

Engineering Chemistry 1 By Ss Dara

This book presents the current carbonaceous fuel conversion technologies based on chemical looping concepts in the context of traditional or conventional technologies. The key features of the chemical looping processes, their ability to generate a sequestration-ready CO₂ stream, are thoroughly discussed. Chapter 2 is devoted entirely to the performance of particles in chemical looping technology and covers the subjects of solid particle design, synthesis, properties, and reactive characteristics. The looping processes can be applied for combustion and/or gasification of carbon-based material such as coal, natural gas, petroleum coke, and biomass directly or indirectly for steam, syngas, hydrogen, chemicals, electricity, and liquid fuels production. Details of the energy conversion efficiency and the economics of these looping processes for combustion and gasification applications in contrast to those of the conventional processes are given in Chapters 3, 4, and 5. Finally, Chapter 6 presents additional chemical looping applications that are potentially beneficial, including those for H₂ storage and onboard H₂ production, CO₂ capture in combustion flue gas, power generation using fuel cell, steam-methane reforming, tar sand digestion, and chemicals and liquid fuel production. A CD is appended to this book that contains the chemical looping simulation files and the simulation results based on the ASPEN Plus software for such reactors as gasifier, reducer, oxidizer and combustor, and for such processes as conventional gasification processes, Syngas Chemical Looping Process, Calcium Looping Process, and Carbonation-Calcination Reaction (CCR) Process. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

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Absorption-Based Post-Combustion Capture of Carbon Dioxide provides a comprehensive and authoritative review of the use of absorbents for post-combustion capture of carbon dioxide. As fossil fuel-based power generation technologies are likely to remain key in the future, at least in the short- and medium-term, carbon capture and storage will be a critical greenhouse gas reduction technique. Post-combustion capture involves the removal of carbon dioxide from flue gases after fuel combustion, meaning that carbon dioxide can then be compressed and cooled to form a safely transportable liquid that can be stored underground. Provides researchers in academia and industry with an authoritative overview of the amine-based methods for carbon dioxide capture from flue gases and related processes Editors and contributors are well known experts in the field Presents the first book on this specific topic

The manner in which time is captured forms the foundation for synthesis, design, and optimization in batch chemical plants. However, there are still serious challenges with handling time in batch plants. Most techniques tend to assume either a fixed time dimension or adopt time average models to tame the time dimension, thereby simplifying the resu

This book is primarily intended for the first year B.Tech students of all branches for their course on engineering chemistry. The main objective of this book is to provide a broad understanding of the chemical concepts, theories and principles of Engineering Chemistry in a clear and concise manner, so that even an average student can grasp the intricacies of the subject. It includes the general concepts of structure and bonding, phase rule, solid state, reaction kinetics and catalysis, electrochemistry, chemical thermodynamics and free energy. Besides, the book introduces topics of applied chemistry like water technology, polymer chemistry and nanotechnology. Each theoretical concept is well supported by illustrative examples. The book

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also provides a large number of solved problems and illustrations to reinforce the theoretical understanding of concepts. KEY FEATURES (i) Each chapter of the book provides a clear and easy understanding of the definitions, theories and principles. (ii) A large number of well-labelled diagrams help to understand the concepts easily and clearly. (iii) Chapter-wise glossary and important mathematical relations are given for quick revision. (iv) Provides multiple choice questions with answers, short questions and long questions for practice. Instrumental methods of analysis have become very popular in industrial and research laboratories due to their rapidity, accuracy, precision, convenience and amenability for automation and computerisation. Although engineers are not expected to carry out chemical analysis by themselves, it is absolutely essential for them to have appreciation regarding the principles, applications, merits and limitations of the modern techniques of instrumental chemical analysis.

Written in lucid language, the book offers a detailed treatment of fundamental concepts of chemistry and its engineering applications.

Any good text book, particularly that in the fast changing fields such as engineering & technology, is not only expected to cater to the current curricular requirements of various institutions but also should provide a glimpse towards the latest developments in the concerned subject and the relevant disciplines. It should guide the periodic review and updating of the curriculum.

