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Nota di contenuto	Modern Heterogeneous Oxidation Catalysis: Design, Reactions and Characterization; Contents; Preface; List of Contributors; 1 Concepts in Selective Oxidation of Small Alkane Molecules; 1.1 Introduction; 1.2 The Research Field; 1.3 Substrate Activation; 1.4 Active Oxygen Species; 1.5 Catalyst Material Science; 1.6 Conclusion; References; 2 Active Ensemble Structures for Selective Oxidation Catalyses at Surfaces; 2.1 Introduction; 2.2 Chiral Self-Dimerization of Vanadium Schiff-Base Complexes on SiO2 and Their Catalytic Performances for Asymmetric Oxidative Coupling of 2-Naphthol 2.2.1 Asymmetric Heterogeneous Catalysis Using Supported Metal Complexes2.2.2 Chiral V-Dimer Structure on a SiO2 Surface; 2.2.3 Asymmetric Catalysis for Oxidative Coupling of 2-Naphthol to BINOL; 2.3 Low-Temperature Preferential Oxidation of CO in Excess H2 on Cu-Clusters Dispersed on CeO2; 2.3.1 Preferential Oxidation (PROX) of CO in Excess H2 on Novel Metal Catalysts; 2.3.2 Characterization and Performance of a Novel Cu Cluster/CeO2 Catalyst; 2.4 Direct Phenol Synthesis from Benzene and Molecular Oxygen on a Novel N-Interstitial Re10-Cluster/HZSM-5 Catalyst

2.4.1 Phenol Production from Benzene with N2O, H2 + O2, and O22. 4.1.1 Benzene to Phenol with N2O; 2.4.1.2 Benzene to Phenol with H2 + O2; 2.4.1.3 Benzene to Phenol with O2; 2.4.2 Novel Re/HZSM-5 Catalyst for Direct Benzene-to-Phenol Synthesis with O2; 2.4.3 Active Re Clusters Entrapped in ZSM-5 Pores; 2.4.4 Structural Dynamics of the Active Re10 Cluster; 2.5 Conclusion; References; 3 Unique Catalytic Performance of Supported Gold Nanoparticles in Oxidation; 3.1 Introduction; 3.2 Low-Temperature CO Oxidation; 3.2.1 Low-Temperature CO Oxidation in Air
3.2.1.1 Junction Perimeter Between Au Particles and the Support3.2.1.2 Selection of Suitable Supports; 3.2.1.3 Sensitivity to the Size of the Gold Particles; 3.2.2 Low-Temperature CO Oxidation in H2; 3.2.3 Mechanism for CO Oxidation Over Supported Gold Nanoparticles; 3.2.3.1 Mechanisms Involving Junction Perimeter Between Gold and the Metal-Oxide Supports; 3.2.3.2 Mechanisms Involving Specific Size or Thickness of Gold Clusters or Thin Layers; 3.2.3.3 Mechanisms Involving Cationic Gold; 3.3 Complete Oxidation of Volatile Organic Compounds
3.4 Gas-Phase Selective Oxidation of Organic Compounds3.4.1 Gas-Phase Selective Oxidation of Aliphatic Alkanes; 3.4.2 Gas-Phase Selective Oxidation of Alcohols; 3.4.3 Gas-Phase Propylene Epoxidation; 3.4.3.1 Introduction; 3.4.3.2 Gas-Phase Propylene Epoxidation with Hydrogen-Oxygen Mixtures on Au/TiO2; 3.4.3.3 Gas-Phase Propylene Epoxidation with Hydrogen-Oxygen Mixtures on Au/Ti-SiO2; 3.5 Liquid-Phase Selective Oxidation of Organic Compounds; 3.5.1 Oxidation of Mono-Alcohols; 3.5.2 Oxidation of Diols; 3.5.3 Oxidation of Glycerol; 3.5.4 Aerobic Oxidation of Glucose 3.5.5 Oxidation of Alkanes and Alkenes

Sommario/riassunto

Filling a gap in the current literature, this comprehensive reference presents all important catalyst classes, including metal oxides, polyoxometalates, and zeolites. Readers will find here everything they need to know -- from structure design to characterization, and from immobilization to industrial processes.A true must-have for anyone working in this key technology.