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Dive into the critical realm of chemical design, exploring the intricate processes of synthesis and rigorous analysis. This comprehensive torrent of information covers fundamental methodologies in chemical engineering, crucial for developing, optimizing, and understanding complex industrial systems from concept to implementation.

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Analysis, Synthesis, and Design of Chemical Processes

Accompanying CD-ROM contains the newest version of CAPCOST, HENSAD software and an additional appendix presenting preliminary design information for fifteen key chemical processes. The CD also includes six additional projects, plus chapters on outcomes assessment, written and oral communications, and a written report case study.

Chemical Engineering Design

Chemical Engineering Design, Second Edition, deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, this edition has been specifically developed for the U.S. market. It provides the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards. It contains new discussions of conceptual plant design, flowsheet development, and revamp design; extended coverage of capital cost estimation, process costing, and economics; and new chapters on equipment selection, reactor design, and solids handling processes. A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data, and Excel spreadsheet calculations, plus over 150 Patent References for downloading from the companion website. Extensive instructor resources, including 1170 lecture slides and a fully worked solutions manual are available to adopting instructors. This text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken, plus graduates) and lecturers/tutors, and professionals in industry (chemical process, biochemical, pharmaceutical, petrochemical sectors). New to this edition: Revised organization into Part I: Process Design, and Part II: Plant Design. The broad themes of Part I are flowsheet development, economic analysis, safety and environmental impact and optimization. Part II contains chapters on equipment design and selection that can be used as supplements to a lecture course or as essential references for students or practicing engineers working on design projects. New discussion of conceptual plant design, flowsheet development and revamp design Significantly increased coverage of capital cost estimation, process costing and economics New chapters on equipment selection, reactor design and solids handling processes New sections on fermentation, adsorption, membrane separations, ion exchange and chromatography Increased coverage of batch processing, food, pharmaceutical and biological processes All equipment chapters in Part II revised and updated with current information Updated throughout for latest US codes and standards, including API, ASME and ISA design codes and ANSI standards Additional worked

examples and homework problems The most complete and up to date coverage of equipment selection 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data and Excel spreadsheet calculations plus over 150 Patent References, for downloading from the companion website Extensive instructor resources: 1170 lecture slides plus fully worked solutions manual available to adopting instructors

Northwest Forest Plan Research Synthesis

This book focuses on an “outside the box” notion by utilizing the powerful applications of next-generation sequencing (NGS) technologies in the interface of chemistry and biology. In personalized medicine, developing small molecules targeting a specific genomic sequence is an attractive goal. N-methylpyrrole (P)–N-methylimidazole (I) polyamides (PIPs) are a class of small molecule that can bind to the DNA minor groove. First, a cost-effective NGS (ion torrent platform)-based Bind-n-Seq was developed to identify the binding specificity of PIP conjugates in a randomized DNA library. Their biological influences rely primarily on selective DNA binding affinity, so it is important to analyze their genome-wide binding preferences. However, it is demanding to enrich specifically the small-molecule-bound DNA without chemical cross-linking or covalent binding in chromatinized genomes. Herein is described a method that was developed using high-throughput sequencing to map the differential binding sites and relative enriched regions of non-cross-linked SAHA-PIPs throughout the complex human genome. SAHA-PIPs binding motifs were identified and the genome-level mapping of SAHA-PIPs-enriched regions provided evidence for the differential activation of the gene network. A method using high-throughput sequencing to map the binding sites and relative enriched regions of alkylating PIP throughout the human genome was also developed. The genome-level mapping of alkylating the PIP-enriched region and the binding sites on the human genome identifies significant genomic targets of breast cancer. It is anticipated that this pioneering low-cost, high through-put investigation at the sequence-specific level will be helpful in understanding the binding specificity of various DNA-binding small molecules, which in turn will be beneficial for the development of small-molecule-based drugs targeting a genome-level sequence.