The book is revised specifically to address the needs of the latest course

curriculum in Engineering Chemistry for the first semester students of all branches of engineering. The topics covered in the book are customarily taught in several universities and institutes. The book exposes students to fundamental knowledge in Water technology • Applications of surface chemistry and concept of nuclear energy and energy storage devices • Alloys and phase rule • Electrochemistry and principle involved in corrosion and its inhibition and protective coatings • Analysis of fuels and combustion KEY FEATURES • Several worked-out examples to help students reinforce their comprehension of theory • Numerous short and descriptive questions at the end of each chapter to test and foster students' conceptual understanding of the subject • Chapter-end problems to help students become proficient in problem solving TARGET AUDIENCE Students of first-year BE/BTech (All Branches)

Clear and complete description of diffusion in fluids, for undergraduate students in chemical engineering.

In a world with highly competitive markets and economic instability due to capitalization, industrial competition has increasingly intensified. In order for many industries to survive and succeed, they need to develop highly effective coordination between supply chain partners, dynamic collaborative and strategic alliance relationships, and efficient logistics and supply chain network designs.

Consequently, in the past decade, there has been an explosion of interest among academic researchers and industrial practitioners in innovative supply chain and logistics models, algorithms, and coordination policies. Mathematically distinct from classical supply chain management, this emerging research area has been proven to be useful and applicable to a wide variety of industries. This book brings together recent advances in supply chain and logistics research and computational optimization that apply to a collaborative environment in the enterprise.

First multi-year cumulation covers six years: 1965-70.

1 Water 2 Analytical Chemistry 3 Advanced Materials 4 Fuels 5 Corrosion And its Prevention 6 Metallic Materials and Green Chemistry

The book provides insight into the working of clays and clay minerals in speeding up a variety of organic reactions. Clay minerals are known to have a large propensity for taking up organic molecules and can catalyse numerous organic reactions due to fine particle size, extensive surface area, layer structure, and peculiar charge characteristics. They can be used as heterogeneous catalysts and catalyst carriers of organic reactions because they are non-corrosive, easy to separate from the reaction mixture, and reusable. Clays and clay minerals have an advantage over other solid acids as they are abundant, inexpensive, and non-polluting.

In organic chemistry, Alkenes, also known as olefins, are the unsaturated hydrocarbons with

the general formula of C_nH_{2n} that contains one or more carbon-carbon double bonds in their chemical structures ($RC=CR'$). The presence of this double bond allows alkenes to react in ways that alkanes cannot. Hence, alkenes find many diverse applications in industry. These compounds are widely used as initial materials in the synthesis of alcohols, plastics, lacquers, detergents, and fuels. The current book includes all knowledge and novel data according to the structure of alkenes, their novel synthesis methods, and their applications. In addition, manufacture, properties, and the use of polyalkenes are the other important topics that are covered in this book. These data are collected by the efforts and contributions of many authors and scientists from all over the globe, and all of us are ready to further improve the contents of this book as per the readers' comments.

This book covers many important aspects of applied chemistry and chemical engineering, focusing on three main aspects: principles, methodology and evaluation methods. It presents a selection of chapters on recent developments of theoretical, mathematical, and computational conceptions, as well as chapters on modeling and simulation of specific research themes covering applied chemistry and chemical engineering. This book attempts to bridge the gap between classical analysis and modern applications. Covering a selection of topics within the field of applied chemistry and chemical engineering, the book is divided into several parts: polymer chemistry and technology bioorganic and biological chemistry nanoscale technology selected topics This book is the second of the two-volume series Applied Chemistry and Chemical Engineering. The first volume is Volume 1: Mathematical and Analytical Techniques. Water And Its Industrial Applications | Fuels And Combustion | Lubricants |

Cement And Refractories| Polymers | Instrumental Techniques In Chemical Analysis | Water Analysis Techniques | Question Bank

Engineering Chemistry-I serves as a textbook for the first semester course for 1 year BE/B. Tech students of Anna University, Chennai The book is informative and exhaustive to meet the requirements of students who aim to assimilate authentic knowledge for use during engineering course as well as in their careers. The theoretical portions have been explained in simple language, clear style with lot of solved problems and illustrated diagrams. Academic and industrial communities will find this book a valuable resource. **KEY FEATURES** • Specifically designed for 1 year B.E. students of colleges affiliated to Anna University, Chennai. • The chapters are presented in simple language. • Suitable diagrams for clear understanding of the concepts. • The recent developments in the respective fields are included in all the chapters. • Comparative tables are presented where ever two similar concepts arise. • Many solved problems. • Review questions from previous Anna University examinations at the end of each chapter.

