

Transport Processes And Separation Process Principles Includes Unit Operations 4th Ed

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PRINCIPLES OF MASS TRANSFER AND SEPERATION PROCESSES - BINAY K. DUTTA 2007-01-21

THIS TEXTBOOK IS TARGETTED TO UNDERGRADUATE STUDENTS IN CHEMICAL ENGINEERING, CHEMICAL TECHNOLOGY, AND BIOCHEMICAL ENGINEERING FOR COURSES IN MASS TRANSFER, SEPARATION PROCESSES, TRANSPORT PROCESSES, AND UNIT OPERATIONS. THE PRINCIPLES OF MASS TRANSFER, BOTH DIFFUSIONAL AND CONVECTIVE HAVE BEEN COMPREHENSIVELY DISCUSSED. THE APPLICATION OF THESE PRINCIPLES TO SEPARATION PROCESSES IS EXPLAINED. THE MORE COMMON SEPARATION PROCESSES USED IN THE CHEMICAL INDUSTRIES ARE INDIVIDUALLY DESCRIBED IN SEPARATE CHAPTERS. THE BOOK ALSO PROVIDES A GOOD UNDERSTANDING OF THE CONSTRUCTION, THE OPERATING PRINCIPLES, AND THE SELECTION CRITERIA OF SEPARATION EQUIPMENT. RECENT DEVELOPMENTS IN EQUIPMENT HAVE BEEN INCLUDED AS FAR AS POSSIBLE. THE PROCEDURE OF EQUIPMENT DESIGN AND SIZING HAS BEEN ILLUSTRATED BY SIMPLE EXAMPLES. AN OVERVIEW OF DIFFERENT APPLICATIONS AND ASPECTS OF MEMBRANE SEPARATION HAS ALSO BEEN PROVIDED. 'HUMIDIFICATION AND WATER COOLING', NECESSARY IN EVERY PROCESS INDUS-TRY, IS ALSO DESCRIBED. FINALLY, ELEMENTARY PRINCIPLES OF 'UNSTEADY STATE DIFFUSION' AND MASS TRANSFER ACCOMPANIED BY A CHEMICAL REACTION ARE COVERED. SALIENT FEATURES : * A BALANCED COVERAGE OF THEORETICAL PRINCIPLES AND APPLICATIONS. * IMPORTANT RECENT DEVELOPMENTS IN MASS TRANSFER EQUIPMENT AND PRACTICE ARE INCLUDED. * A LARGE NUMBER OF SOLVED PROBLEMS OF VARYING LEVELS OF COMPLEXITIES SHOWING THE APPLICATIONS OF THE THEORY ARE INCLUDED. * MANY END-CHAPTER EXERCISES. * CHAPTER-WISE MULTIPLE CHOICE QUESTIONS. * AN INSTRUCTORS MANUAL FOR THE TEACHERS.

TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES - CHRISTIE JOHN GEANKOPLIS 2018-04-23

THE COMPLETE, UNIFIED, UP-TO-DATE GUIDE TO TRANSPORT AND SEPARATION-FULLY UPDATED FOR TODAY'S METHODS AND SOFTWARE TOOLS **TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES, FIFTH EDITION**, OFFERS A UNIFIED AND UP-TO-DATE TREATMENT OF MOMENTUM, HEAT, AND MASS TRANSFER AND SEPARATIONS PROCESSES. THIS EDITION-REORGANIZED AND MODULARIZED FOR BETTER READABILITY AND TO ALIGN WITH MODERN CHEMICAL ENGINEERING CURRICULA-COVERS BOTH FUNDAMENTAL PRINCIPLES AND PRACTICAL APPLICATIONS, AND IS A KEY RESOURCE FOR CHEMICAL ENGINEERING STUDENTS AND PROFESSIONALS ALIKE. THIS EDITION PROVIDES NEW CHAPTER OBJECTIVES AND SUMMARIES THROUGHOUT BETTER LINKAGES BETWEEN COVERAGE OF HEAT AND MASS TRANSFER MORE COVERAGE OF HEAT EXCHANGER DESIGN NEW PROBLEMS BASED ON EMERGING TOPICS SUCH AS BIOTECHNOLOGY, NANOTECHNOLOGY, AND GREEN ENGINEERING NEW INSTRUCTOR RESOURCES: ADDITIONAL HOMEWORK PROBLEMS, EXAM QUESTIONS, PROBLEM-SOLVING VIDEOS, COMPUTATIONAL PROJECTS, AND MORE PART 1 THOROUGHLY COVERS THE FUNDAMENTAL PRINCIPLES OF TRANSPORT PHENOMENA, ORGANIZED INTO THREE SECTIONS: FLUID MECHANICS, HEAT TRANSFER, AND MASS TRANSFER. PART 2 FOCUSES ON KEY SEPARATION PROCESSES, INCLUDING ABSORPTION, STRIPPING, HUMIDIFICATION, FILTRATION, MEMBRANE SEPARATION, GASEOUS MEMBRANES, DISTILLATION, LIQUID-LIQUID EXTRACTION, ADSORPTION, ION EXCHANGE, CRYSTALLIZATION AND PARTICLE-SIZE REDUCTION, SETTLING, SEDIMENTATION, CENTRIFUGATION, LEACHING, EVAPORATION, AND DRYING. THE AUTHORS CONCLUDE WITH CONVENIENT APPENDICES ON THE PROPERTIES OF WATER, COMPOUNDS, FOODS, BIOLOGICAL MATERIALS, PIPES, TUBES, AND SCREENS. THE COMPANION WEBSITE (TRINE.EDU/TRANSPORT5ED/) CONTAINS ADDITIONAL HOMEWORK PROBLEMS THAT INCORPORATE TODAY'S LEADING SOFTWARE, INCLUDING ASPEN/CHEMCAD, MATLAB, COMSOL, AND MICROSOFT EXCEL.

SEPARATION PROCESS PRINCIPLES - J. D. SEADER 2016-01-20

SEPARATION PROCESS PRINCIPLES WITH APPLICATIONS USING PROCESS SIMULATOR, 4TH EDITION IS THE MOST COMPREHENSIVE AND UP-TO-DATE TREATMENT OF THE MAJOR SEPARATION OPERATIONS IN THE CHEMICAL INDUSTRY. THE 4TH EDITION FOCUSES ON USING PROCESS SIMULATORS TO DESIGN SEPARATION PROCESSES AND PREPARES READERS FOR PROFESSIONAL PRACTICE. COMPLETELY REWRITTEN TO ENHANCE CLARITY, THIS FOURTH EDITION PROVIDES ENGINEERS WITH A STRONG UNDERSTANDING OF THE FIELD. WITH THE HELP OF AN ADDITIONAL CO-AUTHOR, THE TEXT PRESENTS NEW INFORMATION ON BIOSEPARATIONS THROUGHOUT THE CHAPTERS. A NEW CHAPTER ON MECHANICAL SEPARATIONS COVERS SETTLING, FILTRATION AND CENTRIFUGATION INCLUDING MECHANICAL SEPARATIONS IN BIOTECHNOLOGY AND CELL LYSIS. BOXES HELP HIGHLIGHT FUNDAMENTAL EQUATIONS. NUMEROUS NEW EXAMPLES AND EXERCISES ARE INTEGRATED THROUGHOUT AS WELL.

TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES - CHRISTIE JOHN GEANKOPLIS 2009

PYTHON FOR PROGRAMMERS - PAUL J. DEITEL 2019-03-15

THE PROFESSIONAL PROGRAMMER'S DEITEL® GUIDE TO PYTHON® WITH INTRODUCTORY ARTIFICIAL INTELLIGENCE CASE STUDIES WRITTEN FOR PROGRAMMERS WITH A BACKGROUND IN ANOTHER HIGH-LEVEL LANGUAGE, PYTHON FOR PROGRAMMERS USES HANDS-ON INSTRUCTION TO TEACH TODAY'S MOST COMPELLING, LEADING-EDGE COMPUTING TECHNOLOGIES AND PROGRAMMING IN PYTHON-ONE OF THE WORLD'S MOST POPULAR AND FASTEST-GROWING

