

PDF FREE CHEMICAL REACTION ENGINEERING 3RD EDITION (READ ONLY)

CHEMICAL REACTION ENGINEERING IS CONCERNED WITH THE EXPLOITATION OF CHEMICAL REACTIONS ON A COMMERCIAL SCALE ITS GOAL IS THE SUCCESSFUL DESIGN AND OPERATION OF CHEMICAL REACTORS THIS TEXT EMPHASIZES QUALITATIVE ARGUMENTS SIMPLE DESIGN METHODS GRAPHICAL PROCEDURES AND FREQUENT COMPARISON OF CAPABILITIES OF THE MAJOR REACTOR TYPES SIMPLE IDEAS ARE TREATED FIRST AND ARE THEN EXTENDED TO THE MORE COMPLEX MARKET DESC CHEMICAL ENGINEERS IN CHEMICAL NUCLEAR AND BIOMEDICAL INDUSTRIES SPECIAL FEATURES EMPHASIS IS PLACED THROUGHOUT ON THE DEVELOPMENT OF COMMON DESIGN STRATEGY FOR ALL SYSTEMS HOMOGENEOUS AND HETEROGENEOUS THIS EDITION FEATURES NEW TOPICS ON BIOCHEMICAL SYSTEMS REACTORS WITH FLUIDIZED SOLIDS GAS LIQUID REACTORS AND MORE ON NON IDEAL FLOW THE BOOK EXPLAINS WHY CERTAIN ASSUMPTIONS ARE MADE WHY AN ALTERNATIVE APPROACH IS NOT USED AND TO INDICATE THE LIMITATIONS OF THE TREATMENT WHEN APPLIED TO REAL SITUATIONS ABOUT THE BOOK CHEMICAL REACTION ENGINEERING IS CONCERNED WITH THE EXPLOITATION OF CHEMICAL REACTIONS ON A COMMERCIAL SCALE ITS GOAL IS THE SUCCESSFUL DESIGN AND OPERATION OF CHEMICAL REACTORS THIS TEXT EMPHASIZES QUALITATIVE ARGUMENTS SIMPLE DESIGN METHODS GRAPHICAL PROCEDURES AND FREQUENT COMPARISON OF CAPABILITIES OF THE MAJOR REACTOR TYPES SIMPLE IDEAS ARE TREATED FIRST AND ARE THEN EXTENDED TO THE MORE COMPLEX LEARN CHEMICAL REACTION ENGINEERING THROUGH REASONING NOT MEMORIZATION ESSENTIALS OF CHEMICAL REACTION ENGINEERING IS A COMPLETE YET CONCISE MODERN INTRODUCTION TO CHEMICAL REACTION ENGINEERING FOR UNDERGRADUATE STUDENTS WHILE THE CLASSIC ELEMENTS OF CHEMICAL REACTION ENGINEERING FOURTH EDITION IS STILL AVAILABLE H SCOTT FOGLER DISTILLED THAT LARGER TEXT INTO THIS VOLUME OF ESSENTIAL TOPICS FOR UNDERGRADUATE STUDENTS FOGLER S UNIQUE WAY OF PRESENTING THE MATERIAL HELPS STUDENTS GAIN A DEEP INTUITIVE UNDERSTANDING OF THE FIELD S ESSENTIALS THROUGH REASONING NOT MEMORIZATION HE ESPECIALLY FOCUSES ON IMPORTANT NEW ENERGY AND SAFETY ISSUES RANGING FROM SOLAR AND BIOMASS APPLICATIONS TO THE AVOIDANCE OF RUNAWAY REACTIONS THOROUGHLY CLASSROOM TESTED THIS TEXT REFLECTS FEEDBACK FROM HUNDREDS OF STUDENTS AT THE UNIVERSITY OF MICHIGAN AND OTHER LEADING UNIVERSITIES IT ALSO PROVIDES NEW RESOURCES TO HELP STUDENTS DISCOVER HOW REACTORS BEHAVE IN DIVERSE SITUATIONS COVERAGE INCLUDES CRUCIAL SAFETY TOPICS INCLUDING AMMONIUM NITRATE CSTR EXPLOSIONS NITROANILINE AND T2 LABORATORIES BATCH REACTOR RUNAWAYS AND SACHE CCPS RESOURCES GREATER EMPHASIS ON SAFETY FOLLOWING THE RECOMMENDATIONS OF THE CHEMICAL SAFETY BOARD CSB 2 CASE STUDIES FROM PLANT EXPLOSIONS AND TWO HOMEWORK PROBLEMS WHICH DISCUSS ANOTHER EXPLOSION SOLAR ENERGY CONVERSIONS CHEMICAL THERMAL AND CATALYTIC WATER SPILLING ALGAE PRODUCTION FOR BIOMASS MOLE BALANCES BATCH CONTINUOUS FLOW AND INDUSTRIAL REACTORS CONVERSION AND REACTOR SIZING DESIGN EQUATIONS REACTORS IN SERIES AND MORE RATE LAWS AND STOICHIOMETRY ISOTHERMAL REACTOR DESIGN CONVERSION AND MOLAR FLOW RATES COLLECTION AND ANALYSIS OF RATE DATA MULTIPLE REACTIONS PARALLEL SERIES AND COMPLEX REACTIONS MEMBRANE REACTORS AND MORE REACTION MECHANISMS PATHWAYS BIOREACTIONS AND BIOREACTORS CATALYSIS AND CATALYTIC REACTORS NONISOTHERMAL REACTOR DESIGN STEADY STATE ENERGY BALANCE AND ADIABATIC PFR APPLICATIONS STEADY STATE NONISOTHERMAL REACTOR DESIGN FLOW REACTORS WITH HEAT EXCHANGE THIS IS THE SECOND EDITION OF THE STANDARD TEXT ON CHEMICAL REACTION ENGINEERING BEGINNING WITH BASIC DEFINITIONS AND FUNDAMENTAL PRINCIPLES AND CONTINUING ALL THE WAY TO PRACTICAL APPLICATIONS EMPHASIZING REAL WORLD ASPECTS OF INDUSTRIAL PRACTICE THE TWO MAIN SECTIONS COVER APPLIED OR ENGINEERING KINETICS REACTOR ANALYSIS AND DESIGN INCLUDES UPDATED COVERAGE OF COMPUTER MODELING METHODS AND MANY NEW WORKED EXAMPLES MOST OF THE EXAMPLES USE REAL KINETIC DATA FROM PROCESSES OF INDUSTRIAL IMPORTANCE FILLING A LONGSTANDING GAP FOR GRADUATE COURSES IN THE FIELD CHEMICAL REACTION ENGINEERING BEYOND THE FUNDAMENTALS COVERS BASIC CONCEPTS AS WELL AS COMPLEXITIES OF CHEMICAL REACTION ENGINEERING INCLUDING NOVEL TECHNIQUES FOR PROCESS INTENSIFICATION THE BOOK IS DIVIDED INTO THREE PARTS FUNDAMENTALS REVISITED BUILDING ON FUNDAMENTALS AND BEYOND THE FUNDAMENTALS PART I FUNDAMENTALS REVISITED REVIEWS THE SALIENT FEATURES OF AN UNDERGRADUATE COURSE INTRODUCING CONCEPTS ESSENTIAL TO REACTOR DESIGN SUCH AS MIXING UNSTEADY STATE OPERATIONS MULTIPLE STEADY STATES AND COMPLEX REACTIONS PART II BUILDING ON FUNDAMENTALS IS DEVOTED TO SKILL BUILDING PARTICULARLY IN THE AREA OF CATALYSIS AND CATALYTIC REACTIONS IT COVERS CHEMICAL THERMODYNAMICS EMPHASIZING THE THERMODYNAMICS OF ADSORPTION AND COMPLEX REACTIONS THE FUNDAMENTALS OF CHEMICAL KINETICS WITH SPECIAL EMPHASIS ON MICROKINETIC ANALYSIS AND HEAT AND MASS TRANSFER EFFECTS IN CATALYSIS INCLUDING TRANSPORT BETWEEN PHASES TRANSFER ACROSS INTERFACES AND EFFECTS OF EXTERNAL HEAT AND MASS TRANSFER IT ALSO CONTAINS A CHAPTER THAT PROVIDES READERS WITH TOOLS FOR MAKING ACCURATE KINETIC MEASUREMENTS AND ANALYZING THE DATA OBTAINED PART III BEYOND THE FUNDAMENTALS PRESENTS MATERIAL NOT COMMONLY COVERED IN TEXTBOOKS ADDRESSING ASPECTS OF REACTORS INVOLVING MORE THAN ONE PHASE IT DISCUSSES SOLID CATALYZED FLUID PHASE REACTIONS IN FIXED BED AND FLUIDIZED BED REACTORS GAS SOLID NONCATALYTIC REACTIONS REACTIONS INVOLVING AT LEAST ONE LIQUID PHASE GAS LIQUID AND LIQUID LIQUID AND MULTIPHASE REACTIONS THIS SECTION ALSO DESCRIBES MEMBRANE ASSISTED REACTOR ENGINEERING COMBO REACTORS HOMOGENEOUS CATALYSIS AND PHASE TRANSFER CATALYSIS THE FINAL CHAPTER PROVIDES A PERSPECTIVE ON FUTURE TRENDS IN REACTION ENGINEERING CHEMICAL REACTION ENGINEERING IS AT THE CORE OF CHEMICAL ENGINEERING EDUCATION UNFORTUNATELY THE SUBJECT CAN BE INTIMIDATING TO STUDENTS BECAUSE IT REQUIRES A HEAVY DOSE OF MATHEMATICS THESE MATHEMATICS UNLESS SUITABLY EXPLAINED IN THE CONTEXT OF THE PHYSICAL PHENOMENON CAN CONFUSE RATHER THAN ENLIGHTEN STUDENTS BEARING THIS IN MIND REACTION ENGINEERING PRINCIPLES IS WRITTEN PRIMARILY FROM A STUDENT S PERSPECTIVE IT IS THE CULMINATION OF THE AUTHOR S MORE THAN TWENTY YEARS OF EXPERIENCE TEACHING CHEMICAL REACTION ENGINEERING THE TEXTBOOK BEGINS BY COVERING THE BASIC BUILDING BLOCKS OF THE SUBJECT STOICHIOMETRY KINETICS AND THERMODYNAMICS ENSURING STUDENTS GAIN A GOOD GRASP OF THE ESSENTIAL CONCEPTS BEFORE VENTURING INTO THE WORLD OF REACTORS THE DESIGN AND PERFORMANCE EVALUATION OF REACTORS ARE CONVENIENTLY GROUPED INTO CHAPTERS BASED ON AN INCREASING DEGREE OF DIFFICULTY ACCORDINGLY ISOTHERMAL REACTORS BATCH AND IDEAL FLOW TYPES ARE ADDRESSED FIRST FOLLOWED BY NON ISOTHERMAL REACTOR OPERATION NON IDEAL FLOW IN REACTORS AND SOME SPECIAL REACTOR TYPES FOR BETTER COMPREHENSION DETAILED DERIVATIONS ARE PROVIDED FOR ALL IMPORTANT MATHEMATICAL EQUATIONS NARRATIVE OF THE PHYSICAL CONTEXT IN WHICH THE FORMULAE WORK ADDS TO THE CLARITY OF THOUGHT THE USE OF MATHEMATICAL FORMULAE IS ELABORATED UPON IN THE FORM OF PROBLEM SOLVING STEPS FOLLOWED BY WORKED EXAMPLES EFFECTS OF PARAMETERS CHANGING TRENDS AND COMPARISONS BETWEEN DIFFERENT SITUATIONS ARE PRESENTED GRAPHICALLY SELF PRACTICE EXERCISES ARE INCLUDED AT THE END OF EACH CHAPTER THIS BOOK SERVES AS AN INTRODUCTION TO THE SUBJECT GIVING READERS THE TOOLS TO SOLVE REAL WORLD CHEMICAL REACTION ENGINEERING PROBLEMS IT FEATURES

