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Nota di contenuto	Activation of Small Molecules; Contents; Preface; List of Contributors; 1 Carbon Dioxide Reduction and Uses as a Chemical Feedstock; 1.1 Introduction; 1.2 Properties of the CO(2) Molecule; 1.2.1 Molecular Geometry; 1.2.2 Spectroscopic Properties; 1.2.2.1 Vibrational; 1.2.2.2 UV-Vis; 1.2.2.3 (13)C-Nuclear Magnetic Resonance (NMR); 1.2.3 Energy Data and Reaction Kinetics Relevant to CO(2) Conversion; 1.3 CO(2) Coordination to Metal Centers and Reactivity of Coordinated CO(2); 1.3.1 Modes of Coordination; 1.3.2 Interaction of CO(2) with Metal Atoms at Low Temperature: Stability of the Adducts 1.3.3 Reactivity of CO(2) Coordinated to Transition Metal Systems1.4 CO(2) Conversion; 1.4.1 Carboxylation Reactions; 1.4.1.1 C-C Bond Formation; 1.4.1.1.1 Natural Processes; 1.4.1.1.2 Artificial Processes; 1.4.1.2 N-C Bond Formation; 1.4.1.3 O-C Bond Formation; 1.4.1.3.1 Cyclic Carbonates; 1.4.1.3.2 Linear Carbonates; 1.4.1.4 Use of Urea as an Active-CO(2) Form; 1.4.1.5 Transesterification Reactions; 1.4.2 Reduction Reactions; 1.4.2.1 Energetics of the Reactions; 1.4.2.1.1 Natural Processes; 1.4.2.1.2 Artificial Processes; 1.4.2.1.3

Photoelectrochemical Reduction; 1.5 Conclusions; References
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3.3.2.1 The Originally Proposed "Chatt Cycle"
3.3.2.2 An Electrocatalytic Reduction Cycle using Low-valent Tungsten

Sommario/riassunto

The first to combine both the bioinorganic and the organometallic view, this handbook provides all the necessary knowledge in one convenient volume. Alongside a look at CO2 and N2 reduction, the authors discuss O2, NO and N2O binding and reduction, activation of H2 and the oxidation catalysis of O2. Edited by the highly renowned William Tolman, who has won several awards for his research in the field.