LANGUAGES. PLEASE READ THE TABLE OF CONTENTS DIAGRAM INSIDE THE FRONT COVER AND THE PREFACE FOR MORE DETAILS. IN THE CONTEXT OF 500+, REAL-WORLD EXAMPLES RANGING FROM INDIVIDUAL SNIPPETS TO 40 LARGE SCRIPTS AND FULL IMPLEMENTATION CASE STUDIES, YOU'LL USE THE INTERACTIVE IPYTHON INTERPRETER WITH CODE IN JUPYTER NOTEBOOKS TO QUICKLY MASTER THE LATEST PYTHON CODING IDIOMS. AFTER COVERING PYTHON CHAPTERS 1-5 AND A FEW KEY PARTS OF CHAPTERS 6-7, YOU'LL BE ABLE TO HANDLE SIGNIFICANT PORTIONS OF THE HANDS-ON INTRODUCTORY AI CASE STUDIES IN CHAPTERS 11-16, WHICH ARE LOADED WITH COOL, POWERFUL, CONTEMPORARY EXAMPLES. THESE INCLUDE NATURAL LANGUAGE PROCESSING, DATA MINING TWITTER® FOR SENTIMENT ANALYSIS, COGNITIVE COMPUTING WITH IBM® WATSON®, SUPERVISED MACHINE LEARNING WITH CLASSIFICATION AND REGRESSION, UNSUPERVISED MACHINE LEARNING WITH CLUSTERING, COMPUTER VISION THROUGH DEEP LEARNING AND CONVOLUTIONAL NEURAL NETWORKS, DEEP LEARNING WITH RECURRENT NEURAL NETWORKS, BIG DATA WITH HADOOP®, SPARK® AND NOSQL DATABASES, THE INTERNET OF THINGS AND MORE. YOU'LL ALSO WORK DIRECTLY OR INDIRECTLY WITH CLOUD-BASED SERVICES, INCLUDING TWITTER, GOOGLE TRANSLATE®, IBM WATSON, MICROSOFT® AZURE®, OPENMAPQUEST, PUBNUB AND MORE. FEATURES 500+ HANDS-ON, REAL-WORLD, LIVE-CODE EXAMPLES FROM SNIPPETS TO CASE STUDIES IPYTHON + CODE IN JUPYTER® NOTEBOOKS LIBRARY-FOCUSED: USES PYTHON STANDARD LIBRARY AND DATA SCIENCE LIBRARIES TO ACCOMPLISH SIGNIFICANT TASKS WITH MINIMAL CODE RICH PYTHON COVERAGE: CONTROL STATEMENTS, FUNCTIONS, STRINGS, FILES, JSON SERIALIZATION, CSV, EXCEPTIONS PROCEDURAL, FUNCTIONAL-STYLE AND OBJECT-ORIENTED PROGRAMMING COLLECTIONS: LISTS, TUPLES, DICTIONARIES, SETS, NUMPY ARRAYS, PANDAS SERIES & DATAFRAMES STATIC, DYNAMIC AND INTERACTIVE VISUALIZATIONS DATA EXPERIENCES WITH REAL-WORLD DATASETS AND DATA SOURCES INTRO TO DATA SCIENCE SECTIONS: AI, BASIC STATS, SIMULATION, ANIMATION, RANDOM VARIABLES, DATA WRANGLING, REGRESSION AI, BIG DATA AND CLOUD DATA SCIENCE CASE STUDIES: NLP, DATA MINING TWITTER®, IBM® WATSON®, MACHINE LEARNING, DEEP LEARNING, COMPUTER VISION, HADOOP®, SPARK®, NOSQL, IoT OPEN-SOURCE LIBRARIES: NUMPY, PANDAS, MATPLOTLIB, SEABORN, FOLIUM, SCIPY, NLTK, TEXTBLOB, SPACY, TEXTATISTIC, TWEETPY, SCIKIT-LEARN®, KERAS AND MORE ACCOMPANYING CODE EXAMPLES ARE AVAILABLE HERE:

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ION-EXCHANGE MEMBRANE SEPARATION PROCESSES - H STRATHMANN 2004-01-29

TODAY, MEMBRANES AND MEMBRANE PROCESSES ARE USED AS EFFICIENT TOOLS FOR THE SEPARATION OF LIQUID MIXTURES OR GASES IN THE CHEMICAL AND BIOMEDICAL INDUSTRY, IN WATER DESALINATION AND WASTEWATER PURIFICATION. DESPITE THE FACT THAT VARIOUS MEMBRANE PROCESSES, LIKE REVERSE OSMOSIS, ARE DESCRIBED IN GREAT DETAIL IN A NUMBER OF BOOKS, PROCESSES INVOLVING ION-EXCHANGE MEMBRANES ARE ONLY DESCRIBED IN A FRAGMENTED WAY IN SCIENTIFIC JOURNALS AND PATENTS; EVEN THOUGH LARGE INDUSTRIAL APPLICATIONS, LIKE ELECTRODIALYSIS, HAVE BEEN AROUND FOR OVER HALF A CENTURY. THEREFORE, THIS BOOK IS EMPHASIZING ON THE MOST RELEVANT ASPECTS OF ION-EXCHANGE MEMBRANES. THIS BOOK PROVIDES A COMPREHENSIVE OVERVIEW OF ION-EXCHANGE MEMBRANE SEPARATION PROCESSES COVERING THE FUNDAMENTALS AS WELL AS RECENT DEVELOPMENTS OF THE DIFFERENT PRODUCTS AND PROCESSES AND THEIR APPLICATIONS. THE AUDIENCE FOR THIS BOOK IS HETEROGENEOUS, AS IT INCLUDES PLANT MANAGERS AND PROCESS ENGINEERS AS WELL AS RESEARCH SCIENTISTS AND GRADUATE STUDENTS. THE SEPARATE CHAPTERS ARE BASED ON DIFFERENT TOPICS. THE FIRST CHAPTER DESCRIBES THE RELEVANT ELECTROMEMBRANE PROCESSES IN A GENERAL OVERVIEW. THE SECOND CHAPTER EXPLAINS THERMODYNAMIC AND PHYSICO-CHEMICAL FUNDAMENTALS. THE THIRD CHAPTER GIVES INFORMATION ABOUT ION-EXCHANGE MEMBRANE PREPARATION TECHNIQUES, WHILE THE FOURTH AND FIFTH CHAPTER DISCUSSES THE PROCESSES AS UNIT OPERATIONS GIVING EXAMPLES FOR THE DESIGN OF SPECIFIC PLANTS. FIRST WORK ON THE PRINCIPLES AND APPLICATIONS OF ELECTRODIALYSIS AND RELATED SEPARATION PROCESSES PRESENTLY NO OTHER COMPREHENSIVE WORK THAT CAN SERVE AS BOTH REFERENCE WORK AND TEXT BOOK IS AVAILABLE BOOK IS SUITED FOR TEACHING STUDENTS AND AS SOURCE FOR DETAILED INFORMATION

TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES - CHRISTIE J. GEANKOPLIS 2003

APPROPRIATE FOR ONE-YEAR TRANSPORT PHENOMENA (ALSO CALLED TRANSPORT PROCESSES) AND SEPARATION PROCESSES COURSE. FIRST SEMESTER COVERS FLUID MECHANICS, HEAT AND MASS TRANSFER; SECOND SEMESTER COVERS SEPARATION PROCESS PRINCIPLES (INCLUDES UNIT OPERATIONS). THE TITLE OF THIS FOURTH EDITION HAS BEEN CHANGED FROM TRANSPORT PROCESSES AND UNIT OPERATIONS TO TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES (INCLUDES UNIT OPERATIONS). THIS WAS DONE BECAUSE THE TERM UNIT OPERATIONS HAS BEEN LARGELY SUPERSEDED BY THE TERM SEPARATION PROCESSES WHICH BETTER REFLECTS THE PRESENT MODERN NOMENCLATURE

BEING USED. THE MAIN OBJECTIVES AND THE FORMAT OF THE FOURTH EDITION REMAIN THE SAME. THE SECTIONS ON MOMENTUM TRANSFER HAVE BEEN GREATLY EXPANDED, ESPECIALLY IN THE SECTIONS ON FLUIDIZED BEDS, FLOW METERS, MIXING, AND NON-NEWTONIAN FLUIDS. MATERIAL HAS BEEN ADDED TO THE CHAPTER ON MASS TRANSFER. THE CHAPTERS ON ABSORPTION, DISTILLATION, AND LIQUID-LIQUID EXTRACTION HAVE ALSO BEEN ENLARGED. MORE NEW MATERIAL HAS BEEN ADDED TO THE SECTIONS ON ION EXCHANGE AND CRYSTALLIZATION. THE CHAPTER ON MEMBRANE SEPARATION PROCESSES HAS BEEN GREATLY EXPANDED ESPECIALLY FOR GAS-MEMBRANE THEORY.

MASS TRANSFER AND SEPARATION PROCESSES - DIRAN BASMADJIAN 2007-04-25
MASS TRANSFER ALONG WITH SEPARATION PROCESSES IS AN AREA THAT IS OFTEN QUITE CHALLENGING TO MASTER, AS MOST VOLUMES CURRENTLY AVAILABLE COMPLICATE THE LEARNING BY TEACHING MASS TRANSFER LINKED WITH HEAT TRANSFER, RATHER THAN FOCUSING ON MORE RELEVANT TECHNIQUES. WITH THIS THOROUGHLY UPDATED SECOND EDITION, *MASS TRANSFER AND SEPARATION PROCESSES: PRINCIPLES AND APPLICATIONS* PRESENTS A HIGHLY THOUGHTFUL AND INSTRUCTIVE INTRODUCTION TO THIS SOPHISTICATED MATERIAL BY TEACHING MASS TRANSFER AND SEPARATION PROCESSES AS UNIQUE THOUGH RELATED ENTITIES. IN AN EVER INCREASING EFFORT TO DEMYSTIFY THE SUBJECT, WITH THIS EDITION, THE AUTHOR—AVOIDS MORE COMPLEX SEPARATION PROCESSES PLACES A GREATER EMPHASIS ON THE ART OF SIMPLIFYING ASSUMPTIONS CONVEYS A GREATER SENSE OF SCALE WITH THE INCLUSION OF NUMEROUS PHOTOS OF ACTUAL INSTALLATIONS MAKES THE MATH ONLY AS COMPLICATED AS NECESSARY WHILE REVIEWING FUNDAMENTAL PRINCIPLES THAT MAY HAVE BEEN FORGOTTEN THE BOOK EXPLORES ESSENTIAL PRINCIPLES AND REINFORCES THE CONCEPTS WITH CLASSICAL AND CONTEMPORARY ILLUSTRATIONS DRAWN FROM THE ENGINEERING, ENVIRONMENTAL, AND BIOLOGICAL SCIENCES. THE THEORIES OF HEAT CONDUCTION AND TRANSFER ARE UTILIZED NOT SO MUCH TO DRAW ANALOGIES BUT RATHER TO MAKE FRUITFUL USE OF EXISTING SOLUTIONS NOT SEEN IN OTHER TEXTS ON THE SUBJECT. BOTH AN INTRODUCTORY RESOURCE AND A REFERENCE, THIS IMPORTANT TEXT SERVES ENVIRONMENTAL, BIOMEDICAL, AND ENGINEERING PROFESSIONALS, AS WELL AS ANYONE WISHING TO GAIN A GRASP ON THIS SUBJECT AND ITS INCREASING RELEVANCE ACROSS A NUMBER OF FIELDS. IT FILLS A VOID IN TRADITIONAL CHEMICAL ENGINEERING LITERATURE BY PROVIDING ACCESS TO THE PRINCIPLES AND WORKING PRACTICES THAT ALLOW MASS TRANSFER THEORY TO BE APPLIED TO SEPARATION PROCESSES.