Advancing Development of Synthetic Gene Regulators

The European Symposium on Computer Aided Process Engineering (ESCAPE) series presents the latest innovations and achievements of leading professionals from the industrial and academic communities. The ESCAPE series serves as a forum for engineers, scientists, researchers, managers and students to present and discuss progress being made in the area of computer aided process engineering (CAPE). European industries large and small are bringing innovations into our lives, whether in the form of new technologies to address environmental problems, new products to make our homes more comfortable and energy efficient or new therapies to improve the health and well being of European citizens. Moreover, the European Industry needs to undertake research and technological initiatives in response to humanity's "Grand Challenges," described in the declaration of Lund, namely, Global Warming, Tightening Supplies of Energy, Water and Food, Ageing Societies, Public Health, Pandemics and Security. Thus, the Technical Theme of ESCAPE 21 will be "Process Systems Approaches for Addressing Grand Challenges in Energy, Environment, Health, Bioprocessing & Nanotechnologies."

21st European Symposium on Computer Aided Process Engineering

Building on a solid foundation of knowledge and skills, this classic text from trusted author Mary Louise Turgeon clearly explains everything from basic immunologic mechanisms and serologic concepts to the theory behind procedures performed in the lab. This go-to resource prepares you for everything from mastering automated techniques to understanding immunoassay instrumentation and disorders of infectious and immunologic origin. Packed with learning objectives, review questions, step-by-step procedures, and case studies, this text is the key to your success in today's modern laboratory environment. Procedural protocols help you transition from immunology theory to practical aspects of the clinical lab. Case studies allow you to apply your knowledge to real-world situations and strengthen your critical thinking skills. Updated illustrations, photographs, and summary tables visually clarify key concepts and information. Full-color presentation clearly showcases diagrams and micrographs, giving you a sense of what you will encounter in the lab. Learning objectives and key terms at the beginning of each chapter provide measurable outcomes and a framework for organizing your study efforts. Review questions at the end of each chapter provide you with review and self-assessment opportunities. NEW!

Highlights of Immunology chapter presents a clear, accessible, and easy-to-understand introduction to immunology that will help you grasp the complex concepts you need to understand to practice in the clinical lab. NEW! Stronger focus on molecular laboratory techniques. NEW! Ten chapters include COVID-19 related topics, including Primer on Vaccines chapter covering newer vaccine production methods focusing on DNA and RNA nucleic acids and viral vectors, and covering eight different platforms in use for vaccine research and development against SARS-CoV-2 virus. NEW! All chapters include significant updates based on reviewer feedback. NEW! Key Concepts interwoven throughout each chapter highlight important facts for more focused learning.

Immunology & Serology in Laboratory Medicine - E-Book

This text explains the concepts behind process design. It uses a case study approach, guiding readers through realistic design problems, and referring back to these cases at the end of each chapter. Throughout, the author uses shortcut techniques that allow engineers to obtain the whole focus for a design in a very short period (generally less than two days).

Conceptual Design of Chemical Processes

The aim of this book is to disseminate the most recent research in science and technology against microbial pathogens presented at the first edition of the ICAR Conference Series (ICAR2010) held in Valladolid, Spain, in November 2010. This volume is a compilation of 86 chapters written by active researchers that offer information and experiences and afford critical insights into anti-microbe strategies in a general context marked by the threat posed by the increasing antimicrobial resistance of pathogenic microorganisms. "Anti" is here taken in a wide sense as "against cell cycle, adhesion, or communication," and when harmful for the human health (infectious diseases, chemotherapy etc.) and industry or economy (food, agriculture, water systems etc.) The book examines this interesting subject area from antimicrobial resistance (superbugs, emerging and re-emerging pathogens etc.), to the use of natural products or microbes against microbial pathogens, not forgetting antimicrobial chemistry, physics and material science. Readers will find in a single volume, up-to-date information of the current knowledge in antimicrobial research. The book is recommended for researchers from a broad range of academic disciplines that are contributing in the battle against harmful microorganisms, not only those more traditionally involved in this research area (microbiologists, biochemists, geneticists, clinicians etc.), but also experimental and theoretical/computational chemists, physicists or engineers.

