

Announcement

Preparation and optimization of a catalyst system for the selective catalytic reduction of NO_x via the sol-gel process using acetate precursors

Bachelor Thesis Master Thesis

Background

A wide variety of methods for catalyst preparation exist. One of these methods is the sol-gel process, which can be found in the literature with and without the use of microwave technology. One group of catalysts prepared by this method are transition metal oxide catalysts, which are also important for SCR catalysis for the reduction of NO_x. In recent literature, simultaneous reductions of NO_x and VOCs have been reported for catalysts produced using the sol-gel process, which makes them an attractive candidate for investigation regarding flue gas cleaning.

Objective

Within this work, transition metal oxide catalysts on a titanium and aluminum basis are to be prepared and tested for the selective catalytic reduction of NO_x at low temperatures using the sol-gel process. The preparation shall be carried out with and without the use of microwave technology. Since the aim of the work is to obtain a catalyst that is as effective as possible, catalyst optimization should also be performed by introducing other transition metals that are known to support the reduction of NO_x .

Approach and tasks

- 1. Literature research
- 2. Performing experiments on the preparation and optimization of catalysts via the sol-gel process
- 3. Evaluation and interpretation of the data obtained through measurements
- 4. Assessment and compilation of the results



Requirements

- Working independently
- Proper documentation
- Interested in catalyst preperation

Start date: from April 2025

Experiments

Interested students please contact

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