INTRODUCTION TO ADSORPTION - CHI TIEN 2018-11-27

INTRODUCTION TO ADSORPTION: BASICS, ANALYSIS, AND APPLICATIONS PRESENTS ADSORPTION BASICS THAT ARE RELEVANT AND ESSENTIAL TO ITS APPLICATION, INCLUDING DATA ANALYSIS, INTERPRETATION AND DESIGN CALCULATIONS. THE BOOK DELIBERATELY KEEPS BACKGROUND INFORMATION TO A MINIMUM, INSTEAD COMPREHENSIVELY COVERING ADSORPTION OF LIQUID SOLUTIONS, THE DIFFERENCE BETWEEN EQUILIBRIUM INDIVIDUAL SOLUTE UPTAKE AND SURFACE EXCESS, A GENERAL DISCUSSION OF ADSORBATE UPTAKE MECHANISMS AND UPTAKE RATE EXPRESSION, UPTAKE STEPS, PERFORMANCE MODELS AND THEIR GENERALIZATIONS, APPLICATION OF PERFORMANCE MODELS, AND DESIGN METHODS BASED ON THE CONSTANT BEHAVIOR ASSUMPTION AND UNUSED BED LENGTH CONCEPT. INCLUDES ADSORPTION BASICS AND THEIR APPLICATIONS DISCUSSES GAS ADSORPTION EQUILIBRIUM AND EQUILIBRIUM OF LIQUID ADSORPTION GIVES THE VARIOUS STEPS OF ADSORBATE UPTAKE AND THEIR COMBINATION TO YIELD ADSORBATE UPTAKE RATE EXPRESSION PRESENTS BOTH RATIONAL AND EMPIRICAL DESIGN FOR ADSORPTION PROCESSES HIGHLIGHTS COMMON MISTAKES FOUND IN RECENT ADSORPTION PUBLICATIONS

BORON SEPARATION PROCESSES - NALAN KABAY 2015-01-19

THE IMPENDING CRISIS POSED BY WATER STRESS AND POOR SANITATION REPRESENTS ONE OF GREATEST HUMAN CHALLENGES FOR THE 21ST CENTURY, AND MEMBRANE TECHNOLOGY HAS EMERGED AS A SERIOUS CONTENDER TO CONFRONT THE CRISIS. YET, WHILST THERE ARE COUNTLESS TEXTS ON WASTEWATER TREATMENT AND ON MEMBRANE TECHNOLOGIES, NONE ADDRESS THE BORON PROBLEM AND SEPARATION PROCESSES FOR BORON ELIMINATION. *BORON SEPARATION PROCESSES* FILLS THIS GAP AND PROVIDES A UNIQUE AND SINGLE SOURCE THAT HIGHLIGHTS THE GROWING AND COMPETITIVE IMPORTANCE OF THESE PROCESSES. FOR THE FIRST TIME, THE READER IS ABLE TO SEE IN ONE REFERENCE WORK THE STATE-OF-THE-ART RESEARCH IN THIS RAPIDLY GROWING FIELD. THE BOOK FOCUSES ON FOUR MAIN AREAS: EFFECT OF BORON ON HUMANS AND PLANTS SEPARATION OF BORON BY ION EXCHANGE AND ADSORPTION PROCESSES SEPARATION OF BORON BY MEMBRANE PROCESSES SIMULATION AND OPTIMIZATION STUDIES FOR BORON SEPARATION PROVIDES IN ONE SOURCE A STATE-OF-THE-ART OVERVIEW OF THIS COMPELLING AREA REVIEWS THE ENVIRONMENTAL IMPACT OF BORON BEFORE INTRODUCING EMERGING BORON SEPARATION PROCESSES INCLUDES SIMULATION AND OPTIMIZATION STUDIES FOR BORON SEPARATION PROCESSES DESCRIBES BORON SEPARATION PROCESSES APPLICABLE TO SPECIFIC SOURCES, SUCH AS SEAWATER, GEOTHERMAL WATER AND WASTEWATER

LIQUID MEMBRANES - VLADIMIR S KISLIK 2009-08-31

LIQUID MEMBRANES: PRINCIPLES AND APPLICATIONS IN CHEMICAL SEPARATIONS AND WASTEWATER TREATMENT DISCUSSES THE PRINCIPLES AND APPLICATIONS OF THE LIQUID MEMBRANE (LM) SEPARATION PROCESSES IN ORGANIC AND INORGANIC CHEMISTRY, ANALYTICAL CHEMISTRY, BIOCHEMISTRY, BIOMEDICAL ENGINEERING, GAS SEPARATION, AND WASTEWATER TREATMENT. IT PRESENTS UPDATED, USEFUL, AND SYSTEMATIZED INFORMATION ON NEW LM SEPARATION TECHNOLOGIES, ALONG WITH NEW DEVELOPMENTS IN THE FIELD. IT PROVIDES AN OVERVIEW OF LMS AND LM PROCESSES, AND IT EXAMINES THE MECHANISMS AND KINETICS OF CARRIER-FACILITATED TRANSPORT THROUGH LMS. IT ALSO DISCUSSES ACTIVE TRANSPORT, DRIVEN BY OXIDATION-REDUCTION, CATALYTIC, AND BIOCONVERSION REACTIONS ON THE LM INTERFACES; MODIFICATIONS OF SUPPORTED LMS; BULK AQUEOUS HYBRID LM PROCESSES WITH WATER-SOLUBLE CARRIERS; EMULSION LMS AND THEIR APPLICATIONS; AND PROGRESS IN LM SCIENCE AND ENGINEERING. THIS BOOK WILL BE OF VALUE TO STUDENTS AND YOUNG RESEARCHERS WHO ARE NEW TO SEPARATION SCIENCE AND TECHNOLOGY, AS WELL AS TO SCIENTISTS AND ENGINEERS INVOLVED IN THE RESEARCH AND DEVELOPMENT OF SEPARATION TECHNOLOGIES, LM SEPARATIONS, AND MEMBRANE REACTORS. - PROVIDES COMPREHENSIVE KNOWLEDGE-BASED INFORMATION ON THE PRINCIPLES AND APPLICATIONS OF A VARIETY OF LIQUID MEMBRANE SEPARATION PROCESSES. - CONTAINS A CRITICAL ANALYSIS OF NEW TECHNOLOGIES PUBLISHED IN THE LAST 15 YEARS.

INDUSTRIAL SEPARATION PROCESSES - ANDRÉ B. DE HAAN 2020-07-06

SEPARATION PROCESSES ON AN INDUSTRIAL SCALE ACCOUNT FOR WELL OVER HALF OF THE

CAPITAL AND OPERATING COSTS IN THE CHEMICAL INDUSTRY. KNOWLEDGE OF THESE PROCESSES IS KEY FOR EVERY STUDENT OF CHEMICAL OR PROCESS ENGINEERING. THIS BOOK IS IDEALLY SUITED TO UNIVERSITY TEACHING, THANKS TO ITS WEALTH OF EXERCISES AND SOLUTIONS. THE SECOND EDITION BOASTS AN EVEN GREATER NUMBER OF APPLIED EXAMPLES AND CASE STUDIES AS WELL AS REFERENCES FOR FURTHER READING.

INTRODUCTORY TRANSPORT PHENOMENA - R. BYRON BIRD 2015-02-13

INTRODUCTORY TRANSPORT PHENOMENA BY R. BYRON BIRD, WARREN E. STEWART, EDWIN N. LIGHTFOOT, AND DANIEL KLINGENBERG IS A NEW INTRODUCTORY TEXTBOOK BASED ON THE CLASSIC BIRD, STEWART, LIGHTFOOT TEXT, *TRANSPORT PHENOMENA*. THE AUTHORS' GOAL IN WRITING THIS BOOK REFLECTS TOPICS COVERED IN AN UNDERGRADUATE COURSE. SOME OF THE RIGOROUS TOPICS SUITABLE FOR THE ADVANCED STUDENTS HAVE BEEN RETAINED. THE TEXT COVERS TOPICS SUCH AS: THE TRANSPORT OF MOMENTUM; THE TRANSPORT OF ENERGY AND THE TRANSPORT OF CHEMICAL SPECIES. THE ORGANIZATION OF THE MATERIAL IS SIMILAR TO BIRD/STEWART/LIGHTFOOT, BUT PRESENTATION HAS BEEN THOUGHTFULLY REVISED SPECIFICALLY FOR UNDERGRADUATE STUDENTS ENCOUNTERING THESE CONCEPTS FOR THE FIRST TIME. DEVOTING MORE SPACE TO MATHEMATICAL DERIVATIONS AND PROVIDING FULLER EXPLANATIONS OF MATHEMATICAL DEVELOPMENTS—INCLUDING A SECTION OF THE APPENDIX DEVOTED TO MATHEMATICAL TOPICS—ALLOWS STUDENTS TO COMPREHEND TRANSPORT PHENOMENA CONCEPTS AT AN UNDERGRADUATE LEVEL.