Science and Technology Against Microbial Pathogens

Students contemplating careers in chemistry, whether in research, practice, or academia, obviously need a solid grounding in proper research methodology, reasoning, and analysis. However, there are few resources available that efficiently and effectively introduce these concepts and techniques and inspire students to undertake advanced research, particularly in the area of catalysis. Catalysis: Principles and Applications evolved out of a special, resoundingly successful short course for graduate students interested in catalysis. It covers nearly the entire gamut of the subject, from its fundamentals to its modern, applied aspects. The chapters were contributed by catalysis specialists from leading academic institutions, national laboratories and industrial R&D labs. Because they are based on the authors' lecture notes, each chapter is highly accessible and for the most part self-contained. Topics include various spectroscopic methods, biocatalysis, x-ray and thermal analysis, photocatalysis, and recent developments, such as solid acid catalysts, fine chemical synthesis, and computer-aided catalyst design. The book also contains discussions on a variety of modern applications, including environmental pollution control, petroleum refining, fuel cells, and monomolecular films. Logically presented, well-illustrated, and thoroughly referenced, Catalysis: Principles and Applications offers an outstanding basis for courses in catalysis. It not only imparts the fundamentals, synthesis, characterization, and applications of catalysis, but does so in a way that will motivate students to pursue more advanced studies and ultimately careers in the field.

Catalysis

Since the discovery of the Warburg effect in the 1920s cancer has been tightly associated with the genetic and metabolic state of the cell. One of the hallmarks of cancer is the alteration of the cellular metabolism in order to promote proliferation and undermine cellular defense mechanisms such as apoptosis or detection by the immune system. However, the strategies by which this is achieved in different cancers and sometimes even in different patients of the same cancer is very heterogeneous,

which hinders the design of general treatment options. Recently, there has been an ongoing effort to study this phenomenon on a genomic scale in order to understand the causality underlying the disease. Hence, current “omics” technologies have contributed to identify and monitor different biological pieces at different biological levels, such as genes, proteins or metabolites. These technological capacities have provided us with vast amounts of clinical data where a single patient may often give rise to various tissue samples, each of them being characterized in detail by genomescale data on the sequence, expression, proteome and metabolome level. Data with such detail poses the imminent problem of extracting meaningful interpretations and translating them into specific treatment options. To this purpose, Systems Biology provides a set of promising computational tools in order to decipher the mechanisms driving a healthy cell’s metabolism into a cancerous one. However, this enterprise requires bridging the gap between large data resources, mathematical analysis and modeling specifically designed to work with the available data. This is by no means trivial and requires high levels of communication and adaptation between the experimental and theoretical side of research.

Systems Biology and the Challenge of Deciphering the Metabolic Mechanisms Underlying Cancer

Fractionators, separators and accumulators, cooling towers, gas treating, blending, troubleshooting field cases, gas solubility, and density of irregular solids * Hundreds of common sense techniques, shortcuts, and calculations.

Rules of Thumb for Chemical Engineers

Labs on Chip: Principles, Design and Technology provides a complete reference for the complex field of labs on chip in biotechnology. Merging three main areas— fluid dynamics, monolithic micro- and nanotechnology, and out-of-equilibrium biochemistry—this text integrates coverage of technology issues with strong theoretical explanations of design techniques. Analyzing each subject from basic principles to relevant applications, this book: Describes the biochemical elements required to work on labs on chip Discusses fabrication, microfluidic, and electronic and optical detection techniques Addresses planar technologies, polymer microfabrication, and process scalability to huge volumes Presents a global view of current lab-on-chip research and development Devotes an entire chapter to labs on chip for genetics Summarizing in one source the different technical competencies required, Labs on Chip: Principles, Design and Technology offers valuable guidance for the lab-on-chip design decision-making process, while exploring essential elements of labs on chip useful both to the professional who wants to approach a new field and to the specialist who wants to gain a broader perspective.

Labs on Chip

This best selling text prepares students to formulate and solve material and energy balances in chemical process systems and lays the foundation for subsequent courses in chemical engineering. The text provides a realistic, informative, and positive introduction to the practice of chemical engineering. The Integrated Media Edition update provides a stronger link between the text, media supplements, and new student workbook.

Elementary Principles of Chemical Processes, 3rd Edition 2005 Edition Integrated Media and Study Tools, with Student Workbook

