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Nota di contenuto	Metal-Catalysed Hydrogenation of CO2 into Methanol -- Catalytic C-C Bond Formations from CO2 with Alkenes -- Recent advances on CO2 utilization as C1 building block in C-N and C-O bond formation -- “Alkene Metathesis for Transformation of Renewables” -- Metal-Catalyzed Aromatic C-O Bond Activation/Transformation -- Hydrogenation/Dehydrogenation of Unsaturated Bonds with Iron Pincer Catalysis -- Conversion of Alcohols to Carboxylates Using Water and Base with H2 Liberation -- Selective Transfer-hydrogenation of ,-Unsaturated Carbonyl Compounds -- Functionalization of C(sp2)–H Bonds of Arenes and Heteroarenes Assisted by Photoredox-Catalysts for the C–C Bond Formation -- Green Cross-Coupling using Visible-light for C-O and C-N Bond Formation.
Sommario/riassunto	This volume presents the latest developments in the use of organometallic catalysis for the formation of bulk chemicals and the production of energy, via green processes including efficient utilization

of waste feedstocks from industry. The chemistry of carbon dioxide relating to its hydrogenation into methanol –an eco-friendly energy storage strategy– and its uses as C1 synthon for the formation of important building-blocks for fine chemicals industry are covered. Catalytic hydrogenations of various functional groups and hydrogen transfer reactions including the use of first row metal catalysts are presented as well as the conversion of alcohols to carboxylates via hydrogen transfer with a zero-waste strategy using water. Transformation of renewable or bio-based raw materials is surveyed through alkene metathesis and C–O bond activations and functionalizations. A green aspect for selective formation of C-C, C-O and C-N bonds involves direct regioselective C–H bond activations and functionalizations. These transformations can now be promoted under mild reaction conditions due to the use photoredox catalyts. C–H bond oxidation using visible light leads mainly to the formation of C–O and C–N bonds, whereas cross-coupled C–C bonds can be formed through the radical additions on (hetero) arenes using photoredox assisted mechanism.