ADVANCED TRANSPORT PHENOMENA - L. GARY LEAL 2007-06-18

ADVANCED TRANSPORT PHENOMENA IS IDEAL AS A GRADUATE TEXTBOOK. IT CONTAINS A DETAILED DISCUSSION OF MODERN ANALYTIC METHODS FOR THE SOLUTION OF FLUID MECHANICS AND HEAT AND MASS TRANSFER PROBLEMS, FOCUSING ON APPROXIMATIONS BASED ON SCALING AND ASYMPTOTIC METHODS, BEGINNING WITH THE DERIVATION OF BASIC EQUATIONS AND BOUNDARY CONDITIONS AND CONCLUDING WITH LINEAR STABILITY THEORY. ALSO COVERED ARE UNIDIRECTIONAL FLOWS, LUBRICATION AND THIN-FILM THEORY, CREEPING FLOWS, BOUNDARY LAYER THEORY, AND CONVECTIVE HEAT AND MASS TRANSPORT AT HIGH AND LOW REYNOLDS NUMBERS. THE EMPHASIS IS ON BASIC PHYSICS, SCALING AND NONDIMENSIONALIZATION, AND APPROXIMATIONS THAT CAN BE USED TO OBTAIN SOLUTIONS THAT ARE DUE EITHER TO GEOMETRIC SIMPLIFICATIONS, OR LARGE OR SMALL VALUES OF DIMENSIONLESS PARAMETERS. THE AUTHOR EMPHASIZES SETTING UP PROBLEMS AND EXTRACTING AS MUCH INFORMATION AS POSSIBLE SHORT OF OBTAINING DETAILED SOLUTIONS OF DIFFERENTIAL EQUATIONS. THE BOOK ALSO FOCUSES ON THE SOLUTIONS OF REPRESENTATIVE PROBLEMS. THIS REFLECTS THE BOOK'S GOAL OF TEACHING READERS TO THINK ABOUT THE SOLUTION OF TRANSPORT PROBLEMS.

CRYSTALLIZATION PROCESS SYSTEMS - ALAN G. JONES 2002-04-24

PARTICULATE CRYSTAL CHARACTERISTICS; FLUID-PARTICLE TRANSPORT PROCESSES; CRYSTALLIZATION PRINCIPLES AND TECHNIQUES; CRYSTAL FORMATION PROCESSES; CRYSTALLIZER DESIGN AND OPERATION; SOLID-LIQUID SEPARATION PROCESSES; DESIGN OF CRYSTALLIZATION PROCESS SYSTEMS.

MEMBRANE SEPARATION PROCESSES - KAUSHIK NATH 2017-01-01

THIS CONCISE AND SYSTEMATICALLY ORGANIZED TEXT, NOW IN ITS SECOND EDITION, GIVES A CLEAR INSIGHT INTO VARIOUS MEMBRANE SEPARATION PROCESSES. IT COVERS THE FUNDAMENTALS AS WELL AS THE RECENT DEVELOPMENTS OF DIFFERENT PROCESSES ALONG WITH THEIR INDUSTRIAL APPLICATIONS AND THE PRODUCTS. IT INCLUDES THE BASIC PRINCIPLES, OPERATING PARAMETERS, MEMBRANE HARDWARE, FLUX EQUATION, TRANSPORT MECHANISM, AND APPLICATIONS OF MEMBRANE-BASED TECHNOLOGIES. MEMBRANE SEPARATION PROCESSES ARE LARGELY RATE-CONTROLLED SEPARATIONS WHICH REQUIRE RATE ANALYSIS FOR COMPLETE UNDERSTANDING. MOREOVER, A HIGHER LEVEL OF MATHEMATICAL ANALYSIS, ALONG WITH THE UNDERSTANDING OF MASS TRANSFER, IS ALSO REQUIRED. THESE ARE AMPLY TREATED IN DIFFERENT CHAPTERS OF THE BOOK TO MAKE THE STUDENTS COMPREHEND THE MEMBRANE SEPARATION PRINCIPLES WITH EASE. THIS TEXTBOOK IS PRIMARILY DESIGNED FOR UNDERGRADUATE STUDENTS OF CHEMICAL ENGINEERING, BIOCHEMICAL ENGINEERING AND BIOTECHNOLOGY FOR THE COURSE IN MEMBRANE SEPARATION PROCESSES. BESIDES, THE BOOK WILL ALSO BE USEFUL TO PROCESS ENGINEERS AND RESEARCHERS. KEY FEATURES • PROVIDES SUFFICIENT NUMBER OF EXAMPLES OF INDUSTRIAL APPLICATIONS RELATED TO CHEMICAL, METALLURGICAL, BIOCHEMICAL AND FOOD PROCESSING INDUSTRIES. • FOCUSES ON IMPORTANT BIOMEDICAL APPLICATIONS OF MEMBRANE-BASED TECHNOLOGIES SUCH AS BLOOD OXYGENATOR, CONTROLLED DRUG DELIVERY, PLASMAPHERESIS, AND BIOARTIFICIAL ORGANS. • INCLUDES CHAPTER-END SHORT QUESTIONS AND PROBLEMS TO TEST STUDENTS' COMPREHENSION OF THE SUBJECT. NEW TO THIS EDITION • A NEW SECTION ON MEMBRANE CLEANING IS INCLUDED. MEMBRANE FABRICATION METHODS ARE SUPPLEMENTED WITH ADDITIONAL INFORMATION (CHAPTER 2). • ADDITIONAL INFORMATION ON SILT DENSITY INDEX, FORWARD OSMOSIS AND SEA WATER DESALINATION (CHAPTER 3). • PHYSICO-CHEMICAL PARAMETERS AFFECTING NANOFILTRATION, DETERMINATION OF VARIOUS RESISTANCES USING RESISTANCE IN SERIES MODEL AND FEW MORE INDUSTRIAL APPLICATIONS WITH ADDITIONAL SHORT QUESTIONS (CHAPTER 4). • MEMBRANE CROSS-LINKING METHODS USED IN PERVAPORATION, FACTORS AFFECTING PERVAPORATION AND FEW MORE APPLICATIONS (CHAPTER 9). • MEMBRANE DISTILLATION, MEMBRANE REACTOR WITH DIFFERENT MODULES, TYPES OF MEMBRANES AND REACTIONS FOR MEMBRANE REACTOR (CHAPTER 13).

ELEMENTS OF CHEMICAL REACTION ENGINEERING - H. SCOTT FOGLER 1999-01

APPLIED ALGORITHMS + SOFTWARE PACKAGES = ADVANCED TOOLS FOR SOLVING COMPLEX PROBLEMS THE NEWEST DIGITAL TECHNIQUES, BUILT ON THE SOUND FOUNDATIONS OF THE CLASSIC, BEST-SELLING TEXT. WITH A COMBINATION OF USER-FRIENDLY SOFTWARE AND CLASSIC ALGORITHMS, STUDENTS LEARN TO SOLVE PROBLEMS THROUGH REASONING RATHER THAN MEMORIZATION. THOROUGH COVERAGE OF THE FUNDAMENTALS OF CHEMICAL REACTION ENGINEERING FORMS THE BACKBONE OF THIS TRUSTED TEXT, PRESENTED IN A FRAMEWORK THAT HELPS DEVELOP CRITICAL-THINKING SKILLS AND PRACTICAL PROBLEM-SOLVING. ALL THE CLASSICAL ELEMENTS ARE COVERED. *ELEMENTS OF CHEMICAL REACTION ENGINEERING, THIRD EDITION*, BUILDS A STRONG UNDERSTANDING OF CHEMICAL REACTION ENGINEERING PRINCIPLES AND SHOWS HOW THEY CAN BE APPLIED TO NUMEROUS REACTIONS IN A VARIETY OF APPLICATIONS. THE STRUCTURED APPROACH HELPS DEVELOP SKILLS IN CRITICAL THINKING, CREATIVE THINKING, AND PROBLEM-SOLVING, BY EMPLOYING OPEN-ENDED QUESTIONS AND STRESSING THE SOCRATIC METHOD. PROBLEMS ARE INCLUDED FOR EACH SUBJECT: *STRAIGHTFORWARD PROBLEMS THAT REINFORCE THE MATERIAL *PROBLEMS THAT ENCOURAGE STUDENTS TO EXPLORE THE ISSUES AND LOOK FOR OPTIMUM SOLUTIONS *OPEN-

ENDED PROBLEMS THAT ENCOURAGE STUDENTS TO PRACTICE CREATIVE PROBLEM-SOLVING SKILLS ELEMENTS OF CHEMICAL REACTION ENGINEERING, THIRD EDITION REMAINS A LEADER AS THE ONLY UNDERGRADUATE-LEVEL BOOK TO FOCUS ON COMPUTER-BASED SOLUTIONS TO CHEMICAL REACTION PROBLEMS. BOTH STUDENTS AND INSTRUCTORS, INCLUDING: *LEARNING RESOURCES: LECTURE NOTES, WEB MODULES, AND PROBLEM-SOLVING HEURISTICS *LIVING EXAMPLE PROBLEMS: POLYMATH SOFTWARE THAT ALLOWS STUDENTS TO EXPLORE THE EXAMPLES AND ASK WHAT-IF QUESTIONS *PROFESSIONAL REFERENCE SHELF: DETAILED DERIVATIONS, EQUATIONS, GENERAL ENGINEERING MATERIALS, AND SPECIALTY REACTORS AND REACTION SYSTEMS *ADDITIONAL STUDY MATERIALS: EXTRA HOMEWORK PROBLEMS, COURSE SYLLABI, GUIDES TO POPULAR SOFTWARE PACKAGES THROUGHOUT THE TEXT, MARGIN ICONS LINK CONCEPTS AND PROCEDURES TO THE MATERIAL ON THE CD FOR FULLY INTEGRATED LEARNING AND REFERENCE. WEB SITE: HTTP://WWW.ENGIN.UMICH.EDU/CR

