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Titolo	Advances in CO2 Utilization : From Fundamentals to Applications / / edited by Guoliang Zhang, Annemie Bogaerts, Jingyun Ye, Chang-jun Liu
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Descrizione fisica	1 online resource (315 pages)
Collana	Green Chemistry and Sustainable Technology, , 2196-6990
Disciplina	905
Soggetti	Catalysis Renewable energy sources Green chemistry Chemical engineering Environment Sustainability Renewable Energy Green Chemistry Chemical Engineering Environmental Sciences
Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	CO2 conversion via MOF-based catalysts -- Photo-thermo catalytic conversion of CO2: What, why, how and future perspectives -- Thermocatalytic CO2 Hydrogenation to Liquid Fuels -- Status of catalyst development for CO2 hydrogenation to platform chemicals CH3OH and CO -- CO2 Methanation over the Supported Ni Catalysts: The Structural Effect -- CO2 Reforming with Alkanes -- CO2 electrocatalytic conversion: outlooks, pitfalls and scientific gaps -- Bio-conversion of CO2 into valuables -- CO2-sourced polymers: synthesis, property, application -- Plasma-based CO2 conversion -- Transition Metal-Promoted Carboxylation of Unsaturated Compounds with CO2 -- Large Scale Recycling of Carbon:Carbon Dioxide as Source of Carbon.
Sommario/riassunto	This book presents the current status of CO2 utilization from

fundamental studies to industrial tests. With the development of renewable energy, carbon dioxide will become an important feedstock for the synthesis of fuels and chemicals, and CO₂ utilization must be the final solution for the carbon dioxide issues. This book discusses the effective techniques for activating inert carbon dioxide and various approaches for CO₂ conversion, such as homogeneous catalytic conversion, homogeneous catalytic conversion, heterogeneous catalytic conversion, photocatalytic conversion, electrocatalytic conversion, photo-thermal catalytic conversion, plasma-chemical/plasma-catalytic conversion, and bio-catalytic conversion. It also addresses the electronic and geometric structural effects of the supported catalyst on the activity and selectivity of the conversion of carbon dioxide. The significant effects from single atom catalyst to nanoparticle are also discussed, and process intensification in catalyst preparation and reaction is highlighted. Furthermore, this book contains chapters with theoretical studies, including functional theory, which has played an important role in the catalyst design, the explanation of the reaction mechanism, and in understanding the synergy of reaction and heat and mass transfer. Given its scope, this book appeals to a wider readership, especially for researchers in the field of CO₂ utilization.
