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Nota di contenuto	Chapter 1. Recent Advances in Hydrotreating/ Hydrodesulfurization Catalysts: Part I – Nature of Active Phase and Support -- Chapter 2. Recent Advances in Hydrotreating/ Hydrodesulfurization Catalysts: Part II – Catalyst Additives, Preparation Methods, Activation, Deactivation and Regeneration -- Chapter 3. Recent Developments in FCC process and Catalysts -- Chapter 4. Emerging Trends in Solid Acid Catalyst Alkylation Processes -- Chapter 5. Production of C3 based Petrochemicals: Recent Advances and Role of Catalyst -- Chapter 6. Selective Hydrogenation of 1, 3-Butadiene to 1-Butene: Review on Catalysts, Selectivity, Kinetics and Reaction Mechanism -- Chapter 7. Thermocatalytic conversion of Natural gas to petrochemical feedstocks via non oxidative methods: Theoretical and Experimental Approaches

-- Chapter 8. Insights into Transition Metal Catalysed C-H Bond Activations -- Chapter 9. Flue gas treatment via dry reforming of methane -- Chapter 10. Catalysts deactivation challenges in refining and petrochemicals industries -- Chapter 11. Non-Conventional Catalytic materials for Refining and Petrochemicals -- Chapter 12. Petcoke gasification: challenges and future prospects -- Chapter 13. Steam Reforming Catalyst for Membrane Refomer -- Chapter 14. Fischer-Tropsch Synthesis in Silicon and 3D Printed Stainless Steel Microchannel Microreactors -- Chapter 15. Recent advancement on catalyst development and kinetics for synthesis gas conversion into liquid fuel -- Chapter 16. Recent developments on clean fuels over SAPO type catalysts -- Chapter 17. Synthesis of Novel Catalysts for Carbon Dioxide Conversion to Products of Value -- Chapter 18. Perspectives in Carbon Oxides Conversion to Methanol/Dimethyl ether: Distinctive Contribution of Heterogeneous and Photocatalysis -- Chapter 19. Efficient homogeneous catalysts for conversion of CO<sub>2</sub> to fine chemicals -- Chapter 20. Potential Application of Ionic Liquids and Deep Eutectic Solvents in Reduction of Industrial CO<sub>2</sub> Emissions -- Chapter 21. Evolution of Ziegler Natta Catalysts for Polymerization of Olefins -- Chapter 22. Stability and Destabilization of Water-in-Crude Oil Emulsion.

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### Sommario/riassunto

This book is part of a two-volume work that offers a unique blend of information on realistic evaluations of catalyst-based synthesis processes using green chemistry principles and the environmental sustainability applications of such processes for biomass conversion, refining, and petrochemical production. The volumes provide a comprehensive resource of state-of-the-art technologies and green chemistry methodologies from researchers, academics, and chemical and manufacturing industrial scientists. The work will be of interest to professors, researchers, and practitioners in clean energy catalysis, green chemistry, chemical engineering and manufacturing, and environmental sustainability. This volume focuses on catalyst synthesis and green chemistry applications for petrochemical and refining processes. While most books on the subject focus on catalyst use for conventional crude, fuel-oriented refineries, this book emphasizes recent transitions to petrochemical refineries with the goal of evaluating how green chemistry applications can produce clean energy through petrochemical industrial means. The majority of the chapters are contributed by industrial researchers and technicians and address various petrochemical processes, including hydrotreating, hydrocracking, flue gas treatment and isomerization catalysts.

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