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Catalytic Hydrogenation of CO_2

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Message from the Guest Editors

We have noticeably felt the rising impact of worldwide extreme weather on our daily life in the recent years, although the direct correlation with CO_2 emissions is still a scientific topic. It is urgent for human beings to keep the CO_2 emissions at a safe level. Measures may include the reduction of emissions, capture and storage, conversion to value-added chemicals, and so forth.

For the conversion, the typically utilized way is the catalytic hydrogenation of CO_2, which includes thermocatalytic, electrochemical, biochemical, plasma, photocatalytic methods, etc. A growing amount of excellent work has been carried out on CO_2 hydrogenation to produce CO, methanol, light olefin, dimethyl ether, methane, etc. However, efficient catalysts with combined high activity, selectivity and stability are still the ultimate aim to pursue. In addition, microscopic insight into the catalytic mechanism on an elemental level may speed up the design and exploitation of novel catalysts.