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1/14

VIPERS IN THE STORM DIARY OF A GULF WAR FIGHTER PILOT

AVIATION WEEK BOOKS

A SECTION OF FULLY SOLVED EXAMPLES AS WELL AS END OF CHAPTER PROBLEMS IT INCLUDES COVERAGE OF CATALYST CHARACTERIZATION AND ITS IMPACT ON KINETICS AND REACTOR MODELING EACH CHAPTER PRESENTS SIMPLE IDEAS AND CONCEPTS WHICH BUILD TOWARDS MORE COMPLEX AND REALISTIC CASES AND SITUATIONS INTRODUCES AN IN DEPTH KINETICS ANALYSIS FEATURES WELL DEVELOPED SECTIONS ON THE MAJOR TOPICS OF CATALYSTS KINETICS REACTOR DESIGN AND MODELING INCLUDES A CHAPTER THAT SHOWCASES A FULLY WORKED OUT EXAMPLE DETAILING A TYPICAL PROBLEM THAT IS FACED WHEN PERFORMING LABORATORY WORK OFFERS END OF CHAPTER PROBLEMS AND A SOLUTIONS MANUAL FOR ADOPTING PROFESSORS AIMED AT ADVANCED CHEMICAL ENGINEERING UNDERGRADUATES AND GRADUATE STUDENTS TAKING CHEMICAL REACTION ENGINEERING COURSES AS WELL AS CHEMICAL ENGINEERING PROFESSIONALS THIS TEXTBOOK PROVIDES THE KNOWLEDGE TO TACKLE REAL PROBLEMS WITHIN THE INDUSTRY THE ROLE OF THE CHEMICAL REACTOR IS CRUCIAL FOR THE INDUSTRIAL CONVERSION OF RAW MATERIALS INTO PRODUCTS AND NUMEROUS FACTORS MUST BE CONSIDERED WHEN SELECTING AN APPROPRIATE AND EFFICIENT CHEMICAL REACTOR CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY DEFINES THE QUALITATIVE ASPECTS THAT AFFECT THE SELECTION OF AN INDUSTRIAL CHEMICAL REACTOR AND COUPLES VARIOUS REACTOR MODELS TO CASE SPECIFIC KINETIC EXPRESSIONS FOR CHEMICAL PROCESSES OFFERING A SYSTEMATIC DEVELOPMENT OF THE CHEMICAL REACTION ENGINEERING CONCEPT THIS VOLUME EXPLORES ESSENTIAL STOICHIOMETRIC KINETIC AND THERMODYNAMIC TERMS NEEDED IN THE ANALYSIS OF CHEMICAL REACTORS HOMOGENEOUS AND HETEROGENEOUS REACTORS RESIDENCE TIME DISTRIBUTIONS AND NON IDEAL FLOW CONDITIONS IN INDUSTRIAL REACTORS SOLUTIONS OF ALGEBRAIC AND ORDINARY DIFFERENTIAL EQUATION SYSTEMS GAS AND LIQUID PHASE DIFFUSION COEFFICIENTS AND GAS FILM COEFFICIENTS CORRELATIONS FOR GAS LIQUID SYSTEMS SOLUBILITIES OF GASES IN LIQUIDS GUIDELINES FOR LABORATORY REACTORS AND THE ESTIMATION OF KINETIC PARAMETERS THE AUTHORS PAY SPECIAL ATTENTION TO THE EXACT FORMULATIONS AND DERIVATIONS OF MASS ENERGY BALANCES AND THEIR NUMERICAL SOLUTIONS RICHLY ILLUSTRATED AND CONTAINING EXERCISES AND SOLUTIONS COVERING A NUMBER OF PROCESSES FROM OIL REFINING TO THE DEVELOPMENT OF SPECIALTY AND FINE CHEMICALS THE TEXT PROVIDES A CLEAR UNDERSTANDING OF CHEMICAL REACTOR ANALYSIS AND DESIGN THE PUBLICATION OF THE THIRD EDITION OF CHEMICAL ENGINEERING VOLUME 3 MARKS THE COMPLETION OF THE RE ORIENTATION OF THE BASIC MATERIAL CONTAINED IN THE FIRST THREE VOLUMES OF THE SERIES VOLUME 3 IS DEVOTED TO REACTION ENGINEERING BOTH CHEMICAL AND BIOCHEMICAL TOGETHER WITH MEASUREMENT AND PROCESS CONTROL THIS TEXT IS DESIGNED FOR STUDENTS GRADUATE AND POSTGRADUATE OF CHEMICAL ENGINEERING THE PUBLICATION OF THE THIRD EDITION OF CHEMICAL ENGINEERING VOLUME 3 MARKS THE COMPLETION OF THE RE ORIENTATION OF THE BASIC MATERIAL CONTAINED IN THE FIRST THREE VOLUMES OF THE SERIES VOLUME 3 IS DEVOTED TO REACTION ENGINEERING BOTH CHEMICAL AND BIOCHEMICAL TOGETHER WITH MEASUREMENT AND PROCESS CONTROL THIS TEXT IS DESIGNED FOR STUDENTS GRADUATE AND POSTGRADUATE OF CHEMICAL ENGINEERING APPROPRIATE FOR A ONE SEMESTER UNDERGRADUATE OR FIRST YEAR GRADUATE COURSE THIS TEXT INTRODUCES THE QUANTITATIVE TREATMENT OF CHEMICAL REACTION ENGINEERING IT COVERS BOTH HOMOGENEOUS AND HETEROGENEOUS REACTING SYSTEMS AND EXAMINES CHEMICAL REACTION ENGINEERING AS WELL AS CHEMICAL REACTOR ENGINEERING EACH CHAPTER CONTAINS NUMEROUS WORKED OUT PROBLEMS AND REAL WORLD VIGNETTES INVOLVING COMMERCIAL APPLICATIONS A FEATURE WIDELY PRAISED BY REVIEWERS AND TEACHERS 2003 EDITION DESIGNED TO GIVE CHEMICAL ENGINEERS BACKGROUND FOR MANAGING CHEMICAL REACTIONS THIS TEXT EXAMINES THE BEHAVIOR OF CHEMICAL REACTIONS AND REACTORS CONSERVATION EQUATIONS FOR REACTORS HETEROGENEOUS REACTIONS FLUID FLUID AND FLUID SOLID REACTION SYSTEMS HETEROGENEOUS CATALYSIS AND CATALYTIC KINETICS DIFFUSION AND HETEROGENEOUS CATALYSIS AND ANALYSES AND DESIGN OF HETEROGENEOUS REACTORS 1976 EDITION VERY GOOD NO HIGHLIGHTS OR MARKUP ALL PAGES ARE INTACT SOLVING PROBLEMS IN CHEMICAL REACTION ENGINEERING AND KINETICS IS NOW EASIER THAN EVER AS STUDENTS READ THROUGH THIS TEXT THEY LL FIND A COMPREHENSIVE INTRODUCTORY TREATMENT OF REACTORS FOR SINGLE PHASE AND MULTIPHASE SYSTEMS THAT EXPOSES THEM TO A BROAD RANGE OF REACTORS AND KEY DESIGN FEATURES THEY LL GAIN VALUABLE INSIGHT ON REACTION KINETICS IN RELATION TO CHEMICAL REACTOR DESIGN THEY WILL ALSO UTILIZE A SPECIAL SOFTWARE PACKAGE THAT HELPS THEM QUICKLY SOLVE SYSTEMS OF ALGEBRAIC AND DIFFERENTIAL EQUATIONS AND PERFORM PARAMETER ESTIMATION WHICH GIVES THEM MORE TIME FOR ANALYSIS KEY FEATURES THOROUGH COVERAGE IS PROVIDED ON THE RELEVANT PRINCIPLES OF KINETICS IN ORDER TO DEVELOP BETTER DESIGNS OF CHEMICAL REACTORS E Z SOLVE SOFTWARE ON CD ROM IS INCLUDED WITH THE TEXT BY UTILIZING THIS SOFTWARE STUDENTS CAN HAVE MORE TIME TO FOCUS ON THE DEVELOPMENT OF DESIGN MODELS AND ON THE INTERPRETATION OF CALCULATED RESULTS THE SOFTWARE ALSO FACILITATES EXPLORATION AND DISCUSSION OF REALISTIC INDUSTRIAL DESIGN PROBLEMS MORE THAN 500 WORKED EXAMPLES AND END OF CHAPTER PROBLEMS ARE INCLUDED TO HELP STUDENTS LEARN HOW TO APPLY THE THEORY TO SOLVE DESIGN PROBLEMS A WEB SITE WILEY COM COLLEGE MISSEN PROVIDES ADDITIONAL RESOURCES INCLUDING SAMPLE FILES DEMONSTRATIONS AND A DESCRIPTION OF THE E Z SOLVE SOFTWARE ELEMENTS OF CHEMICAL REACTION ENGINEERING FOURTH EDITION PRESENTS THE FUNDAMENTALS OF CHEMICAL REACTION ENGINEERING IN A CLEAR AND CONCISE MANNER THIS PRESENT VOLUME CONTAINS THE TEXT OF ALL CONTRIBUTIONS ORAL AND POSTERS EXCEPT FOR THE FOUR INVITED PAPERS WHICH WERE PRESENTED AT THE 3RD INTERNATIONAL SYMPOSIUM ON HIGH PRESSURE CHEMICAL ENGINEERING ON OCTOBER 7 9 1996 THE SYMPOSIUM WAS DIVIDED INTO THREE MAJOR SECTIONS NAMEDLY CHEMICAL REACTION ENGINEERING SEPARATION PROCESSES AND PHASE EQUILIBRIA PLANT APPARATUS MACHINERY MEASUREMENTS CONTROL THE ROLE OF THE CHEMICAL REACTOR IS CRUCIAL FOR THE INDUSTRIAL CONVERSION OF RAW MATERIALS INTO PRODUCTS AND NUMEROUS FACTORS MUST BE CONSIDERED WHEN SELECTING AN APPROPRIATE AND EFFICIENT CHEMICAL REACTOR CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY DEFINES THE QUALITATIVE ASPECTS THAT AFFECT THE SELECTION OF AN INDUSTRIAL CHEMICAL REACTOR AND COUPLES VARIOUS REACTOR MODELS TO CASE SPECIFIC KINETIC EXPRESSIONS FOR CHEMICAL PROCESSES THOROUGHLY REVISED AND UPDATED THIS MUCH ANTICIPATED SECOND EDITION ADDRESSES THE RAPID