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3.2 Method Coupling
3.3 Spectroscopic Reactors and Practical Aspects;
3.4 Selected Examples of Use; 3.4.1 Heterogeneously Catalyzed Hydrogenation of Imines; 3.4.2 Three-Phase Hydrogenation of Nitrobenzene over Nanosized Au on TiO₂; 3.4.3 Elucidating the Mechanism of Cu(II)-Catalyzed Arylation of Imidazole and Phenylboronic Acid by a Multitechnique Approach; 3.5 Conclusion and Outlook; References; Chapter 4 In Situ Studies on Photocatalytic Materials, Surface Intermediates, and Reaction Mechanisms; 4.1 Introduction; 4.2 In Situ Investigations; 4.2.1 FTIR; 4.2.1.1 NO_x Depollution
4.2.1.2 Hydrocarbon Oxidation
4.2.1.3 Oxidation of Oxygen-Containing Compounds; 4.2.2 EPR; 4.2.2.1 Semiconductor Charge Separation and Transfer; 4.2.2.2 Reactive Oxygen Species; 4.2.2.3 Local Structure of Active Sites; 4.2.3 XPS; 4.2.4 XAFS and UV Vis; 4.2.5 NMR; 4.2.6 Other Methods; 4.3 Concluding Remarks; References; Chapter 5 Enantioselective Heterogeneous Catalysis; 5.1 Introduction; 5.2 Strategies for the Creation of Enantioselective Heterogeneous Catalysts; 5.2.1 Immobilization of Homogeneous or Enzyme Catalysts; 5.2.1.1 Covalent Tethering
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5.2.3 Chirally Modified Metal Surfaces

Sommario/riassunto

This ready reference and handbook is the first to combine the hot topics of heterogeneous catalysis and clean technology in a single volume. As such, it focuses on the development of heterogeneous catalysts for use in clean chemical synthesis, dealing with how modern spectroscopic techniques can aid the design of catalysts for use in liquid phase reactions, their application in industrially important chemistries -- including selective oxidation, hydrogenation, solid acid and base catalyzed processes -- as well as the role of process intensification and use of renewable resources in improving
