



Processes

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Special Issue Reprint

CO₂ Capture and Conversion Processes

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This Reprint presents recent advances in carbon dioxide capture, utilization, storage, and conversion, with emphasis on process design, materials performance, and industrial relevance. The collected papers examine a broad range of approaches for reducing carbon emissions, including chemical looping combustion, adsorption and sequestration in shale formations, amine-based absorption systems, phase change absorbents, conductivity-based monitoring of absorption processes, geological top seal assessment, blue hydrogen carbon footprint analysis, and catalytic CO₂ hydrogenation to methanol. Together, these contributions highlight the technical challenges and opportunities associated with carbon management across energy, chemical, and environmental systems. The Reprint is intended for researchers, engineers, and practitioners interested in low-carbon technologies, greenhouse gas mitigation, process optimization, and the development of scalable solutions for CO₂ capture and conversion.

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