ACADEMIC AND INDUSTRIAL DEVELOPMENT OF CHEMICAL REACTION ENGINEERING OFFERING A SYSTEMATIC DEVELOPMENT OF THE CHEMICAL REACTION ENGINEERING CONCEPT THIS VOLUME EXPLORES ESSENTIAL STOICHIOMETRIC KINETIC AND THERMODYNAMIC TERMS NEEDED IN THE ANALYSIS OF CHEMICAL REACTORS HOMOGENEOUS AND HETEROGENEOUS REACTORS REACTOR OPTIMIZATION ASPECTS RESIDENCE TIME DISTRIBUTIONS AND NON IDEAL FLOW CONDITIONS IN INDUSTRIAL REACTORS SOLUTIONS OF ALGEBRAIC AND ORDINARY DIFFERENTIAL EQUATION SYSTEMS GAS AND LIQUID PHASE DIFFUSION COEFFICIENTS AND GAS FILM COEFFICIENTS CORRELATIONS FOR 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INTRODUCTION TO CHEMICAL REACTOR ANALYSIS SECOND EDITION INTRODUCES THE BASIC CONCEPTS OF CHEMICAL REACTOR ANALYSIS AND DESIGN AN IMPORTANT FOUNDATION FOR UNDERSTANDING CHEMICAL REACTORS WHICH PLAY A CENTRAL ROLE IN MOST INDUSTRIAL CHEMICAL PLANTS THE SCOPE OF THE SECOND EDITION HAS BEEN SIGNIFICANTLY ENHANCED AND THE CONTENT REORGANIZED FOR IMPROVED PEDAGOGICAL VALUE CONTAINING SUFFICIENT MATERIAL TO BE USED AS A TEXT FOR AN UNDERGRADUATE LEVEL TWO TERM COURSE THIS EDITION ALSO CONTAINS FIVE NEW CHAPTERS ON CATALYTIC REACTION ENGINEERING WRITTEN SO THAT NEWCOMERS TO THE FIELD CAN EASILY PROGRESS THROUGH THE TOPICS THIS TEXT PROVIDES SUFFICIENT KNOWLEDGE FOR READERS TO PERFORM MOST OF THE COMMON REACTION ENGINEERING CALCULATIONS REQUIRED FOR A TYPICAL PRACTICING ENGINEER THE AUTHORS INTRODUCE KINETICS REACTOR TYPES AND COMMONLY USED TERMS IN THE FIRST CHAPTER SUBSEQUENT CHAPTERS COVER A REVIEW OF CHEMICAL ENGINEERING THERMODYNAMICS MOLE BALANCES IN IDEAL REACTORS FOR THREE COMMON REACTOR TYPES ENERGY BALANCES IN IDEAL REACTORS AND CHEMICAL REACTION KINETICS THE TEXT ALSO PRESENTS AN INTRODUCTION TO NONIDEAL REACTORS AND EXPLORES KINETICS AND REACTORS IN CATALYTIC SYSTEMS THE BOOK ASSUMES THAT READERS HAVE SOME KNOWLEDGE OF THERMODYNAMICS NUMERICAL METHODS HEAT TRANSFER AND FLUID FLOW THE AUTHORS INCLUDE AN APPENDIX FOR NUMERICAL METHODS WHICH ARE ESSENTIAL TO SOLVING MOST REALISTIC PROBLEMS IN CHEMICAL REACTION ENGINEERING THEY ALSO PROVIDE NUMEROUS WORKED EXAMPLES AND ADDITIONAL PROBLEMS IN EACH CHAPTER GIVEN THE SIGNIFICANT NUMBER OF CHEMICAL ENGINEERS INVOLVED IN CHEMICAL PROCESS PLANT OPERATION AT SOME POINT IN THEIR CAREERS THIS BOOK OFFERS ESSENTIAL TRAINING FOR INTERPRETING CHEMICAL REACTOR PERFORMANCE AND IMPROVING REACTOR OPERATION WHAT S NEW IN THIS EDITION FIVE NEW CHAPTERS ON CATALYTIC REACTION ENGINEERING INCLUDING VARIOUS CATALYTIC REACTIONS AND KINETICS TRANSPORT PROCESSES AND EXPERIMENTAL METHODS EXPANDED COVERAGE OF ADSORPTION ADDITIONAL WORKED PROBLEMS REORGANIZED MATERIAL COULSON AND RICHARDSON S CHEMICAL ENGINEERING VOLUME 3A CHEMICAL AND BIOCHEMICAL REACTORS AND REACTION ENGINEERING FOURTH EDITION COVERS REACTOR DESIGN FLOW MODELLING GAS LIQUID AND GAS SOLID REACTIONS AND REACTORS CAPTURES CONTENT CONVERTED FROM TEXTBOOKS INTO FULLY REVISED REFERENCE MATERIAL INCLUDES CONTENT RANGING FROM FOUNDATIONAL THROUGH TECHNICAL FEATURES EMERGING APPLICATIONS NUMERICAL METHODS AND COMPUTATIONAL TOOLS THE SECOND EDITION FEATURES NEW PROBLEMS THAT ENGAGE READERS IN CONTEMPORARY REACTOR DESIGN HIGHLY PRAISED BY INSTRUCTORS STUDENTS AND CHEMICAL ENGINEERS INTRODUCTION TO CHEMICAL ENGINEERING KINETICS REACTOR DESIGN HAS BEEN EXTENSIVELY REVISED AND UPDATED IN THIS SECOND EDITION THE TEXT CONTINUES TO OFFER A SOLID BACKGROUND IN CHEMICAL REACTION KINETICS AS WELL AS IN MATERIAL AND ENERGY BALANCES PREPARING READERS WITH THE FOUNDATION NECESSARY FOR SUCCESS IN THE DESIGN OF CHEMICAL REACTORS MOREOVER IT REFLECTS NOT ONLY THE BASIC ENGINEERING SCIENCE BUT ALSO THE MATHEMATICAL TOOLS USED BY TODAY S ENGINEERS TO SOLVE PROBLEMS ASSOCIATED WITH THE DESIGN OF CHEMICAL REACTORS INTRODUCTION TO CHEMICAL ENGINEERING KINETICS REACTOR DESIGN ENABLES READERS TO PROGRESSIVELY BUILD THEIR KNOWLEDGE AND SKILLS BY APPLYING THE LAWS OF CONSERVATION OF MASS AND ENERGY TO INCREASINGLY MORE DIFFICULT CHALLENGES IN REACTOR DESIGN THE FIRST ONE THIRD OF THE TEXT EMPHASIZES GENERAL PRINCIPLES OF CHEMICAL REACTION KINETICS SETTING THE STAGE FOR THE SUBSEQUENT TREATMENT OF REACTORS INTENDED TO CARRY OUT HOMOGENEOUS REACTIONS HETEROGENEOUS CATALYTIC REACTIONS AND BIOCHEMICAL TRANSFORMATIONS TOPICS INCLUDE THERMODYNAMICS OF CHEMICAL REACTIONS DETERMINATION OF REACTION RATE EXPRESSIONS ELEMENTS OF HETEROGENEOUS CATALYSIS BASIC CONCEPTS IN REACTOR DESIGN AND IDEAL REACTOR MODELS TEMPERATURE AND ENERGY EFFECTS IN CHEMICAL REACTORS BASIC AND APPLIED ASPECTS OF BIOCHEMICAL TRANSFORMATIONS AND BIOREACTORS ABOUT 70 OF THE PROBLEMS IN THIS SECOND EDITION ARE NEW THESE PROBLEMS FREQUENTLY BASED ON ARTICLES CULLED FROM THE RESEARCH LITERATURE HELP READERS DEVELOP A SOLID UNDERSTANDING OF THE MATERIAL MANY OF THESE NEW PROBLEMS ALSO OFFER READERS OPPORTUNITIES TO USE CURRENT SOFTWARE APPLICATIONS SUCH AS MATHCAD AND MATLAB BY ENABLING READERS TO PROGRESSIVELY BUILD AND APPLY THEIR KNOWLEDGE THE SECOND EDITION OF INTRODUCTION TO CHEMICAL ENGINEERING KINETICS REACTOR DESIGN REMAINS A PREMIER TEXT FOR STUDENTS IN CHEMICAL ENGINEERING AND A VALUABLE RESOURCE FOR PRACTICING ENGINEERS CHEMICAL REACTION ENGINEERING ESSENTIALS EXERCISES AND EXAMPLES PRESENTS THE ESSENTIALS OF KINETICS REACTOR DESIGN AND CHEMICAL REACTION ENGINEERING FOR UNDERGRADUATE STUDENTS CONCISE AND DIDACTIC IN ITS APPROACH IT FEATURES OVER 70 RESOLVED EXAMPLES AND MANY EXERCISES THE WORK IS ORGANIZED IN TWO PARTS IN THE FIRST PART KINETICS IS PRESENTED COULSON AND RICHARDSON S CHEMICAL ENGINEERING VOLUME 3A CHEMICAL AND BIOCHEMICAL REACTORS AND REACTION 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BOOK COVERS ELECTROCHEMISTRY AND CHEMICAL ENGINEERING PRINCIPLES AND WILL ENABLE RESEARCHERS IN THESE FIELDS TO WORK TOGETHER MORE EFFECTIVELY IN THE DESIGN PROCESS WRITTEN AS A TEXTBOOK ALL BASIC ASPECTS ARE REINFORCED WITH NUMEROUS EXAMPLES ON REAL SYNTHESIS MAKING THIS AN ESSENTIAL REFERENCE FOR GRADUATE STUDENTS NEEDING TO LEARN ABOUT FUNDAMENTAL ELECTROCHEMICAL KINETICS RATE PROCESSES AND MODELING REACTION ENGINEERING CLEARLY AND CONCISELY COVERS THE CONCEPTS AND MODELS OF REACTION ENGINEERING AND THEN APPLIES THEM TO REAL WORLD REACTOR DESIGN THE BOOK EMPHASIZES THAT THE FOUNDATION OF REACTION ENGINEERING REQUIRES THE USE OF KINETICS AND TRANSPORT KNOWLEDGE TO EXPLAIN AND ANALYZE REACTOR BEHAVIORS THE AUTHORS USE READILY UNDERSTANDABLE LANGUAGE TO COVER THE SUBJECT LEAVING READERS WITH A COMPREHENSIVE GUIDE ON HOW TO UNDERSTAND ANALYZE AND MAKE DECISIONS RELATED TO IMPROVING CHEMICAL