The idea of combining drugs and diagnostics in oncology is not new. When the selective estrogen receptor modulator tamoxifen was developed in the 1970’s for the treatment of breast cancer a positive correlation between receptor status and treatment outcome was found. As a result of this research, it was suggested to use the estrogen-receptor assay as a diagnostic test for selection of patients for tamoxifen treatment. Despite this suggestion was put forward nearly 40 years ago the adaptation of the drug-diagnostic co-development model has been relatively slow and it is only within the last decade that it has gained more widespread acceptance. The parallel development of the monoclonal antibody trastuzumab (Herceptin®, Roche/Genentech) and the immunohistochemistry assay for HER2 protein overexpression (HercepTest™, Dako) seems to have served as an inspiration to a number of stakeholders such as pharma and diagnostic companies, regulatory agencies, and academia. In recent years we have seen an increasing number of oncology drug development projects that have taken advantage of the drug-diagnostic co-development model, as outline below. Most of the new targeted anti-cancer drugs that have been introduced in recent years, such as BRAF-, ALK-, EGFR- and HER2-inhibitors, are more or less all a product of the drugdiagnostic co-development model. These drugs have shown remarkable high response rates in selected groups of patients within cancer

diseases with great unmet medical needs. This Research Topic on Drug-Diagnostic Co-Development in Oncology aims to provide you with an insight into some of the diverse activities that constitute this new research area.

General Technical Report PNW-GTR

A comprehensive and example oriented text for the study of chemical process design and simulation Chemical Process Design and Simulation is an accessible guide that offers information on the most important principles of chemical engineering design and includes illustrative examples of their application that uses simulation software. A comprehensive and practical resource, the text uses both Aspen Plus and Aspen Hysys simulation software. The author describes the basic methodologies for computer aided design and offers a description of the basic steps of process simulation in Aspen Plus and Aspen Hysys. The text reviews the design and simulation of individual simple unit operations that includes a mathematical model of each unit operation such as reactors, separators, and heat exchangers. The author also explores the design of new plants and simulation of existing plants where conventional chemicals and material mixtures with measurable compositions are used. In addition, to aid in comprehension, solutions to examples of real problems are included. The final section covers plant design and simulation of processes using nonconventional components. This important resource: Includes information on the application of both the Aspen Plus and Aspen Hysys software that enables a comparison of the two software systems Combines the basic theoretical principles of chemical process and design with real-world examples Covers both processes with conventional organic chemicals and processes with more complex materials such as solids, oil blends, polymers and electrolytes Presents examples that are solved using a new version of Aspen software, ASPEN One 9 Written for students and academics in the field of process design, Chemical Process Design and Simulation is a practical and accessible guide to the chemical process design and simulation using proven software.

Drug-Diagnostics Co-Development in Oncology

Satya P. Gupta's Hydroxamic Acids is the first book to compile invited articles written by international experts on the class of compounds hydroxamic acids. Found to possess a wide spectrum of biological activities, the hydroxamic acids are of interest to theoretical and experimental chemists who can study and make use of them in drug design and development. Chapters in this book provide a diverse and comprehensive coverage of this compound class and consequently this publication is a valuable resource for researchers in chemical, pharmaceutical and biological sciences.

The Europa World of Learning

Provides: over 26,000 academic institutions, 150,000 staff and officials; extensive coverage of universities, colleges and other centres of learning; and detailed information on over 400 international cultural, scientific and educational organizations.

Chemical Process Design and Simulation: Aspen Plus and Aspen Hysys Applications

From Structure to Clinical Development: Allosteric Modulation of G Protein-Coupled Receptors, Volume 88, the latest release in the Advances in Pharmacology series, presents a variety of chapters from the best authors in the field. Chapters in this updated edition include Targeting muscarinic M1 receptor in neurodegeneration, Photo-switchable allosteric ligands, Computational approaches for the design of mGlu receptor allosteric modulators, Allosteric modulation of GLP-1 receptor in metabolic disorders, Group II mGluR roles in the nervous system and their roles in addiction, RAMPs as allosteric modulators of Class B GPCRs, Structure-based discovery and development of mGlu5 NAMs, and much more. Includes the authority and expertise of leading contributors in pharmacology Presents the latest release in the Advances in Pharmacology series

Hydroxamic Acids

The Bulletin of the Atomic Scientists is the premier public resource on scientific and technological developments that impact global security. Founded by Manhattan Project Scientists, the Bulletin's iconic "Doomsday Clock" stimulates solutions for a safer world.

The Europa World of Learning

Contains information on international organizations and individual chapters on academic institutions in countries from Afghanistan to Zimbabwe. A comprehensive index is included in both volumes.