March 05-06, 2018 Berlin, Germany Key Topics: Dental Biomaterials, Advanced Materials, Tissue Engineering and Regenerative Medicine, Biomaterials Applications, Biomaterials Companies and Market Analysis, Polymer

Biomaterials, Biomaterials and Nanotechnology, Properties of Biomaterials, 3D printing of Biomaterials, Biomaterials in Delivery Systems, Biodegradable Biomaterials, Entrepreneurs Investment Meet, Bio-based Materials and Sustainability, Biophotonics and Biomedical Optics, A TEXTBOOK OF ENGINEERING CHEMISTRYS. Chand Publishing

The Third Edition of this book has been comprehensively revised in a coherent style to impart fundamental principles and useful applications of chemistry in engineering and technology. It provides extensive explanation of all five modules—Electrochemistry and Battery Technology, Corrosion and Metal Finishing, Fuels and Solar Energy, Polymers, Water Technology and Nanomaterials—with good emphasis on topics of interest in engineering. The newly added material to this edition certainly builds up the information as well as strengthens the text further. The book covers all those important topics that are required for the first-year undergraduate students of engineering of all branches for their course in Engineering Chemistry. NEW TO THE THIRD EDITION • Incorporates a new chapter on Nanomaterials. • Comprises new sections on Production of Solar Grade Silicon—Union Carbide Process, Purification of Silicon (Zone Refining) in the chapter on Chemical Energy Resources, and sections on Boiler's Sludge and Scales, Priming, Foaming and Boiler Corrosion in the

chapter on Water Technology. • Includes revamped section on Molecular Mass (Weight) of a Polymer in the chapter on High Polymers. • Contains a Model Test Paper to help the students from examination point of view.

Completely revised and updated, *Elements of Environmental Engineering: Thermodynamics and Kinetics, Second Edition* covers the applications of chemical thermodynamics and kinetics in environmental processes. Each chapter has been rewritten and includes new examples that better illuminate the theories discussed. An excellent introduction to environmental engineering, this reference stands alone in its multimedia approach to fate and transport modeling and in pollution control design options. Clearly and lucidly written, it provides extensive tables, figures, and data that make it the reference to have on this subject.

Alkanes—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Alkanes. The editors have built *Alkanes—Advances in Research and Application: 2012 Edition* on the vast information databases of ScholarlyNews.™ You can expect the information about Alkanes in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of *Alkanes—Advances in Research and Application: 2012 Edition* has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written,

assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Plant biomass is attracting increasing attention as a sustainable resource for large-scale production of renewable fuels and chemicals. However, in order to successfully compete with petroleum, it is vital that biomass conversion processes are designed to minimize costs and maximize yields. Advances in pretreatment technology are critical in order to develop high-yielding, cost-competitive routes to renewable fuels and chemicals.

Aqueous Pretreatment of Plant Biomass for Biological and Chemical Conversion to Fuels and Chemicals presents a comprehensive overview of the currently available aqueous pretreatment technologies for cellulosic biomass, highlighting the fundamental chemistry and biology of each method, key attributes and limitations, and opportunities for future advances. Topics covered include:

- The importance of biomass conversion to fuels
- The role of pretreatment in biological and chemical conversion of biomass
- Composition and structure of biomass, and recalcitrance to conversion
- Fundamentals of biomass pretreatment at low, neutral and high pH
- Ionic liquid and organosolv pretreatments to fractionate biomass
- Comparative data for application of leading pretreatments and effect of enzyme formulations
- Physical and chemical features of pretreated biomass
- Economics of pretreatment for biological processing
- Methods of analysis and enzymatic conversion of biomass streams
- Experimental

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pretreatment systems from multiwellplates to pilot plant operations This comprehensive reference book provides an authoritative source of information on the pretreatment of cellulosic biomass to aid those experienced in the field to access the most current information on the topic. It will also be invaluable to those entering the growing field of biomass conversion.

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