REACTIONS AND CHEMICAL REACTOR DESIGN WORKED EXAMPLES AND OVER 20 EXERCISES AT THE END OF EACH CHAPTER PROVIDE OPPORTUNITIES FOR READERS TO PRACTICE SOLVING PROBLEMS RELATED TO THE CONTENT COVERED IN THE BOOK

CHEMICAL REACTION ENGINEERING

1998-09-01

CHEMICAL REACTION ENGINEERING IS CONCERNED WITH THE EXPLOITATION OF CHEMICAL REACTIONS ON A COMMERCIAL SCALE ITS GOAL IS THE SUCCESSFUL DESIGN AND OPERATION OF CHEMICAL REACTORS THIS TEXT EMPHASIZES QUALITATIVE ARGUMENTS SIMPLE DESIGN METHODS GRAPHICAL PROCEDURES AND FREQUENT COMPARISON OF CAPABILITIES OF THE MAJOR REACTOR TYPES SIMPLE IDEAS ARE TREATED FIRST AND ARE THEN EXTENDED TO THE MORE COMPLEX

CHEMICAL REACTION ENGINEERING, 3RD ED

2006

MARKET DESC CHEMICAL ENGINEERS IN CHEMICAL NUCLEAR AND BIOMEDICAL INDUSTRIES SPECIAL FEATURES EMPHASIS IS PLACED THROUGHOUT ON THE DEVELOPMENT OF COMMON DESIGN STRATEGY FOR ALL SYSTEMS HOMOGENEOUS AND HETEROGENEOUS THIS EDITION FEATURES NEW TOPICS ON BIOCHEMICAL SYSTEMS REACTORS WITH FLUIDIZED SOLIDS GAS LIQUID REACTORS AND MORE ON NON IDEAL FLOW THE BOOK EXPLAINS WHY CERTAIN ASSUMPTIONS ARE MADE WHY AN ALTERNATIVE APPROACH IS NOT USED AND TO INDICATE THE LIMITATIONS OF THE TREATMENT WHEN APPLIED TO REAL SITUATIONS ABOUT THE BOOK CHEMICAL REACTION ENGINEERING IS CONCERNED WITH THE EXPLOITATION OF CHEMICAL REACTIONS ON A COMMERCIAL SCALE ITS GOAL IS THE SUCCESSFUL DESIGN AND OPERATION OF CHEMICAL REACTORS THIS TEXT EMPHASIZES QUALITATIVE ARGUMENTS SIMPLE DESIGN METHODS GRAPHICAL PROCEDURES AND FREQUENT COMPARISON OF CAPABILITIES OF THE MAJOR REACTOR TYPES SIMPLE IDEAS ARE TREATED FIRST AND ARE THEN EXTENDED TO THE MORE COMPLEX

