The catalytic activity and selectivity of heterogeneous catalysts are very much dependent on their morphology and structure. In spite of the great technological, environmental, and economic interests, general methods for the activation and utilization of CO\textsubscript{2} are missing to be developed. The talk will cover our recent progress in the synthesis of nanostructured materials, their characterization, and their application. The materials have been applied as heterogeneous catalysts for the utilization of CO\textsubscript{2} into fuels and chemicals. Several different catalytic systems were developed where various types of metal nanoparticles are incorporated into different types of porous and nanostructured materials. The methods aim to be cost-effective and practical and result in a narrow size distribution of small uniform nanoparticles. More importantly, the catalysts show high activity and selectivity in various reactions. We present the progress that has been made in the synthesis in various ways and their characterization using different techniques. We have primarily focused on novel materials with high catalytic selectivity for hydrogenation of CO\textsubscript{2} into CO, CH\textsubscript{4}, methanol, and ethanol, respectively.

Donnerstag, 09.11.2023
16 Uhr c.t.
Hörsaal B