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the Finished Catalyst; 2.4 Nomenclature for Dispersed Catalysts; 2.5 Monolithic Materials as Catalyst Substrates; 2.6 Preparing Monolithic Catalysts; 2.7 Catalytic Monoliths; 2.8 Catalyzed Monolith Nomenclature; 2.9 Precious Metal Recovery from Monolithic Catalysts; References; Questions; 3. Catalyst Characterization; 3.1 Introduction; 3.2 Physical Properties of Catalysts; 3.3 Chemical and Physical Morphology Structures of Catalytic Materials 3.4 Techniques for Fundamental Studies References; Questions; 4. Monolithic Reactors for Environmental Catalysis; 4.1 Introduction; 4.2 Chemical Kinetic Control; 4.3 The Arrhenius Equation and Reaction Parameters; 4.4 Bulk Mass Transfer; 4.5 Reactor Bed Pressure Drop; 4.6 Summary; References; Questions; 5. Catalyst Deactivation; 5.1 Introduction; 5.2 Thermally Induced Deactivation; 5.3 Poisoning; 5.4 Washcoat Loss; 5.5 General Comments on Deactivation Diagnostics in Monolithic Catalysts for Environmental Applications; References; Questions; II MOBILE SOURCE; 6. Automotive Catalyst 6.1 Emissions and Regulations 6.2 The Catalytic Reactions for Pollution Abatement; 6.3 The Physical Structure of the Catalytic Converter; 6.4 First-Generation Converters: Oxidation Catalyst (1976-1979); 6.5 NO_x, CO and HC Reduction: The Second Generation: The Three-Way Catalyst (1979-1986); 6.6 Vehicle Test Procedures (U.S., European, and Japanese); 6.7 NO_x, CO, and HC Reduction: The Third Generation (1986-1992); 6.8 Palladium TWC Catalyst: The Fourth Generation (Mid-1990s); 6.9 Low-Emission Catalyst Technologies; 6.10 Modern TWC Technologies for the 2000's 6.11 Toward a Zero-Emission Stoichiometric Spark-Ignited Vehicle 6.12 Engineered Catalyst Design; 6.13 Lean-Burn Spark-Ignited Gasoline Engine; References; Questions; 7. Automotive Substrates; 7.1 Introduction to Ceramic Substrates; 7.2 Requirements for Substrates; 7.3 Design/Sizing of Substrates; 7.4 Physical Properties of Substrates; 7.5 Physical Durability; 7.6 Advances in Substrates; 7.7 Commercial Applications; 7.8 Summary; References; Questions; 8. Diesel Engine Emissions; 8.1 Introduction; 8.2 Worldwide Diesel Emission Standards; 8.3 NO_x-Particulate Trade-Off 8.4 Analytical Procedures for Particulates

Sommario/riassunto

Catalytic Air Pollution Control: Commercial Technology is the primary source for commercial catalytic air pollution control technology, offering engineers a comprehensive account of all modern catalytic technology. This Third Edition covers all the new advances in technology in automotive catalyst control technology, diesel engine catalyst control technology, small engine catalyst control technology, and alternate sustainable fuels for auto and diesel.
