent materials reaction and separation mechanisms

Metal Oxides in Heterogeneous Catalysis

2018-01-11

metal oxides in heterogeneous catalysis is an overview of the past present and future of heterogeneous catalysis using metal oxides catalysts the book presents the historical theoretical and practical aspects of metal oxide based heterogeneous catalysis metal oxides in heterogeneous catalysis deals with fundamental information on heterogeneous catalysis including reaction mechanisms and kinetics approaches there is also a focus on the classification of metal oxides used as catalysts preparation methods and touches on zeolites mesoporous materials and metal organic frameworks mofs in catalysis it will touch on acid or base type reactions selective partial and total oxidation reactions and enzymatic type reactions the book also touches heavily on the biomass applications of metal oxide catalysts and environmentally related depollution reactions such as covs elimination denox and desox finally the book also deals with future trends and prospects in metal oxide based heterogeneous catalysis presents case studies in each chapter that provide a focus on the industrial applications includes fundamentals key theories and practical applications of metal oxide based heterogeneous catalysis in one comprehensive resource edited and contributed by leading experts who provide perspectives on synthesis characterization and applications

Membrane Reactor Engineering

2016-08-01

uniquely focussed on the engineering aspects of membrane reactors provides tools for analysis with specific regard to sustainability applications include water treatment wastewater recycling desalination biorefineries agro food production membrane reactors can bring energy saving reduced environmental impact and lower operating costs

Modern Petrochemical Technology

2021-03-30

modern petrochemical technology a text that explores the essence of petrochemicals and petrochemical technology modern petrochemical technology methods manufacturing and applications is 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 the book contains both critical information the technologies used to produce petrochemicals how the various petrochemicals are applied in industry and provides illustrative examples and problems designed to reinforce the learning about the basic science engineering and use of petrochemicals the book explores three seprate petrochemical building block olefin complexes aromatic complexes and synthesis gas complexes and examines the interconnected nature of these building blocks the authors also include information on the olefins productions using steam cracking paraffin dehydrogenation and methanol to olefins technologies and describes various methods commercial processes to produce aromatics such as benzene toluene and xylene and much more this important book offers a guide to the critical information on petrochemical producing technologies includes material on various petrochemicals from the industrial point of view explores the separation

processes membrane technology absorption technology liquid liquid extraction and more contains material from a team of noted experts provides a survey of examples of commercialization applications of petrochemicals written for chemical engineers chemists in industry membrane scientists and process engineers modern petrochemical technology provides an overview of markets and uses for common petrochemical building blocks as well as includes a survey of the technology used to make the key petrochemical building blocks

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