CHEMICAL REACTOR ANALYSIS DESIGN 2ND EDITION WITH CHEMICAL REACTION ENGINEERING 3RD EDITION SET

2004-06-10

LEARN CHEMICAL REACTION ENGINEERING THROUGH REASONING NOT MEMORIZATION ESSENTIALS OF CHEMICAL REACTION ENGINEERING IS A COMPLETE YET CONCISE MODERN INTRODUCTION TO CHEMICAL REACTION ENGINEERING FOR UNDERGRADUATE STUDENTS WHILE THE CLASSIC ELEMENTS OF CHEMICAL REACTION ENGINEERING FOURTH EDITION IS STILL AVAILABLE H SCOTT FOGLER DISTILLED THAT LARGER TEXT INTO THIS VOLUME OF ESSENTIAL TOPICS FOR UNDERGRADUATE STUDENTS FOGLER S UNIQUE WAY OF PRESENTING THE MATERIAL HELPS STUDENTS GAIN A DEEP INTUITIVE UNDERSTANDING OF THE FIELD S ESSENTIALS THROUGH REASONING NOT MEMORIZATION HE ESPECIALLY FOCUSES ON IMPORTANT NEW ENERGY AND SAFETY ISSUES RANGING FROM SOLAR AND BIOMASS APPLICATIONS TO THE AVOIDANCE OF RUNAWAY REACTIONS THOROUGHLY CLASSROOM TESTED THIS TEXT REFLECTS FEEDBACK FROM HUNDREDS OF STUDENTS AT THE UNIVERSITY OF MICHIGAN AND OTHER LEADING UNIVERSITIES IT ALSO PROVIDES NEW RESOURCES TO HELP STUDENTS DISCOVER HOW REACTORS BEHAVE IN DIVERSE SITUATIONS COVERAGE INCLUDES CRUCIAL SAFETY TOPICS INCLUDING AMMONIUM NITRATE CSTR EXPLOSIONS NITROANILINE AND T2 LABORATORIES BATCH REACTOR RUNAWAYS AND SACHE CCPS RESOURCES GREATER EMPHASIS ON SAFETY FOLLOWING THE RECOMMENDATIONS OF THE CHEMICAL SAFETY BOARD CSB 2 CASE STUDIES FROM PLANT EXPLOSIONS AND TWO HOMEWORK PROBLEMS WHICH DISCUSS ANOTHER EXPLOSION SOLAR ENERGY CONVERSIONS CHEMICAL THERMAL AND CATALYTIC WATER SPILLING ALGAE PRODUCTION FOR BIOMASS MOLE BALANCES BATCH CONTINUOUS FLOW AND INDUSTRIAL REACTORS CONVERSION AND REACTOR SIZING DESIGN EQUATIONS REACTORS IN SERIES AND MORE RATE LAWS AND STOICHIOMETRY ISOTHERMAL REACTOR DESIGN CONVERSION AND MOLAR FLOW RATES COLLECTION AND ANALYSIS OF RATE DATA MULTIPLE REACTIONS PARALLEL SERIES AND COMPLEX REACTIONS MEMBRANE REACTORS AND MORE REACTION MECHANISMS PATHWAYS BIOREACTIONS AND BIOREACTORS CATALYSIS AND CATALYTIC REACTORS NONISOTHERMAL REACTOR DESIGN STEADY STATE ENERGY BALANCE AND ADIABATIC PFR APPLICATIONS STEADY STATE NONISOTHERMAL REACTOR DESIGN FLOW REACTORS WITH HEAT EXCHANGE

CHEMICAL REACTION ENGINEERING

1962

THIS IS THE SECOND EDITION OF THE STANDARD TEXT ON CHEMICAL REACTION ENGINEERING BEGINNING WITH BASIC DEFINITIONS AND FUNDAMENTAL PRINCIPLES AND CONTINUING ALL THE WAY TO PRACTICAL APPLICATIONS EMPHASIZING REAL WORLD ASPECTS OF INDUSTRIAL PRACTICE THE TWO MAIN SECTIONS COVER APPLIED OR ENGINEERING KINETICS REACTOR ANALYSIS AND DESIGN INCLUDES UPDATED COVERAGE

OF COMPUTER MODELING METHODS AND MANY NEW WORKED EXAMPLES MOST OF THE EXAMPLES USE REAL KINETIC DATA FROM PROCESSES OF INDUSTRIAL IMPORTANCE

ESSENTIALS OF CHEMICAL REACTION ENGINEERING

2010-11-02

FILLING A LONGSTANDING GAP FOR GRADUATE COURSES IN THE FIELD CHEMICAL REACTION ENGINEERING BEYOND THE FUNDAMENTALS COVERS BASIC CONCEPTS AS WELL AS COMPLEXITIES OF CHEMICAL REACTION ENGINEERING INCLUDING NOVEL TECHNIQUES FOR PROCESS INTENSIFICATION THE BOOK IS DIVIDED INTO THREE PARTS FUNDAMENTALS REVISITED BUILDING ON FUNDAMENTALS AND BEYOND THE FUNDAMENTALS PART I FUNDAMENTALS REVISITED REVIEWS THE SALIENT FEATURES OF AN UNDERGRADUATE COURSE INTRODUCING CONCEPTS ESSENTIAL TO REACTOR DESIGN SUCH AS MIXING UNSTEADY STATE OPERATIONS MULTIPLE STEADY STATES AND COMPLEX REACTIONS PART II BUILDING ON FUNDAMENTALS IS DEVOTED TO SKILL BUILDING PARTICULARLY IN THE AREA OF CATALYSIS AND CATALYTIC REACTIONS IT COVERS CHEMICAL THERMODYNAMICS EMPHASIZING THE THERMODYNAMICS OF ADSORPTION AND COMPLEX REACTIONS THE FUNDAMENTALS OF CHEMICAL KINETICS WITH SPECIAL EMPHASIS ON MICROKINETIC ANALYSIS AND HEAT AND MASS TRANSFER EFFECTS IN CATALYSIS INCLUDING TRANSPORT BETWEEN PHASES TRANSFER ACROSS INTERFACES AND EFFECTS OF EXTERNAL HEAT AND MASS TRANSFER IT ALSO CONTAINS A CHAPTER THAT PROVIDES READERS WITH TOOLS FOR MAKING ACCURATE KINETIC MEASUREMENTS AND ANALYZING THE DATA OBTAINED PART III BEYOND THE FUNDAMENTALS PRESENTS MATERIAL NOT COMMONLY COVERED IN TEXTBOOKS ADDRESSING ASPECTS OF REACTORS INVOLVING MORE THAN ONE PHASE IT DISCUSSES SOLID CATALYZED FLUID PHASE REACTIONS IN FIXED BED AND FLUIDIZED BED REACTORS GAS SOLID NONCATALYTIC REACTIONS REACTIONS INVOLVING AT LEAST ONE LIQUID PHASE GAS LIQUID AND LIQUID LIQUID AND MULTIPHASE REACTIONS THIS SECTION ALSO DESCRIBES MEMBRANE ASSISTED REACTOR ENGINEERING COMBO REACTORS HOMOGENEOUS CATALYSIS AND PHASE TRANSFER CATALYSIS THE FINAL CHAPTER PROVIDES A PERSPECTIVE ON FUTURE TRENDS IN REACTION ENGINEERING

CHEMICAL REACTOR ANALYSIS AND DESIGN

1979

CHEMICAL REACTION ENGINEERING IS AT THE CORE OF CHEMICAL ENGINEERING EDUCATION UNFORTUNATELY THE SUBJECT CAN BE INTIMIDATING TO STUDENTS BECAUSE IT REQUIRES A HEAVY DOSE OF MATHEMATICS THESE MATHEMATICS UNLESS SUITABLY EXPLAINED IN THE CONTEXT OF THE PHYSICAL PHENOMENON CAN CONFUSE RATHER THAN ENLIGHTEN STUDENTS BEARING THIS IN MIND REACTION ENGINEERING PRINCIPLES IS WRITTEN PRIMARILY FROM A STUDENT S PERSPECTIVE IT IS THE CULMINATION OF THE AUTHOR S MORE THAN TWENTY YEARS OF EXPERIENCE TEACHING CHEMICAL REACTION ENGINEERING THE TEXTBOOK BEGINS BY COVERING THE BASIC BUILDING BLOCKS OF THE SUBJECT STOICHIOMETRY KINETICS AND THERMODYNAMICS ENSURING STUDENTS GAIN A GOOD GRASP OF THE ESSENTIAL CONCEPTS BEFORE VENTURING INTO THE WORLD OF REACTORS THE DESIGN AND PERFORMANCE EVALUATION OF REACTORS ARE CONVENIENTLY GROUPED INTO CHAPTERS BASED ON AN INCREASING DEGREE OF DIFFICULTY ACCORDINGLY ISOTHERMAL REACTORS BATCH AND IDEAL FLOW TYPES ARE ADDRESSED FIRST FOLLOWED BY NON ISOTHERMAL REACTOR OPERATION NON IDEAL FLOW IN REACTORS AND SOME SPECIAL REACTOR TYPES FOR BETTER COMPREHENSION DETAILED DERIVATIONS ARE PROVIDED FOR ALL IMPORTANT MATHEMATICAL EQUATIONS NARRATIVE OF THE PHYSICAL CONTEXT IN WHICH THE FORMULAE WORK ADDS TO THE CLARITY OF THOUGHT THE USE OF MATHEMATICAL FORMULAE IS ELABORATED UPON IN THE FORM OF PROBLEM SOLVING STEPS FOLLOWED BY WORKED EXAMPLES EFFECTS OF PARAMETERS CHANGING TRENDS AND COMPARISONS BETWEEN DIFFERENT SITUATIONS ARE PRESENTED GRAPHICALLY SELF PRACTICE EXERCISES ARE INCLUDED AT THE END OF EACH CHAPTER

CHEMICAL REACTION ENGINEERING

2013-07-15

THIS BOOK SERVES AS AN INTRODUCTION TO THE SUBJECT GIVING READERS THE TOOLS TO SOLVE REAL WORLD CHEMICAL REACTION ENGINEERING PROBLEMS IT FEATURES A SECTION OF FULLY SOLVED EXAMPLES AS WELL AS END OF CHAPTER PROBLEMS IT INCLUDES COVERAGE OF CATALYST CHARACTERIZATION AND ITS IMPACT ON KINETICS AND REACTOR MODELING EACH CHAPTER PRESENTS SIMPLE IDEAS AND CONCEPTS WHICH BUILD TOWARDS MORE COMPLEX AND REALISTIC CASES AND SITUATIONS INTRODUCES AN IN DEPTH KINETICS ANALYSIS FEATURES WELL DEVELOPED SECTIONS ON THE MAJOR TOPICS OF CATALYSTS KINETICS REACTOR DESIGN AND MODELING INCLUDES A CHAPTER THAT SHOWCASES A FULLY WORKED OUT EXAMPLE DETAILING A TYPICAL PROBLEM THAT IS FACED WHEN PERFORMING LABORATORY WORK OFFERS END OF CHAPTER PROBLEMS AND A SOLUTIONS MANUAL FOR ADOPTING PROFESSORS AIMED AT ADVANCED CHEMICAL ENGINEERING UNDERGRADUATES AND GRADUATE STUDENTS TAKING CHEMICAL REACTION ENGINEERING COURSES AS WELL AS CHEMICAL ENGINEERING PROFESSIONALS THIS TEXTBOOK PROVIDES THE KNOWLEDGE TO TACKLE REAL PROBLEMS WITHIN THE INDUSTRY

