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Unser Zeichen:
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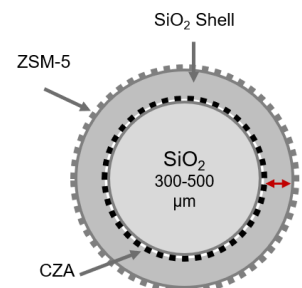
Betreff: Abschlussarbeit (MSc, BSc)

Design and synthesis of a series of core-shell type catalysts for CO₂ to dimethyl ether tandem reaction

Conversion of CO₂ to Methanol (MeOH) is generally carried out on CuZnO/Al₂O₃ catalysts and structure-activity relations of the catalysts has intensively explored in recent years. Several secondary reactions can be combined with CO₂ to MeOH reaction for a tandem reaction system where dimethyl ether (DME) synthesis from MeOH, over an acidic catalyst (zeolites), is one of the important reactions due to overlapping of thermodynamic operational windows of the two reaction. Lately, huge efforts have been devoted to optimize the parameters of the reaction system of CO₂→MeOH→DME of which the design of a compact bifunctional catalysts is of vital importance. Several conformations of the bifunctional catalysts have been proposed in literature which include efficiently designed core-shell type catalysts with a defined distance between the two active centers.

Aufgabenbeschreibung:

- Design and synthesis of SiO₂ supported CuZnO/Al₂O₃ (CZA) based methanol synthesis catalyst and then further developing a series of core-shell catalysts with zeolite as the outermost shell for direct conversion CO₂ to DME via methanol synthesis route
- Conducting basic characterizations of the catalysts and optimizing the synthesis parameters afterwards
- Testing the catalysts in a Berty/Fixed-bed reactor



Wünschenswerte Kenntnisse und Fähigkeiten:

- General knowledge about heterogenous catalysis
- Hands-on experience in working in material synthesis lab

Einstellung: ab sofort / immediately

Ansprechpartner:

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