PERRY'S CHEMICAL ENGINEERS' HANDBOOK, 9TH EDITION - DON W. GREEN 2018-07-13

UP-TO-DATE COVERAGE OF ALL CHEMICAL ENGINEERING TOPICS—FROM THE FUNDAMENTALS TO THE STATE OF THE ART NOW IN ITS 85TH ANNIVERSARY EDITION, THIS INDUSTRY-STANDARD RESOURCE HAS EQUIPPED GENERATIONS OF ENGINEERS AND CHEMISTS WITH VITAL INFORMATION, DATA, AND INSIGHTS. THOROUGHLY REVISED TO REFLECT THE LATEST TECHNOLOGICAL ADVANCES AND PROCESSES, PERRY'S CHEMICAL ENGINEERS' HANDBOOK, NINTH EDITION, PROVIDES UNSURPASSED COVERAGE OF EVERY ASPECT OF CHEMICAL ENGINEERING. YOU WILL GET COMPREHENSIVE DETAILS ON CHEMICAL PROCESSES, REACTOR MODELING, BIOLOGICAL PROCESSES, BIOCHEMICAL AND MEMBRANE SEPARATION, PROCESS AND CHEMICAL PLANT SAFETY, AND MUCH MORE. THIS FULLY UPDATED EDITION COVERS: UNIT CONVERSION FACTORS AND SYMBOLS • PHYSICAL AND CHEMICAL DATA INCLUDING PREDICTION AND CORRELATION OF PHYSICAL PROPERTIES • MATHEMATICS INCLUDING DIFFERENTIAL AND INTEGRAL CALCULUS, STATISTICS, OPTIMIZATION • THERMODYNAMICS • HEAT AND MASS TRANSFER • FLUID AND PARTICLE DYNAMICS • REACTION KINETICS • PROCESS CONTROL AND INSTRUMENTATION • PROCESS ECONOMICS • TRANSPORT AND STORAGE OF FLUIDS • HEAT TRANSFER OPERATIONS AND EQUIPMENT • PSYCHROMETRY, EVAPORATIVE COOLING, AND SOLIDS DRYING • DISTILLATION • GAS ABSORPTION AND GAS-LIQUID SYSTEM DESIGN • LIQUID-LIQUID EXTRACTION OPERATIONS AND EQUIPMENT • ADSORPTION AND ION EXCHANGE • GAS-SOLID OPERATIONS AND EQUIPMENT • LIQUID-SOLID OPERATIONS AND EQUIPMENT • SOLID-SOLID OPERATIONS AND EQUIPMENT • CHEMICAL REACTORS • BIO-BASED REACTIONS AND PROCESSING • WASTE MANAGEMENT INCLUDING AIR, WASTEWATER AND SOLID WASTE MANAGEMENT • PROCESS SAFETY INCLUDING INHERENTLY SAFER DESIGN • ENERGY RESOURCES, CONVERSION AND UTILIZATION • MATERIALS OF CONSTRUCTION

TRANSPORT PHENOMENA AND UNIT OPERATIONS - RICHARD G. GRISKEY 2005-01-14

THE SUBJECT OF TRANSPORT PHENOMENA HAS LONG BEEN THOROUGHLY AND EXPERTLY ADDRESSED ON THE GRADUATE AND THEORETICAL LEVELS. NOW TRANSPORT PHENOMENA AND UNIT OPERATIONS: A COMBINED APPROACH ENDEAVORS NOT ONLY TO INTRODUCE THE FUNDAMENTALS OF THE DISCIPLINE TO A BROADER, UNDERGRADUATE-LEVEL AUDIENCE BUT ALSO TO APPLY ITSELF TO THE CONCERNS OF PRACTICING ENGINEERS AS THEY DESIGN, ANALYZE, AND CONSTRUCT INDUSTRIAL EQUIPMENT. RICHARD GRISKEY'S INNOVATIVE TEXT COMBINES THE OFTEN SEPARATED BUT INTIMATELY RELATED DISCIPLINES OF TRANSPORT PHENOMENA AND UNIT OPERATIONS INTO ONE COHESIVE TREATMENT. WHILE THE LATTER WAS AN ACADEMIC PRECURSOR TO THE FORMER, UNDERGRADUATE STUDENTS ARE OFTEN EXPOSED TO ONE AT THE EXPENSE OF THE OTHER. TRANSPORT PHENOMENA AND UNIT OPERATIONS BRIDGES THE GAP BETWEEN THEORY AND PRACTICE, WITH A FOCUS ON ADVANCING THE CONCEPT OF THE ENGINEER AS PRACTITIONER. CHAPTERS IN THIS COMPREHENSIVE VOLUME INCLUDE: TRANSPORT PROCESSES AND COEFFICIENTS FRICTIONAL FLOW IN CONDUITS FREE AND FORCED CONVECTIVE HEAT TRANSFER HEAT EXCHANGERS MASS TRANSFER; MOLECULAR DIFFUSION EQUILIBRIUM STAGED OPERATIONS MECHANICAL SEPARATIONS EACH CHAPTER CONTAINS A SET OF COMPREHENSIVE PROBLEM SETS WITH REAL-WORLD QUANTITATIVE DATA, AFFORDING STUDENTS THE OPPORTUNITY TO TEST THEIR KNOWLEDGE IN PRACTICAL SITUATIONS. TRANSPORT PHENOMENA AND UNIT OPERATIONS IS AN IDEAL TEXT FOR UNDERGRADUATE ENGINEERING STUDENTS AS WELL AS FOR ENGINEERING PROFESSIONALS.

FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS - THEMIS MATSOUKAS 2013

FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS IS THE CLEAREST AND MOST WELL-ORGANIZED INTRODUCTION TO THERMODYNAMICS THEORY AND CALCULATIONS FOR ALL CHEMICAL ENGINEERING UNDERGRADUATES. THIS BRAND-NEW TEXT MAKES THERMODYNAMICS FAR EASIER TO TEACH AND LEARN. DRAWING ON HIS AWARD-WINNING COURSES AT PENN STATE, DR. THEMIS MATSOUKAS ORGANIZES THE TEXT FOR MORE EFFECTIVE LEARNING, FOCUSES ON WHY AS WELL AS HOW, OFFERS IMAGERY THAT HELPS STUDENTS CONCEPTUALIZE THE EQUATIONS, AND ILLUMINATES THERMODYNAMICS WITH RELEVANT EXAMPLES FROM WITHIN AND BEYOND THE CHEMICAL ENGINEERING DISCIPLINE. MATSOUKAS PRESENTS SOLVED PROBLEMS IN EVERY CHAPTER, RANGING FROM BASIC CALCULATIONS TO REALISTIC SAFETY AND ENVIRONMENTAL APPLICATIONS.

SEPARATION PROCESS ENGINEERING - PHILLIP C. WANKAT 2012

THE DEFINITIVE, FULLY UPDATED GUIDE TO SEPARATION PROCESS ENGINEERING—NOW WITH A THOROUGH INTRODUCTION TO MASS TRANSFER ANALYSIS SEPARATION PROCESS ENGINEERING, THIRD EDITION, IS THE MOST COMPREHENSIVE, ACCESSIBLE GUIDE AVAILABLE ON MODERN SEPARATION PROCESSES AND THE FUNDAMENTALS OF MASS TRANSFER. PHILLIP C. WANKAT TEACHES EACH KEY CONCEPT THROUGH DETAILED, REALISTIC EXAMPLES USING REAL DATA—INCLUDING UP-TO-DATE SIMULATION PRACTICE AND NEW SPREADSHEET-BASED EXERCISES. WANKAT THOROUGHLY COVERS EACH OF TODAY'S LEADING APPROACHES, INCLUDING FLASH, COLUMN, AND BATCH DISTILLATION; EXACT CALCULATIONS AND SHORTCUT METHODS FOR MULTICOMPONENT DISTILLATION; STAGED AND PACKED COLUMN DESIGN; ABSORPTION; STRIPPING; AND MORE. IN THIS EDITION, HE ALSO PRESENTS THE LATEST DESIGN METHODS FOR LIQUID-LIQUID EXTRACTION. THIS EDITION CONTAINS THE MOST DETAILED COVERAGE AVAILABLE OF MEMBRANE SEPARATIONS AND OF SORPTION SEPARATIONS (ADSORPTION, CHROMATOGRAPHY, AND ION EXCHANGE). UPDATED WITH NEW TECHNIQUES AND REFERENCES THROUGHOUT, SEPARATION PROCESS ENGINEERING, THIRD EDITION, ALSO CONTAINS MORE THAN 300 NEW HOMEWORK PROBLEMS, EACH TESTED IN THE AUTHOR'S PURDUE UNIVERSITY CLASSES. COVERAGE INCLUDES MODULAR, UP-TO-DATE PROCESS SIMULATION EXAMPLES AND HOMEWORK PROBLEMS, BASED ON ASPEN PLUS AND EASILY ADAPTABLE TO ANY SIMULATOR EXTENSIVE NEW COVERAGE OF MASS TRANSFER AND