REACTION ENGINEERING PRINCIPLES

2018-09-03

THE ROLE OF THE CHEMICAL REACTOR IS CRUCIAL FOR THE INDUSTRIAL CONVERSION OF RAW MATERIALS INTO PRODUCTS AND NUMEROUS FACTORS MUST BE CONSIDERED WHEN SELECTING AN APPROPRIATE AND EFFICIENT CHEMICAL REACTOR CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY DEFINES THE QUALITATIVE ASPECTS THAT AFFECT THE SELECTION OF AN INDUSTRIAL CHEMICAL REACTOR AND COUPLES VARIOUS REACTOR MODELS TO CASE SPECIFIC KINETIC EXPRESSIONS FOR CHEMICAL PROCESSES OFFERING A SYSTEMATIC DEVELOPMENT OF THE CHEMICAL REACTION ENGINEERING CONCEPT THIS VOLUME EXPLORES ESSENTIAL STOICHIOMETRIC KINETIC AND THERMODYNAMIC TERMS NEEDED IN THE ANALYSIS OF CHEMICAL REACTORS HOMOGENEOUS AND HETEROGENEOUS REACTORS RESIDENCE TIME DISTRIBUTIONS AND NON IDEAL FLOW CONDITIONS IN INDUSTRIAL REACTORS SOLUTIONS OF ALGEBRAIC AND ORDINARY DIFFERENTIAL EQUATION SYSTEMS GAS AND LIQUID PHASE DIFFUSION COEFFICIENTS AND GAS FILM COEFFICIENTS CORRELATIONS FOR GAS LIQUID SYSTEMS SOLUBILITIES OF GASES IN LIQUIDS GUIDELINES FOR LABORATORY REACTORS AND THE ESTIMATION OF KINETIC PARAMETERS THE AUTHORS PAY SPECIAL ATTENTION TO THE EXACT FORMULATIONS AND DERIVATIONS OF MASS ENERGY BALANCES AND THEIR NUMERICAL SOLUTIONS RICHLY ILLUSTRATED AND CONTAINING EXERCISES AND SOLUTIONS COVERING A NUMBER OF PROCESSES FROM OIL REFINING TO THE DEVELOPMENT OF SPECIALTY AND FINE CHEMICALS THE TEXT PROVIDES A CLEAR UNDERSTANDING OF CHEMICAL REACTOR ANALYSIS AND DESIGN

REACTION ENGINEERING, CATALYST PREPARATION, AND KINETICS

2021-11-23

THE PUBLICATION OF THE THIRD EDITION OF CHEMICAL ENGINEERING VOLUME 3 MARKS THE COMPLETION OF THE RE ORIENTATION OF THE BASIC MATERIAL CONTAINED IN THE FIRST THREE VOLUMES OF THE SERIES VOLUME 3 IS DEVOTED TO REACTION ENGINEERING BOTH CHEMICAL AND BIOCHEMICAL TOGETHER WITH MEASUREMENT AND PROCESS CONTROL THIS TEXT IS DESIGNED FOR STUDENTS GRADUATE AND POSTGRADUATE OF CHEMICAL ENGINEERING

CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY

2011-07-01

THE PUBLICATION OF THE THIRD EDITION OF CHEMICAL ENGINEERING VOLUME 3 MARKS THE COMPLETION OF THE RE ORIENTATION OF THE BASIC MATERIAL CONTAINED IN THE FIRST THREE VOLUMES OF THE SERIES VOLUME 3 IS DEVOTED TO REACTION ENGINEERING BOTH CHEMICAL AND BIOCHEMICAL TOGETHER WITH MEASUREMENT AND PROCESS CONTROL THIS TEXT IS DESIGNED FOR STUDENTS GRADUATE AND POSTGRADUATE OF CHEMICAL ENGINEERING

CHEMICAL REACTION ENGINEERING REVIEWS

1975

APPROPRIATE FOR A ONE SEMESTER UNDERGRADUATE OR FIRST YEAR GRADUATE COURSE THIS TEXT INTRODUCES THE QUANTITATIVE TREATMENT OF CHEMICAL REACTION ENGINEERING IT COVERS BOTH HOMOGENEOUS AND HETEROGENEOUS REACTING SYSTEMS AND EXAMINES CHEMICAL REACTION ENGINEERING AS WELL AS CHEMICAL REACTOR ENGINEERING EACH CHAPTER CONTAINS NUMEROUS WORKED OUT PROBLEMS AND REAL WORLD VIGNETTES INVOLVING COMMERCIAL APPLICATIONS A FEATURE WIDELY PRAISED BY REVIEWERS AND TEACHERS 2003 EDITION

CHEMICAL ENGINEERING, VOLUME 3

2012-12-02

DESIGNED TO GIVE CHEMICAL ENGINEERS BACKGROUND FOR MANAGING CHEMICAL REACTIONS THIS TEXT EXAMINES THE BEHAVIOR OF CHEMICAL REACTIONS AND REACTORS CONSERVATION EQUATIONS FOR REACTORS HETEROGENEOUS REACTIONS FLUID FLUID AND FLUID SOLID REACTION SYSTEMS HETEROGENEOUS CATALYSIS AND CATALYTIC KINETICS DIFFUSION AND HETEROGENEOUS CATALYSIS AND ANALYSES AND DESIGN OF HETEROGENEOUS REACTORS 1976 EDITION

CHEMICAL ENGINEERING, VOLUME 3

1994-01-15

VERY GOOD NO HIGHLIGHTS OR MARKUP ALL PAGES ARE INTACT

FUNDAMENTALS OF CHEMICAL REACTION ENGINEERING

2013-05-27

SOLVING PROBLEMS IN CHEMICAL REACTION ENGINEERING AND KINETICS IS NOW EASIER THAN EVER AS STUDENTS READ THROUGH THIS TEXT THEY LL FIND A COMPREHENSIVE INTRODUCTORY TREATMENT OF REACTORS FOR SINGLE PHASE AND MULTIPHASE SYSTEMS THAT EXPOSES THEM TO A BROAD RANGE OF REACTORS AND KEY DESIGN FEATURES THEY LL GAIN VALUABLE INSIGHT ON REACTION KINETICS IN RELATION TO CHEMICAL REACTOR DESIGN THEY WILL ALSO UTILIZE A SPECIAL SOFTWARE PACKAGE THAT HELPS THEM QUICKLY SOLVE SYSTEMS OF ALGEBRAIC AND DIFFERENTIAL EQUATIONS AND PERFORM PARAMETER ESTIMATION WHICH GIVES THEM MORE TIME FOR ANALYSIS KEY FEATURES THOROUGH COVERAGE IS PROVIDED ON THE RELEVANT PRINCIPLES OF KINETICS IN ORDER TO DEVELOP BETTER DESIGNS OF CHEMICAL REACTORS E Z SOLVE SOFTWARE ON CD ROM IS INCLUDED WITH THE TEXT BY UTILIZING THIS SOFTWARE STUDENTS CAN HAVE MORE TIME TO FOCUS ON THE DEVELOPMENT OF DESIGN MODELS AND ON THE INTERPRETATION OF CALCULATED RESULTS THE SOFTWARE ALSO FACILITATES EXPLORATION AND DISCUSSION OF REALISTIC INDUSTRIAL DESIGN PROBLEMS MORE THAN 500 WORKED EXAMPLES AND END OF CHAPTER PROBLEMS ARE INCLUDED TO HELP STUDENTS LEARN HOW TO APPLY THE THEORY TO SOLVE DESIGN PROBLEMS A WEB SITE WILEY COM COLLEGE MISSEN PROVIDES ADDITIONAL RESOURCES INCLUDING SAMPLE FILES DEMONSTRATIONS AND A DESCRIPTION OF THE E Z SOLVE SOFTWARE

CHEMICAL AND CATALYTIC REACTION ENGINEERING

2001-01-01

ELEMENTS OF CHEMICAL REACTION ENGINEERING FOURTH EDITION PRESENTS THE FUNDAMENTALS OF CHEMICAL REACTION ENGINEERING IN A CLEAR AND CONCISE MANNER

CHEMICAL REACTION ENGINEERING

1986

THIS PRESENT VOLUME CONTAINS THE TEXT OF ALL CONTRIBUTIONS ORAL AND POSTERS EXCEPT FOR THE FOUR INVITED PAPERS WHICH WERE PRESENTED AT THE 3RD INTERNATIONAL SYMPOSIUM ON HIGH PRESSURE CHEMICAL ENGINEERING ON OCTOBER 7 9 1996 THE SYMPOSIUM WAS DIVIDED INTO THREE MAJOR SECTIONS NAMELY CHEMICAL REACTION ENGINEERING SEPARATION PROCESSES AND PHASE EQUILIBRIA PLANT APPARATUS MACHINERY MEASUREMENTS CONTROL

