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Prof. Dr.-Ing. habil.
Jens-Uwe Repke

Master / Bachelor thesis (theoretical)

Modelling of CO₂ Absorption from Exhaust Gases with a rigorous Non-Equilibrium Rate-Based approach for Rotating Packed Beds

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In the field of absorption, HiGee units have experienced increased attention in recent years. Compared to conventional packed columns, they are characterized by high gas and liquid flow rates, and the possibility to treat viscous media. Especially the latter enables the usage of different absorbents and, as a result, reduces the exhaust of CO₂ to the atmosphere.

Supervisor
Alexander Ressemann

In the literature, several authors have developed models and correlations for RPBs, but without knowledge of the prevailing fluid dynamics and influencing factors. Since experiments are being carried out on an RPB at the dbta, this knowledge will be incorporated into the modelling and a reliable absorption model will be created.

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Unser Zeichen:
KWT 9

Task description:

- Introduction to the transport phenomena of CO₂ absorption in ammonia solvents
- Introduction to the fluid dynamics and process principle of Rotating Packed Beds
- Modelling of CO₂ Absorption in MOSAIC Modelling
- Check of plausibility

Desirable Skills and Motivation:

- Knowledge of process modelling
- Knowledge of Mosaic Modelling
- Interest in fluid dynamics and transport mechanism in chemical engineering

Start: from now on

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