DIFFUSION, INCLUDING BOTH FICKIAN AND MAXWELL-STEFAN APPROACHES DETAILED DISCUSSIONS OF LIQUID-LIQUID EXTRACTION, INCLUDING MCCABE-THIELE, TRIANGLE AND COMPUTER SIMULATION ANALYSES; MIXER-SETTLER DESIGN; KARR COLUMNS; AND RELATED MASS TRANSFER ANALYSES THOROUGH INTRODUCTIONS TO ADSORPTION, CHROMATOGRAPHY, AND ION EXCHANGE—DESIGNED TO PREPARE STUDENTS FOR ADVANCED WORK IN THESE AREAS COMPLETE COVERAGE OF MEMBRANE SEPARATIONS, INCLUDING GAS PERMEATION, REVERSE OSMOSIS, ULTRAFILTRATION, PERVAPORATION, AND KEY APPLICATIONS A FULL CHAPTER ON ECONOMICS AND ENERGY CONSERVATION IN DISTILLATION EXCEL SPREADSHEETS OFFERING ADDITIONAL PRACTICE WITH PROBLEMS IN DISTILLATION, DIFFUSION, MASS TRANSFER, AND MEMBRANE SEPARATION

TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES, GLOBAL EDITION - CHRISTIE GEANKOPLIS 2023-06

SEPARATION TECHNOLOGIES FOR THE INDUSTRIES OF THE FUTURE - NATIONAL RESEARCH COUNCIL 1999-02-08

SEPARATION PROCESSES ARE PROCESSES THAT USE PHYSICAL, CHEMICAL, OR ELECTRICAL FORCES TO ISOLATE OR CONCENTRATE SELECTED CONSTITUENTS OF A MIXTURE ARE ESSENTIAL TO THE CHEMICAL, PETROLEUM REFINING, AND MATERIALS PROCESSING INDUSTRIES. IN THIS VOLUME, AN EXPERT PANEL REVIEWS THE SEPARATION PROCESS NEEDS OF SEVEN INDUSTRIES AND IDENTIFIES TECHNOLOGIES THAT HOLD PROMISE FOR MEETING THESE NEEDS, AS WELL AS KEY TECHNOLOGIES THAT COULD ENABLE SEPARATIONS. IN ADDITION, THE BOOK RECOMMENDS CRITERIA FOR THE SELECTION OF SEPARATIONS RESEARCH PROJECTS FOR THE DEPARTMENT OF ENERGY'S OFFICE OF INDUSTRIAL TECHNOLOGY.

SEPARATION PROCESS PRINCIPLES - J. D. SEADER 2005-10-28

THERMAL SEPARATION PROCESSES - KLAUS SATTLER 2008-07-11

THIS MUCH-NEEDED BOOK PRESENTS A CLEAR AND VERY PRACTICE-ORIENTED OVERVIEW OF THERMAL SEPARATION PROCESSES. AN EXTENSIVE INTRODUCTION ELUCIDATES THE PHYSICAL AND PHYSICO-CHEMICAL FUNDAMENTALS OF DIFFERENT UNIT OPERATIONS USED TO SEPARATE HOMOGENOUS MIXTURES. THIS IS FOLLOWED BY A CONCISE TEXT WITH NUMEROUS EXPLANATORY FIGURES AND TABLES REFERRING TO PROCESS AND DESIGN, FLOWSHEETS, BASIC ENGINEERING AND EXAMPLES OF SEPARATION PROCESS APPLICATIONS. VERY HELPFUL GUIDANCE IN THE FORM OF PROCESS DESCRIPTIONS, CALCULATION MODELS AND OPERATION DATA IS PRESENTED IN AN EASY-TO-UNDERSTAND MANNER THEREBY ASSISTING THE PRACTICING ENGINEER IN THE CHOOSING AND EVALUATION OF SEPARATION PROCESSES AND FACILITATING THE MODELING AND DESIGN OF INNOVATIVE EQUIPMENT. A COMPREHENSIVE REFERENCE LIST PROVIDES FURTHER OPPORTUNITY FOR THE FOLLOWING UP OF SPECIAL SEPARATION PROBLEMS. CHEMICAL AND MECHANICAL ENGINEERS, CHEMISTS, PHYSICISTS AND BIOTECHNOLOGISTS IN RESEARCH AND DEVELOPMENT, PLANT DESIGN AND ENVIRONMENTAL PROTECTION, AS WELL AS STUDENTS IN CHEMICAL ENGINEERING AND NATURAL SCIENCES WILL FIND THIS ALL-EMBRACING REFERENCE GUIDE OF TREMENDOUS VALUE AND PRACTICAL USE.

AN INTRODUCTION TO CHEMICAL ENGINEERING KINETICS & REACTOR DESIGN - CHARLES G. HILL 1977

FLUID MECHANICS FOR CHEMICAL ENGINEERS - JAMES O. WILKES 2017-07-20

THE CHEMICAL ENGINEER'S PRACTICAL GUIDE TO FLUID MECHANICS: NOW INCLUDES COMSOL MULTIPHYSICS 5 SINCE MOST CHEMICAL PROCESSING APPLICATIONS ARE CONDUCTED EITHER PARTIALLY OR TOTALLY IN THE FLUID PHASE, CHEMICAL ENGINEERS NEED MASTERY OF FLUID MECHANICS. SUCH KNOWLEDGE IS ESPECIALLY VALUABLE IN THE BIOCHEMICAL, CHEMICAL, ENERGY, FERMENTATION, MATERIALS, MINING, PETROLEUM, PHARMACEUTICALS, POLYMER, AND WASTE-PROCESSING INDUSTRIES. FLUID MECHANICS FOR CHEMICAL ENGINEERS: WITH MICROFLUIDICS, CFD, AND COMSOL MULTIPHYSICS 5, THIRD EDITION, SYSTEMATICALLY INTRODUCES FLUID MECHANICS FROM THE PERSPECTIVE OF THE CHEMICAL ENGINEER WHO MUST UNDERSTAND ACTUAL PHYSICAL BEHAVIOR AND SOLVE REAL-WORLD PROBLEMS. BUILDING ON THE BOOK THAT EARNED CHOICE MAGAZINE'S OUTSTANDING ACADEMIC TITLE AWARD, THIS EDITION ALSO GIVES A COMPREHENSIVE INTRODUCTION TO THE POPULAR COMSOL MULTIPHYSICS 5 SOFTWARE. THIS THIRD EDITION CONTAINS EXTENSIVE COVERAGE OF BOTH MICROFLUIDICS AND COMPUTATIONAL FLUID DYNAMICS, SYSTEMATICALLY DEMONSTRATING CFD THROUGH DETAILED EXAMPLES USING COMSOL MULTIPHYSICS 5 AND ANSYS FLUENT. THE CHAPTER ON TURBULENCE NOW PRESENTS VALUABLE CFD TECHNIQUES TO INVESTIGATE PRACTICAL SITUATIONS SUCH AS TURBULENT MIXING AND RECIRCULATING FLOWS. PART I OFFERS A CLEAR, SUCCINCT, EASY-TO-FOLLOW INTRODUCTION TO MACROSCOPIC FLUID MECHANICS, INCLUDING PHYSICAL PROPERTIES; HYDROSTATICS; BASIC RATE LAWS; AND FUNDAMENTAL PRINCIPLES OF FLOW THROUGH EQUIPMENT. PART II TURNS TO MICROSCOPIC FLUID MECHANICS: DIFFERENTIAL EQUATIONS OF FLUID MECHANICS VISCOUS-FLOW PROBLEMS, SOME INCLUDING POLYMER PROCESSING LAPLACE'S EQUATION; IRRATIONAL AND POROUS-MEDIA FLOWS NEARLY UNIDIRECTIONAL FLOWS, FROM BOUNDARY LAYERS TO LUBRICATION, CALENDERING, AND THIN-FILM APPLICATIONS TURBULENT FLOWS, SHOWING HOW THE K-E METHOD EXTENDS CONVENTIONAL MIXING-LENGTH THEORY BUBBLE MOTION, TWO-PHASE FLOW, AND FLUIDIZATION NON-NEWTONIAN FLUIDS, INCLUDING INELASTIC AND VISCOELASTIC FLUIDS MICROFLUIDICS AND ELECTROKINETIC FLOW EFFECTS, INCLUDING ELECTROOSMOSIS, ELECTROPHORESIS, STREAMING POTENTIALS, AND ELECTROSMOTIC SWITCHING COMPUTATIONAL FLUID MECHANICS WITH ANSYS FLUENT AND COMSOL MULTIPHYSICS NEARLY 100 COMPLETELY WORKED PRACTICAL EXAMPLES INCLUDE 12 NEW COMSOL 5 EXAMPLES: BOUNDARY LAYER FLOW, NON-NEWTONIAN FLOW, JET FLOW, DIE FLOW, LUBRICATION, MOMENTUM DIFFUSION, TURBULENT FLOW, AND OTHERS. MORE THAN 300 END-OF-CHAPTER PROBLEMS OF VARYING COMPLEXITY ARE PRESENTED, INCLUDING SEVERAL FROM UNIVERSITY OF CAMBRIDGE EXAMS. THE AUTHOR COVERS ALL MATERIAL NEEDED FOR THE FLUID MECHANICS PORTION OF THE PROFESSIONAL ENGINEER'S EXAM. THE AUTHOR'S WEBSITE (FMCHE.ENGIN.UMICH.EDU) PROVIDES ADDITIONAL NOTES, PROBLEM-SOLVING TIPS, AND ERRATA. REGISTER YOUR PRODUCT AT INFORMIT.COM/REGISTER FOR CONVENIENT ACCESS TO DOWNLOADS, UPDATES, AND CORRECTIONS AS THEY BECOME AVAILABLE.