FUNDAMENTALS OF CHEMICAL REACTION ENGINEERING

1989

THE ROLE OF THE CHEMICAL REACTOR IS CRUCIAL FOR THE INDUSTRIAL CONVERSION OF RAW MATERIALS INTO PRODUCTS AND NUMEROUS FACTORS MUST BE CONSIDERED WHEN SELECTING AN APPROPRIATE AND EFFICIENT CHEMICAL REACTOR CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY DEFINES THE QUALITATIVE ASPECTS THAT AFFECT THE SELECTION OF AN INDUSTRIAL CHEMICAL REACTOR AND COUPLES VARIOUS REACTOR MODELS TO CASE SPECIFIC KINETIC EXPRESSIONS FOR CHEMICAL PROCESSES THOROUGHLY REVISED AND UPDATED THIS MUCH ANTICIPATED SECOND EDITION ADDRESSES THE RAPID ACADEMIC AND INDUSTRIAL DEVELOPMENT OF CHEMICAL REACTION ENGINEERING OFFERING A SYSTEMATIC DEVELOPMENT OF THE CHEMICAL REACTION ENGINEERING CONCEPT THIS VOLUME EXPLORES ESSENTIAL STOICHIOMETRIC KINETIC AND THERMODYNAMIC TERMS NEEDED IN THE ANALYSIS OF CHEMICAL REACTORS HOMOGENEOUS AND HETEROGENEOUS REACTORS REACTOR OPTIMIZATION ASPECTS RESIDENCE TIME DISTRIBUTIONS AND NON IDEAL FLOW CONDITIONS IN INDUSTRIAL REACTORS SOLUTIONS OF ALGEBRAIC AND ORDINARY DIFFERENTIAL EQUATION SYSTEMS GAS AND LIQUID PHASE DIFFUSION COEFFICIENTS AND GAS FILM COEFFICIENTS CORRELATIONS FOR GAS LIQUID SYSTEMS SOLUBILITIES OF GASES IN LIQUIDS GUIDELINES FOR LABORATORY REACTORS AND THE ESTIMATION OF KINETIC PARAMETERS THE AUTHORS PAY SPECIAL ATTENTION TO THE EXACT FORMULATIONS AND DERIVATIONS OF MASS ENERGY BALANCES AND THEIR NUMERICAL SOLUTIONS RICHLY ILLUSTRATED AND CONTAINING EXERCISES AND SOLUTIONS COVERING A NUMBER OF PROCESSES FROM OIL REFINING TO THE DEVELOPMENT OF SPECIALTY AND FINE CHEMICALS THE TEXT PROVIDES A CLEAR UNDERSTANDING OF CHEMICAL REACTOR ANALYSIS AND DESIGN

INTRODUCTION TO CHEMICAL REACTION ENGINEERING AND KINETICS

1999

THIS BOOK ILLUSTRATES HOW MODELS OF CHEMICAL REACTORS ARE BUILT UP IN A SYSTEMATIC MANNER STEP BY STEP THE AUTHORS ALSO OUTLINE HOW THE NUMERICAL SOLUTION ALGORITHMS FOR REACTOR MODELS ARE SELECTED AS WELL AS HOW COMPUTER CODES ARE WRITTEN FOR NUMERICAL PERFORMANCE WITH A FOCUS ON MATLAB AND FORTRAN EXAMPLES SOLVED IN MATLAB AND SIMULATIONS PERFORMED IN FORTRAN ARE INCLUDED FOR DEMONSTRATION PURPOSES

CHEMICAL REACTION ENGINEERING

1994

INTRODUCTION TO CHEMICAL REACTOR ANALYSIS SECOND EDITION INTRODUCES THE BASIC CONCEPTS OF CHEMICAL REACTOR ANALYSIS AND DESIGN AN IMPORTANT FOUNDATION FOR UNDERSTANDING CHEMICAL REACTORS WHICH PLAY A CENTRAL ROLE IN MOST INDUSTRIAL CHEMICAL PLANTS THE SCOPE OF THE SECOND EDITION HAS BEEN SIGNIFICANTLY ENHANCED AND THE CONTENT REORGANIZED FOR IMPROVED PEDAGOGICAL VALUE CONTAINING SUFFICIENT MATERIAL TO BE USED AS A TEXT FOR AN UNDERGRADUATE LEVEL TWO TERM COURSE THIS EDITION ALSO CONTAINS FIVE NEW CHAPTERS ON CATALYTIC REACTION ENGINEERING WRITTEN SO THAT NEWCOMERS TO THE FIELD CAN EASILY PROGRESS THROUGH THE TOPICS THIS TEXT PROVIDES SUFFICIENT KNOWLEDGE FOR READERS TO PERFORM MOST OF THE COMMON REACTION ENGINEERING CALCULATIONS REQUIRED FOR A TYPICAL PRACTICING ENGINEER THE AUTHORS INTRODUCE KINETICS REACTOR TYPES AND COMMONLY USED TERMS IN THE FIRST CHAPTER SUBSEQUENT CHAPTERS COVER A REVIEW OF CHEMICAL ENGINEERING THERMODYNAMICS MOLE BALANCES IN IDEAL REACTORS FOR THREE COMMON REACTOR TYPES ENERGY BALANCES IN IDEAL REACTORS AND CHEMICAL REACTION KINETICS THE TEXT ALSO PRESENTS AN INTRODUCTION TO NONIDEAL REACTORS AND EXPLORES KINETICS AND REACTORS IN CATALYTIC SYSTEMS THE BOOK ASSUMES THAT READERS HAVE SOME KNOWLEDGE OF THERMODYNAMICS NUMERICAL METHODS HEAT TRANSFER AND FLUID FLOW THE AUTHORS INCLUDE AN APPENDIX FOR NUMERICAL METHODS WHICH ARE ESSENTIAL TO SOLVING MOST REALISTIC PROBLEMS IN CHEMICAL REACTION ENGINEERING THEY ALSO PROVIDE NUMEROUS WORKED EXAMPLES AND ADDITIONAL PROBLEMS IN EACH CHAPTER GIVEN THE SIGNIFICANT NUMBER OF CHEMICAL ENGINEERS INVOLVED IN CHEMICAL PROCESS PLANT OPERATION AT SOME POINT IN THEIR CAREERS THIS BOOK OFFERS ESSENTIAL TRAINING FOR INTERPRETING CHEMICAL REACTOR PERFORMANCE AND IMPROVING REACTOR OPERATION WHAT'S NEW IN THIS EDITION FIVE NEW CHAPTERS ON CATALYTIC REACTION ENGINEERING INCLUDING VARIOUS CATALYTIC REACTIONS AND KINETICS TRANSPORT PROCESSES AND EXPERIMENTAL METHODS EXPANDED COVERAGE OF ADSORPTION ADDITIONAL WORKED PROBLEMS REORGANIZED MATERIAL

ELEMENTS OF CHEMICAL REACTION ENGINEERING

2006

COULSON AND RICHARDSON'S CHEMICAL ENGINEERING VOLUME 3A CHEMICAL AND BIOCHEMICAL REACTORS AND REACTION ENGINEERING FOURTH EDITION COVERS REACTOR DESIGN FLOW MODELLING GAS LIQUID AND GAS SOLID REACTIONS AND REACTORS CAPTURES CONTENT CONVERTED FROM TEXTBOOKS INTO FULLY REVISED REFERENCE MATERIAL INCLUDES CONTENT RANGING FROM FOUNDATIONAL THROUGH TECHNICAL FEATURES EMERGING APPLICATIONS NUMERICAL METHODS AND COMPUTATIONAL TOOLS