From Structure to Clinical Development: Allosteric Modulation of G Protein-Coupled Receptors

Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." –Philip Allen This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. Provides a common focal point for "bridging the gap" between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services Each chapter provides definitions of key terms, guiding principles, examples, author's notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UML) / Systems Modeling Language (SysML), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V) Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging-points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

Bulletin of the Atomic Scientists

Chemical Process Engineering presents a systematic approach to solving design problems by listing the needed equations, calculating degrees-of-freedom, developing calculation procedures to generate process specifications- mostly pressures, temperatures, compositions, and flow rates- and sizing equipment. This illustrative reference/text tabulates numerous easy-to-follow calculation procedures as well as the relationships needed for sizing commonly used equipment.

Bibliography of Agriculture

Marine environment is the largest habitat covering approximately 70% of the total earth surface. Oceans are the main regulatory agent of earth's climate and harbour a huge diversity of living organisms. Marine environment provide a unique ecological niche to different microbes which play a significant role in nutrient recycling as well as various environmental activities. However with rapid industrialization, urbanisation, ship trafficking and mining activities enormous amounts of waste including heavy metals, hydrocarbons, chemicals, dyes, organic load, agriculture waste, pesticides, antifoulants (e.g. tributyltin) and bacterial pathogens have accumulated in marine/estuarine environments over several decades and pose a serious threat to marine macro and micro biota and humans and therefore require special attention. However some natural marine microbes are known to possess diverse resistance mechanisms and degradation pathways to variety of toxic pollutants and these unique characteristics of marine/estuarine bacteria proved to be an ideal tool in bioremediation of contaminated marine and estuarine environmental sites. Reclamation of marine polluted environments using marine microbes has been found to be effective, affordable and ecofriendly technological solution over conventional physical and chemical methods. Objective of this book is focus on marine pollution and application of marine microorganisms in cost effective and ecofriendly methods of pollution abatement.

In 2014, the World Health Organization (WHO) listed cancer as the second leading cause of death and highlighted antimicrobial resistance as “a key global health challenge” that may, in a worst case scenario, lead to an annual death toll of 10 million by 2050, which would exceed predicted cancer deaths by 20%. Novel promising therapeutic options to reduce morbidity and mortality of both infectious microbial diseases and cancer are being developed based on antimicrobial peptides (AMPs), i.e., evolutionary proven antibiotics that also possess anti-cancer activities. Intriguingly, AMPs and anti-cancer peptides (ACPs) rely typically on novel mechanisms and cellular targets not used by current antibiotics or chemotherapeutics. Initiated by presentations at the International Meeting of Antimicrobial Peptides in 2016 (IMAP 2016), hosted at Leipzig University, Germany, this book compiles the most recent strategies and promising lead compounds for treating multi- and pan-resistant microbes and chemo-resistant cancer cells in fourteen different chapters representing leading research groups from five different continents. In this respect, the book shall stimulate new avenues of thinking and strategies in tackling forthcoming antimicrobial and cancer resistance health threats with the hope that the scenarios recently reported by the WHO will never eventuate.

System Engineering Analysis, Design, and Development

Aiding researchers seeking to eliminate multi-step procedures, reduce delays in treatment and ease patient care, Cancer Theranostics reviews, assesses, and makes pertinent clinical recommendations on the integration of comprehensive in vitro diagnostics, in vivo molecular imaging, and individualized treatments towards the personalization of cancer treatment. Cancer Theranostics describes the identification of novel biomarkers to advance molecular diagnostics of cancer. The book encompasses new molecular imaging probes and techniques for early detection of cancer, and describes molecular imaging-guided cancer therapy. Discussion also includes nanoplatforms incorporating both cancer imaging and therapeutic components, as well as clinical translation and future perspectives. Supports elimination of multi-step approaches and reduces delays in treatments through combinatorial diagnosis and therapy Fully assesses cancer theranostics across the emergent field, with discussion of biomarkers, molecular imaging, imaging guided therapy, nanotechnology, and personalized medicine Content bridges laboratory, clinic, and biotechnology industries to advance biomedical science and improve patient management

Chemical Process Engineering

Contains the papers presented at a symposium which aimed to address and record changes in distillation and absorption and to discuss new directions. Topics covered include: column sequencing; equipment; batch distillation; azeotropic and extractive distillation; packed columns and more.

The Illustrated London News

Vols. for 1963- include as pt. 2 of the Jan. issue: Medical subject headings.

Monthly Catalog of United States Government Publications

SURVEY OF OPERATIONS RESEARCH AND SYSTEMS ENGINEERING