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Titolo	By the Queen, a proclamation [[electronic resource]] : Anne R. Whereas it hath pleased almighty God of his great goodness and mercy.
Pubbl/distr/stampa	London, : printed by Charles Bill, and the executrix of Thomas Newcomb, deceas'd; printers to the Queens most excellent Majesty, 1709
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Autore	Ancheyta Juarez Jorge
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Nota di contenuto	MODELING AND SIMULATION OF CATALYTIC REACTORS FOR PETROLEUM REFINING; CONTENTS; PREFACE; ABOUT THE AUTHOR; 1: PETROLEUM REFINING; 1.1 PROPERTIES OF PETROLEUM; 1.2 ASSAY OF CRUDE OILS; 1.3 SEPARATION PROCESSES; 1.3.1 Crude Oil Pretreatment: Desalting; 1.3.2 Atmospheric Distillation; 1.3.3 Vacuum Distillation; 1.3.4 Solvent Extraction and Dewaxing; 1.3.5 Deasphalting; 1.3.6 Other Separation Processes; 1.4 UPGRADING OF DISTILLATES; 1.4.1 Catalytic Reforming; 1.4.2 Isomerization; 1.4.3 Alkylation; 1.4.4 Polymerization; 1.4.5 Catalytic Hydrotreating; 1.4.6 Fluid Catalytic Cracking 1.5 UPGRADING OF HEAVY FEEDS1.5.1 Properties of Heavy Oils; 1.5.2 Process Options for Upgrading Heavy Feeds; 2: REACTOR MODELING IN THE PETROLEUM REFINING INDUSTRY; 2.1 DESCRIPTION OF REACTORS; 2.1.1 Fixed-Bed Reactors; 2.1.2 Slurry-Bed Reactors; 2.2 DEVIATION

FROM AN IDEAL FLOW PATTERN; 2.2.1 Ideal Flow Reactors; 2.2.2 Intrareactor Temperature Gradients; 2.2.3 Intrareactor Mass Gradients; 2.2.4 Wetting Effects; 2.2.5 Wall Effects; 2.3 KINETIC MODELING APPROACHES; 2.3.1 Traditional Lumping; 2.3.2 Models Based on Continuous Mixtures; 2.3.3 Structure-Oriented Lumping and Single-Event Models
2.4 REACTOR MODELING2.4.1 Classification and Selection of Reactor Models; 2.4.2 Description of Reactor Models; 2.4.3 Generalized Reactor Model; 2.4.4 Estimation of Model Parameters; REFERENCES; NOMENCLATURE; 3: MODELING OF CATALYTIC HYDROTREATING; 3.1 THE HYDROTREATING PROCESS; 3.1.1 Characteristics of HDT Reactors; 3.1.2 Process Variables; 3.1.3 Other Process Aspects; 3.2 FUNDAMENTALS OF HYDROTREATING; 3.2.1 Chemistry; 3.2.2 Thermodynamics; 3.2.3 Kinetics; 3.2.4 Catalysts; 3.3 REACTOR MODELING; 3.3.1 Effect of Catalyst Particle Shape; 3.3.2 Steady-State Simulation
3.3.3 Simulation of a Commercial HDT Reactor with Quenching3.3.4 Dynamic Simulation; 3.3.5 Simulation of Countercurrent Operation; REFERENCES; NOMENCLATURE; 4: MODELING OF CATALYTIC REFORMING; 4.1 THE CATALYTIC REFORMING PROCESS; 4.1.1 Description; 4.1.2 Types of Catalytic Reforming Processes; 4.1.3 Process Variables; 4.2 FUNDAMENTALS OF CATALYTIC REFORMING; 4.2.1 Chemistry; 4.2.2 Thermodynamics; 4.2.3 Kinetics; 4.2.4 Catalysts; 4.3 REACTOR MODELING; 4.3.1 Development of the Kinetic Model; 4.3.2 Validation of the Kinetic Model with Bench-Scale Reactor Experiments
4.3.3 Simulation of Commercial Semiregenerative Reforming Reactors4.3.4 Simulation of the Effect of Benzene Precursors in the Feed; 4.3.5 Use of the Model to Predict Other Process Parameters; REFERENCES; NOMENCLATURE; 5: MODELING AND SIMULATION OF FLUIDIZED-BED CATALYTIC CRACKING CONVERTERS; 5.1 INTRODUCTION; 5.1.1 Description of the Process; 5.1.2 Place of the FCC Unit Inside the Refinery; 5.1.3 Fractionation of Products and Gas Recovery; 5.1.4 Common Yields and Product Quality; 5.2 REACTION MECHANISM OF CATALYTIC CRACKING
5.2.1 Transport Phenomena, Thermodynamic Aspects, and Reaction Patterns

Sommario/riassunto

Modeling and Simulation of Catalytic Reactors for Petroleum Refining deals with fundamental descriptions of the main conversion processes employed in the petroleum refining industry: catalytic hydrotreating, catalytic reforming, and fluid catalytic cracking. Common approaches for modeling of catalytic reactors for steady-state and dynamic simulations are also described and analyzed. Aspects such as thermodynamics, reaction kinetics, process variables, process scheme, and reactor design are discussed in detail from both research and commercial points of view. Results of simulation with t