ESSENTIALS OF CHEMICAL REACTION ENGINEERING - H. SCOTT FOGLER 2017-10-26

TODAY'S DEFINITIVE, UNDERGRADUATE-LEVEL INTRODUCTION TO CHEMICAL REACTION ENGINEERING PROBLEM-SOLVING FOR 30 YEARS, H. SCOTT FOGLER'S ELEMENTS OF CHEMICAL REACTION ENGINEERING HAS BEEN THE #1 SELLING TEXT FOR COURSES IN CHEMICAL

REACTION ENGINEERING WORLDWIDE. NOW, IN ESSENTIALS OF CHEMICAL REACTION ENGINEERING, SECOND EDITION, FOGLER HAS DISTILLED THIS CLASSIC INTO A MODERN, INTRODUCTORY-LEVEL GUIDE SPECIFICALLY FOR UNDERGRADUATES. THIS IS THE IDEAL RESOURCE FOR TODAY'S STUDENTS: LEARNERS WHO DEMAND INSTANTANEOUS ACCESS TO INFORMATION AND WANT TO ENJOY LEARNING AS THEY DEEPEN THEIR CRITICAL THINKING AND CREATIVE PROBLEM-SOLVING SKILLS. FOGLER SUCCESSFULLY INTEGRATES TEXT, VISUALS, AND COMPUTER SIMULATIONS, AND LINKS THEORY TO PRACTICE THROUGH MANY RELEVANT EXAMPLES. THIS UPDATED SECOND EDITION COVERS MOLE BALANCES, CONVERSION AND REACTOR SIZING, RATE LAWS AND STOICHIOMETRY, ISOTHERMAL REACTOR DESIGN, RATE DATA COLLECTION/ANALYSIS, MULTIPLE REACTIONS, REACTION MECHANISMS, PATHWAYS, BIOREACTIONS AND BIOREACTORS, CATALYSIS, CATALYTIC REACTORS, NONISOTHERMAL REACTOR DESIGNS, AND MORE. ITS MULTIPLE IMPROVEMENTS INCLUDE A NEW DISCUSSION OF ACTIVATION ENERGY, MOLECULAR SIMULATION, AND STOCHASTIC MODELING, AND A SIGNIFICANTLY REVAMPED CHAPTER ON HEAT EFFECTS IN CHEMICAL REACTORS. TO PROMOTE THE TRANSFER OF KEY SKILLS TO REAL-LIFE SETTINGS, FOGLER PRESENTS THREE STYLES OF PROBLEMS: STRAIGHTFORWARD PROBLEMS THAT REINFORCE THE PRINCIPLES OF CHEMICAL REACTION ENGINEERING LIVING EXAMPLE PROBLEMS (LEPs) THAT ALLOW STUDENTS TO RAPIDLY EXPLORE THE ISSUES AND LOOK FOR OPTIMAL SOLUTIONS OPEN-ENDED PROBLEMS THAT ENCOURAGE STUDENTS TO USE INQUIRY-BASED LEARNING TO PRACTICE CREATIVE PROBLEM-SOLVING SKILLS ABOUT THE WEB SITE (UMICH.EDU/~ELEMENTS/5E/INDEX.HTML) THE COMPANION WEB SITE OFFERS EXTENSIVE ENRICHMENT OPPORTUNITIES AND ADDITIONAL CONTENT, INCLUDING COMPLETE POWERPOINT SLIDES FOR LECTURE NOTES FOR CHEMICAL REACTION ENGINEERING CLASSES LINKS TO ADDITIONAL SOFTWARE, INCLUDING POLYMATH, MATLAB, WOLFRAM MATHEMATICA, ASPENTECH, AND COMSOL MULTIPHYSICS INTERACTIVE LEARNING RESOURCES LINKED TO EACH CHAPTER, INCLUDING LEARNING OBJECTIVES, SUMMARY NOTES, WEB MODULES, INTERACTIVE COMPUTER GAMES, COMPUTER SIMULATIONS AND EXPERIMENTS, SOLVED PROBLEMS, FAQs, AND LINKS TO LEARNCHEMÉ LIVING EXAMPLE PROBLEMS THAT PROVIDE MORE THAN 75 INTERACTIVE SIMULATIONS, ALLOWING STUDENTS TO EXPLORE THE EXAMPLES AND ASK "WHAT-IF" QUESTIONS PROFESSIONAL REFERENCE SHELF, CONTAINING ADVANCED CONTENT ON REACTORS, WEIGHTED LEAST SQUARES, EXPERIMENTAL PLANNING, LABORATORY REACTORS, PHARMACOKINETICS, WIRE GAUZE REACTORS, TRICKLE BED REACTORS, FLUIDIZED BED REACTORS, CVD BOAT REACTORS, DETAILED EXPLANATIONS OF KEY DERIVATIONS, AND MORE PROBLEM-SOLVING STRATEGIES AND INSIGHTS ON CREATIVE AND CRITICAL THINKING REGISTER YOUR PRODUCT AT INFORMIT.COM/REGISTER FOR CONVENIENT ACCESS TO DOWNLOADS, UPDATES, AND/OR CORRECTIONS AS THEY BECOME AVAILABLE.

DISTILLATION - JOHANN G. STICHLMAIR 2021-05-07

DISTILLATION PRINCIPLES AND PRACTICE SECOND EDITION COVERS ALL THE MAIN ASPECTS OF DISTILLATION INCLUDING THE THERMODYNAMICS OF VAPOR/LIQUID EQUILIBRIUM, THE PRINCIPLES OF DISTILLATION, THE SYNTHESIS OF DISTILLATION PROCESSES, THE DESIGN OF THE EQUIPMENT, AND THE CONTROL OF PROCESS OPERATION. MOST TEXTBOOKS DEAL IN DETAIL WITH THE PRINCIPLES AND LAWS OF DISTILLING BINARY MIXTURES. WHEN IT COMES TO MULTI-COMPONENT MIXTURES, THEY REFER TO COMPUTER SOFTWARE NOWADAYS AVAILABLE. ONE OF THE SPECIAL FEATURES OF THE SECOND EDITION IS A CLEAR AND EASY UNDERSTANDABLE PRESENTATION OF THE PRINCIPLES AND LAWS OF TERNARY DISTILLATION. THE RIGHT UNDERSTANDING OF TERNARY DISTILLATION IS THE LINK TO A BETTER UNDERSTANDING OF MULTI-COMPONENT DISTILLATION. TERNARY DISTILLATION IS THE BASIS FOR A CONCEPTUAL PROCESS DESIGN, FOR SEPARATING AZEOTROPIC MIXTURES BY USING AN ENTRAINER, AND FOR REACTIVE DISTILLATION, WHICH IS A RAPIDLY DEVELOPING FIELD OF DISTILLATION. ANOTHER SPECIAL FEATURE OF THE BOOK IS THE DESIGN OF DISTILLATION EQUIPMENT, I.E. TRAY COLUMNS AND PACKED COLUMNS. IN PRACTICE, EMPIRICAL KNOW-HOW IS PREFERABLY USED IN MANY COMPANIES, OFTEN IN FORM OF EMPIRICAL EQUATIONS, WHICH ARE NOT EVEN DIMENSIONALLY CORRECT. THE OBJECTIVE OF THE PROPOSED BOOK IS THE DERIVATION OF THE RELEVANT EQUATIONS FOR COLUMN DESIGN BASED ON FIRST PRINCIPLES. THE FIELD OF COLUMN DESIGN IS PERMANENTLY DEVELOPING WITH RESPECT TO THE TYPE OF EQUIPMENT USED AND THE KNOW-HOW OF TWO-PHASE FLOW AND INTERFACIAL MASS TRANSFER.

SEPARATION PROCESS PRINCIPLES - ERNEST J. HENLEY 2011

COMPLETELY REWRITTEN TO ENHANCE CLARITY, THIS THIRD EDITION PROVIDES ENGINEERS WITH A STRONG UNDERSTANDING OF THE FIELD. WITH THE HELP OF AN ADDITIONAL CO-AUTHOR, THE TEXT PRESENTS NEW INFORMATION ON BIOSEPARATIONS THROUGHOUT THE CHAPTERS. A NEW CHAPTER ON MECHANICAL SEPARATIONS COVERS SETTLING, FILTRATION, AND CENTRIFUGATION, INCLUDING MECHANICAL SEPARATIONS IN BIOTECHNOLOGY AND CELL LYSIS. BOXES HELP HIGHLIGHT FUNDAMENTAL EQUATIONS. NUMEROUS NEW EXAMPLES AND EXERCISES ARE INTEGRATED THROUGHOUT AS WELL. IN ADDITION, FREQUENT REFERENCES ARE MADE TO THE SOFTWARE PRODUCTS AND SIMULATORS THAT WILL HELP ENGINEERS FIND THE SOLUTIONS THEY NEED.

CHEMICAL ENGINEERING DESIGN - GAVIN TOWLER 2012-01-25

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

CHEMICAL REACTIONS AND CHEMICAL REACTORS - GEORGE W. ROBERTS 2008-03-14

FOCUSED ON THE UNDERGRADUATE AUDIENCE, CHEMICAL REACTION ENGINEERING PROVIDES STUDENTS WITH COMPLETE COVERAGE OF THE FUNDAMENTALS, INCLUDING IN-DEPTH COVERAGE OF CHEMICAL KINETICS. BY INTRODUCING HETEROGENEOUS CHEMISTRY EARLY IN THE BOOK, THE TEXT GIVES STUDENTS THE KNOWLEDGE THEY NEED TO SOLVE REAL CHEMISTRY AND INDUSTRIAL PROBLEMS. AN EMPHASIS ON PROBLEM-SOLVING AND NUMERICAL TECHNIQUES ENSURES STUDENTS LEARN AND PRACTICE THE SKILLS THEY WILL NEED LATER ON, WHETHER FOR INDUSTRY OR GRADUATE WORK.

TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES (INCLUDES UNIT OPERATIONS) - CHRISTIE JOHN GEANKOPLIS 2013-07-25

APPROPRIATE FOR ONE-YEAR TRANSPORT PHENOMENA (ALSO CALLED TRANSPORT PROCESSES) AND SEPARATION PROCESSES COURSE. FIRST SEMESTER COVERS FLUID MECHANICS, HEAT AND MASS TRANSFER; SECOND SEMESTER COVERS SEPARATION PROCESS PRINCIPLES (INCLUDES UNIT OPERATIONS). THE TITLE OF THIS FOURTH EDITION HAS BEEN CHANGED FROM TRANSPORT PROCESSES AND UNIT OPERATIONS TO TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES (INCLUDES UNIT OPERATIONS). THIS WAS DONE BECAUSE THE TERM UNIT OPERATIONS HAS BEEN LARGELY SUPERSEDED BY THE TERM SEPARATION PROCESSES WHICH BETTER REFLECTS THE PRESENT MODERN NOMENCLATURE BEING USED. THE MAIN OBJECTIVES AND THE FORMAT OF THE FOURTH EDITION REMAIN THE SAME. THE SECTIONS ON MOMENTUM TRANSFER HAVE BEEN GREATLY EXPANDED, ESPECIALLY IN THE SECTIONS ON FLUIDIZED BEDS, FLOW METERS, MIXING, AND NON-NEWTONIAN FLUIDS. MATERIAL HAS BEEN ADDED TO THE CHAPTER ON MASS TRANSFER. THE CHAPTERS ON ABSORPTION, DISTILLATION, AND LIQUID-LIQUID EXTRACTION HAVE ALSO BEEN ENLARGED. MORE NEW MATERIAL HAS BEEN ADDED TO THE SECTIONS ON ION EXCHANGE AND CRYSTALLIZATION. THE CHAPTER ON MEMBRANE SEPARATION PROCESSES HAS BEEN GREATLY EXPANDED ESPECIALLY FOR GAS-MEMBRANE THEORY.

MASS TRANSPORT PHENOMENA - CHRISTIE J. GEANKOPLIS 1972

ELECTROMEMBRANE PROCESSES - LUBOŠ NOVÁK 2021-12-20

THE BOOK IS A COMPREHENSIVE VIEW OF ALL ELECTROMEMBRANE PROCESSES, INCLUDING ELECTROMEMBRANE PROCESSES FOR ENERGY CONVERSION - A CURRENTLY VERY SIGNIFICANT PROBLEM. THE NECESSARY THEORY AND BASIC INFORMATION NEEDED FOR UNDERSTANDING THE TECHNOLOGY ARE EXPLAINED IN PART I. MATERIALS USED FOR ION-SELECTIVE MEMBRANES AND SEPARATION PROCESSES ARE DESCRIBED IN PART II, AND THE APPLICATIONS FOR SYNTHESIS AND ENERGY CONVERSION IN PART III.

TRANSPORT PROCESSES AND UNIT OPERATIONS - CHRISTIE J. GEANKOPLIS 1983

THIS NEW THIRD EDITION PROVIDES A MODERN, UNIFIED TREATMENT OF THE BASIC TRANSPORT PROCESSES OF MOMENTUM, HEAT, AND MASS TRANSFER, AS WELL AS A BROAD TREATMENT OF THE UNIT OPERATIONS OF CHEMICAL ENGINEERING. COVERAGE INCLUDES THE LATEST MEMBRANE SEPARATION PROCESSES; DISCUSSION OF BIOPROCESSES; COMPREHENSIVE TREATMENT OF THE TRANSPORT PROCESSES OF MOMENTUM, HEAT, AND MASS TRANSFER; ADSORPTION PROCESSES; AND MORE. A USEFUL, UP-TO-DATE REFERENCE FOR PRACTICING CHEMICAL ENGINEERS, AGRICULTURAL ENGINEERS, FOOD SCIENTISTS, ENVIRONMENTAL ENGINEERS, BIOCHEMICAL ENGINEERS, AND OTHERS WHO WORK IN THE PROCESS INDUSTRIES.

SEPARATION OF MOLECULES, MACROMOLECULES AND PARTICLES - KAMALESH SIRKAR 2014-01-16

A MODERN SEPARATION PROCESS TEXTBOOK WRITTEN FOR ADVANCED UNDERGRADUATE AND GRADUATE LEVEL COURSES IN CHEMICAL ENGINEERING.

TRANSPORT PROCESSES AND SEPARATION PROCESS PRINCIPLES (INCLUDES UNIT OPERATIONS) 4TH Ed. - CHRISTIE J. GEANKOPLIS 2003

FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS, SI EDITION - KEVIN D. DAHM 2014-02-21

A BRAND NEW BOOK, FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS MAKES THE ABSTRACT SUBJECT OF CHEMICAL ENGINEERING THERMODYNAMICS MORE ACCESSIBLE TO UNDERGRADUATE STUDENTS. THE SUBJECT IS PRESENTED THROUGH A PROBLEM-SOLVING INDUCTIVE (FROM SPECIFIC TO GENERAL) LEARNING APPROACH, WRITTEN IN A CONVERSATIONAL AND APPROACHABLE MANNER. SUITABLE FOR EITHER A ONE-SEMESTER COURSE OR TWO-SEMESTER SEQUENCE IN THE SUBJECT, THIS BOOK COVERS THERMODYNAMICS IN A COMPLETE AND MATHEMATICALLY RIGOROUS MANNER, WITH AN EMPHASIS ON SOLVING PRACTICAL ENGINEERING PROBLEMS. THE APPROACH TAKEN STRESSES PROBLEM-SOLVING, AND DRAWS FROM BEST PRACTICE ENGINEERING TEACHING STRATEGIES. FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS USES EXAMPLES TO FRAME THE IMPORTANCE OF THE MATERIAL. EACH TOPIC BEGINS WITH A MOTIVATIONAL EXAMPLE THAT IS INVESTIGATED IN CONTEXT TO THAT TOPIC. THIS FRAMING OF THE MATERIAL IS HELPFUL TO ALL READERS, PARTICULARLY TO GLOBAL LEARNERS WHO REQUIRE BIG PICTURE INSIGHTS, AND HANDS-ON LEARNERS WHO STRUGGLE WITH ABSTRACTIONS. EACH WORKED EXAMPLE IS FULLY ANNOTATED WITH SKETCHES AND

COMMENTS ON THE THOUGHT PROCESS BEHIND THE SOLVED PROBLEMS. COMMON ERRORS ARE PRESENTED AND EXPLAINED. EXTENSIVE MARGIN NOTES ADD TO THE BOOK ACCESSIBILITY AS WELL AS PRESENTING OPPORTUNITIES FOR INVESTIGATION. IMPORTANT NOTICE: MEDIA CONTENT REFERENCED WITHIN THE PRODUCT DESCRIPTION OR THE PRODUCT TEXT MAY NOT BE AVAILABLE IN THE EBOOK VERSION.

SEPARATION PROCESS ESSENTIALS - ALAN M. LANE 2019-11-07

SEPARATION PROCESS ESSENTIALS PROVIDES AN INTERACTIVE APPROACH FOR STUDENTS TO LEARN THE MAIN SEPARATION PROCESSES (DISTILLATION, ABSORPTION, STRIPPING, AND SOLVENT EXTRACTION) USING MATERIAL AND ENERGY BALANCES WITH EQUILIBRIUM RELATIONSHIPS, WHILE REFERRING READERS TO OTHER MORE COMPLETE WORKS WHEN NEEDED. MEMBRANE SEPARATIONS ARE INCLUDED AS AN EXAMPLE OF NON-EQUILIBRIUM PROCESSES.

THIS BOOK REVIEWS AND BUILDS ON MATERIAL LEARNED IN THE FIRST CHEMICAL ENGINEERING COURSES SUCH AS MATERIAL AND ENERGY BALANCES AND THERMODYNAMICS AS APPLIED TO SEPARATIONS. IT RELIES HEAVILY ON EXAMPLE PROBLEMS, INCLUDING COMPLETELY WORKED AND EXPLAINED PROBLEMS FOLLOWED BY "TRY THIS AT HOME" GUIDED EXAMPLES. MOST EXAMPLES HAVE ACCOMPANYING DOWNLOADABLE EXCEL SPREADSHEET SIMULATIONS. THE BOOK ALSO OFFERS A COMPLEMENTARY WEBSITE, [HTTP://SEPARATIONSBOOK.COM](http://separationsbook.com), WITH SUPPLEMENTARY MATERIAL SUCH AS LINKS TO YOUTUBE TUTORIALS, PRACTICE PROBLEMS, AND THE EXCEL SIMULATIONS. THIS BOOK IS AIMED AT SECOND AND THIRD YEAR UNDERGRADUATE STUDENTS IN CHEMICAL ENGINEERING, AS WELL AS PROFESSIONALS IN THE FIELD OF CHEMICAL ENGINEERING, AND CAN BE USED FOR A ONE SEMESTER COURSE IN SEPARATION PROCESSES AND UNIT OPERATIONS.