High Pressure Chemical Engineering

1996-09-23

THE SECOND EDITION FEATURES NEW PROBLEMS THAT ENGAGE READERS IN CONTEMPORARY REACTOR DESIGN HIGHLY PRAISED BY INSTRUCTORS STUDENTS AND CHEMICAL ENGINEERS INTRODUCTION TO CHEMICAL ENGINEERING KINETICS REACTOR DESIGN HAS BEEN EXTENSIVELY REVISED AND UPDATED IN THIS SECOND EDITION THE TEXT CONTINUES TO OFFER A SOLID BACKGROUND IN CHEMICAL REACTION KINETICS AS WELL AS IN MATERIAL AND ENERGY BALANCES PREPARING READERS WITH THE FOUNDATION NECESSARY FOR SUCCESS IN THE DESIGN OF CHEMICAL REACTORS MOREOVER IT REFLECTS NOT ONLY THE BASIC ENGINEERING SCIENCE BUT ALSO THE MATHEMATICAL TOOLS USED BY TODAY S ENGINEERS TO SOLVE PROBLEMS ASSOCIATED WITH THE DESIGN OF CHEMICAL REACTORS INTRODUCTION TO CHEMICAL ENGINEERING KINETICS REACTOR DESIGN ENABLES READERS TO PROGRESSIVELY BUILD THEIR KNOWLEDGE AND SKILLS BY APPLYING THE LAWS OF CONSERVATION OF MASS AND ENERGY TO INCREASINGLY MORE DIFFICULT CHALLENGES IN REACTOR DESIGN THE FIRST ONE THIRD OF THE TEXT EMPHASIZES GENERAL PRINCIPLES OF CHEMICAL REACTION KINETICS SETTING THE STAGE FOR THE SUBSEQUENT TREATMENT OF REACTORS INTENDED TO CARRY OUT HOMOGENEOUS REACTIONS HETEROGENEOUS CATALYTIC REACTIONS AND BIOCHEMICAL TRANSFORMATIONS TOPICS INCLUDE THERMODYNAMICS OF CHEMICAL REACTIONS DETERMINATION OF REACTION RATE EXPRESSIONS ELEMENTS OF HETEROGENEOUS CATALYSIS BASIC CONCEPTS IN REACTOR DESIGN AND IDEAL REACTOR MODELS TEMPERATURE AND ENERGY EFFECTS IN CHEMICAL REACTORS BASIC AND APPLIED ASPECTS OF BIOCHEMICAL TRANSFORMATIONS AND BIOREACTORS ABOUT 70 OF THE PROBLEMS IN THIS SECOND EDITION ARE NEW THESE PROBLEMS FREQUENTLY BASED ON ARTICLES CULLED FROM THE RESEARCH LITERATURE HELP READERS DEVELOP A SOLID UNDERSTANDING OF THE MATERIAL MANY OF THESE NEW PROBLEMS ALSO OFFER READERS OPPORTUNITIES TO USE CURRENT SOFTWARE APPLICATIONS SUCH AS MATHCAD AND MATLAB BY ENABLING READERS TO PROGRESSIVELY BUILD AND APPLY THEIR KNOWLEDGE THE SECOND EDITION OF INTRODUCTION TO CHEMICAL ENGINEERING KINETICS REACTOR DESIGN REMAINS A PREMIER TEXT FOR STUDENTS IN CHEMICAL ENGINEERING AND A VALUABLE RESOURCE FOR PRACTICING ENGINEERS

CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY, SECOND EDITION

2019-07-11

CHEMICAL REACTION ENGINEERING ESSENTIALS EXERCISES AND EXAMPLES PRESENTS THE ESSENTIALS OF KINETICS REACTOR DESIGN AND CHEMICAL REACTION ENGINEERING FOR UNDERGRADUATE STUDENTS CONCISE AND DIDACTIC IN ITS APPROACH IT FEATURES OVER 70 RESOLVED EXAMPLES AND MANY EXERCISES THE WORK IS ORGANIZED IN TWO PARTS IN THE FIRST PART KINETICS IS PRESENTED

FRONTIERS IN CHEMICAL REACTION ENGINEERING

1984

COULSON AND RICHARDSON S CHEMICAL ENGINEERING VOLUME 3A CHEMICAL AND BIOCHEMICAL REACTORS AND REACTION ENGINEERING FOURTH EDITION COVERS REACTOR DESIGN FLOW MODELLING GAS LIQUID AND GAS SOLID REACTIONS AND REACTORS CAPTURES CONTENT CONVERTED FROM TEXTBOOKS INTO FULLY REVISED REFERENCE MATERIAL INCLUDES CONTENT RANGING FROM FOUNDATIONAL THROUGH TECHNICAL FEATURES EMERGING APPLICATIONS NUMERICAL METHODS AND COMPUTATIONAL TOOLS

CHEMICAL REACTION ENGINEERING

2020-04-06

THE ROLE OF THE CHEMICAL REACTOR IS CRUCIAL FOR THE INDUSTRIAL CONVERSION OF RAW MATERIALS INTO PRODUCTS AND NUMEROUS FACTORS MUST BE CONSIDERED WHEN SELECTING AN APPROPRIATE AND EFFICIENT CHEMICAL REACTOR CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY DEFINES THE QUALITATIVE ASPECTS THAT AFFECT THE SELECTION OF AN INDUSTRIAL CHEMICAL REACTOR AND COUPLES VARIOUS REACTOR MODELS TO CASE SPECIFIC KINETIC EXPRESSIONS FOR CHEMICAL PROCESSES THOROUGHLY REVISED AND UPDATED THIS MUCH ANTICIPATED SECOND EDITION ADDRESSES THE RAPID ACADEMIC AND INDUSTRIAL DEVELOPMENT OF CHEMICAL REACTION ENGINEERING OFFERING A SYSTEMATIC DEVELOPMENT OF THE CHEMICAL REACTION ENGINEERING CONCEPT THIS VOLUME EXPLORES ESSENTIAL STOICHIOMETRIC KINETIC AND THERMODYNAMIC TERMS NEEDED IN THE ANALYSIS OF CHEMICAL REACTORS HOMOGENEOUS AND HETEROGENEOUS REACTORS REACTOR OPTIMIZATION ASPECTS RESIDENCE TIME DISTRIBUTIONS AND NON IDEAL FLOW CONDITIONS IN INDUSTRIAL REACTORS SOLUTIONS OF ALGEBRAIC AND ORDINARY DIFFERENTIAL EQUATION SYSTEMS GAS AND LIQUID PHASE DIFFUSION COEFFICIENTS AND

GAS FILM COEFFICIENTS CORRELATIONS FOR GAS LIQUID SYSTEMS SOLUBILITIES OF GASES IN LIQUIDS GUIDELINES FOR LABORATORY REACTORS AND THE ESTIMATION OF KINETIC PARAMETERS THE AUTHORS PAY SPECIAL ATTENTION TO THE EXACT FORMULATIONS AND DERIVATIONS OF MASS ENERGY BALANCES AND THEIR NUMERICAL SOLUTIONS RICHLY ILLUSTRATED AND CONTAINING EXERCISES AND SOLUTIONS COVERING A NUMBER OF PROCESSES FROM OIL REFINING TO THE DEVELOPMENT OF SPECIALTY AND FINE CHEMICALS THE TEXT PROVIDES A CLEAR UNDERSTANDING OF CHEMICAL REACTOR ANALYSIS AND DESIGN

INTRODUCTION TO CHEMICAL REACTOR ANALYSIS, SECOND EDITION

2012-10-05

SANDRA S PROMO COPY EMPHASIZING ELECTROCHEMICAL REACTOR DESIGN THIS BOOK COVERS ELECTROCHEMISTRY AND CHEMICAL ENGINEERING PRINCIPLES AND WILL ENABLE RESEARCHERS IN THESE FIELDS TO WORK TOGETHER MORE EFFECTIVELY IN THE DESIGN PROCESS WRITTEN AS A TEXTBOOK ALL BASIC ASPECTS ARE REINFORCED WITH NUMEROUS EXAMPLES ON REAL SYNTHESIS MAKING THIS AN ESSENTIAL REFERENCE FOR GRADUATE STUDENTS NEEDING TO LEARN ABOUT FUNDAMENTAL ELECTROCHEMICAL KINETICS RATE PROCESSES AND MODELING

COULSON AND RICHARDSON'S CHEMICAL ENGINEERING

2017-09-26

REACTION ENGINEERING CLEARLY AND CONCISELY COVERS THE CONCEPTS AND MODELS OF REACTION ENGINEERING AND THEN APPLIES THEM TO REAL WORLD REACTOR DESIGN THE BOOK EMPHASIZES THAT THE FOUNDATION OF REACTION ENGINEERING REQUIRES THE USE OF KINETICS AND TRANSPORT KNOWLEDGE TO EXPLAIN AND ANALYZE REACTOR BEHAVIORS THE AUTHORS USE READILY UNDERSTANDABLE LANGUAGE TO COVER THE SUBJECT LEAVING READERS WITH A COMPREHENSIVE GUIDE ON HOW TO UNDERSTAND ANALYZE AND MAKE DECISIONS RELATED TO IMPROVING CHEMICAL REACTIONS AND CHEMICAL REACTOR DESIGN WORKED EXAMPLES AND OVER 20 EXERCISES AT THE END OF EACH CHAPTER PROVIDE OPPORTUNITIES FOR READERS TO PRACTICE SOLVING PROBLEMS RELATED TO THE CONTENT COVERED IN THE BOOK

FRONTIERS IN CHEMICAL REACTION ENGINEERING

1984

CHEMICAL REACTION ENGINEERING REVIEWS

1975

INTRODUCTION TO CHEMICAL ENGINEERING KINETICS AND REACTOR DESIGN

2014-05-27

CHEMICAL REACTION ENGINEERING

2014-04-04

COULSON AND RICHARDSON'S CHEMICAL ENGINEERING

2017-10-12

FUNDAMENTALS OF CHEMICAL REACTION ENGINEERING

1986-01

WIE CHEMICAL REACTION ENGINEERING

2002-08-08

CHEMICAL REACTION ENGINEERING FOR THE 21ST CENTURY

1999

CHEMICAL REACTION ENGINEERING AND REACTOR TECHNOLOGY, SECOND EDITION

2019-07-11

ELEMENTS OF CHEMICAL REACTION ENGINEERING.

2024

FRONTIERS IN CHEMICAL REACTION ENGINEERING

1984-03-01

ELECTROCHEMICAL REACTION ENGINEERING

1991

REACTION ENGINEERING

2017-07-14

CHEMICAL REACTION ENGINEERING BEYOND THE YEAR 2000

2001

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