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Nota di contenuto	Fuel Processing; Contents; Acknowledgement; 1 Introduction and Outline; 2 Fundamentals; 2.1 Common Fossil Fuels; 2.2 Basic Definitions, Calculations and Legislation; 2.3 The Various Types of Fuel Cells and the Requirements of the Fuel Processor; 2.3.1 PEM Fuel Cells; 2.3.2 High Temperature Fuel Cells; 3 The Chemistry of Fuel Processing; 3.1 Steam Reforming; 3.2 Partial Oxidation; 3.3 Oxidative Steam Reforming or Autothermal Reforming; 3.4 Catalytic Cracking of Hydrocarbons; 3.5 Pre-Reforming of Higher Hydrocarbons; 3.6 Homogeneous Plasma Reforming of Higher Hydrocarbons 3.7 Aqueous Reforming of Bio-Fuels 3.8 Processing of Alternative Fuels; 3.8.1 Dimethyl Ether; 3.8.2 Methylcyclohexane; 3.8.3 Sodium Borohydride; 3.8.4 Ammonia; 3.9 Desulfurisation; 3.10 Carbon Monoxide Clean-Up; 3.10.1 Water-Gas Shift; 3.10.2 Preferential Oxidation of Carbon Monoxide; 3.10.3 Methanation; 3.11 Catalytic Combustion; 3.12 Coke Formation on Metal Surfaces; 4 Catalyst Technology for Distributed Fuel Processing Applications; 4.1 A Brief Introduction to Catalyst Technology and Evaluation; 4.1.1 Catalyst Activity; 4.1.2 Catalyst Stability; 4.1.3 Catalyst Coating Techniques

4.1.4 Specific Features Required for Fuel Processing Catalysts in Smaller Scale Applications4.2 Reforming Catalysts; 4.2.1 Catalysts for Methanol Reforming; 4.2.2 Catalysts for Ethanol Reforming; 4.2.3 Overview of Catalysts for Hydrocarbon Reforming; 4.2.4 Catalysts for Natural Gas/Methane Reforming; 4.2.5 Catalysts for Reforming of LPG; 4.2.6 Catalysts for Pre-Reforming of Hydrocarbons; 4.2.7 Catalysts for Gasoline Reforming; 4.2.8 Catalysts for Diesel and Kerosene Reforming; 4.2.9 Cracking Catalysts; 4.2.10 Deactivation of Reforming Catalysts by Sintering
4.2.11 Deactivation of Reforming Catalysts by Coke Formation4.2.12 Deactivation of Reforming Catalysts by Sulfur Poisoning; 4.3 Catalysts for Hydrogen Generation from Alternative Fuels; 4.3.1 Dimethyl Ether; 4.3.2 Methylcyclohexane; 4.3.3 Sodium Borohydride; 4.3.4 Ammonia; 4.4 Desulfurisation Catalysts/Adsorbents; 4.5 Carbon Monoxide Clean-Up Catalysts; 4.5.1 Catalysts for Water-Gas Shift; 4.5.2 Catalysts for the Preferential Oxidation of Carbon Monoxide; 4.5.3 Methanation Catalysts; 4.6 Combustion Catalysts; 5 Fuel Processor Design Concepts; 5.1 Design of the Reforming Process
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5.4.4 Overall Basic Engineering of the Fuel Processor

Sommario/riassunto

Adopting a unique integrated engineering approach, this text covers all aspects of fuel processing: catalysts, reactors, chemical plant components and integrated system design. While providing an introduction to the subject, it also contains recent research developments, making this an invaluable handbook for chemical, power and process engineers, electrochemists, catalytic chemists, materials scientists and engineers in power technology.
