Session of Focus Materialchemie – Wednesday, **07.12.2022** 16:00 – @ Seminarraum Lehar 02 (TU-Wien, Getreidemarkt 9, BC, OG. 02, room A46) – join us on ZOOM (ID: 983 0066 2349)

Up-scaling of reverse water-gas shift catalysts

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CO_2 recycling is a technological challenge due to the stability of the molecule. It requires significant energy input, which is often realised by very high reaction temperatures (limiting suitable competitive processes). Hence, CO_2 valorisation requires the development of new concepts and new perspectives for catalysis, including process engineering [1].
An effective process for large scale CO_2 utilisation is the catalytic reverse water-gas shift (rWGS) reaction [2]. A major advantage is that rWGS reactors can be implemented easily with the current available infrastructure in heavy carbon industry (e.g. cement, steel making, refineries, etc.), exactly where huge amounts of CO_2 are emitted.

One of our approaches was to use zeolites as a backbone for the rWGS catalysts. Zeolites are extremely versatile materials composed of a Si-/Al-oxide network that are stable at high reaction temperatures [3].
Characterization of the prepared material was performed via X-Ray diffraction (XRD), surface area measurements with the Brunauer-Emmett-Teller model (BET) and catalytic tests.

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References

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