



Bachelor's Thesis

(Experimentell)

Fundamental Investigation of Devolatilization Behaviour of Pencil Residue under High-Temperature Conditions

Description:

The transition towards a climate-neutral energy system requires an increased use of renewable energy sources such as biomass. Biomass combustion plays an important role in sustainable heat and power generation; however, challenges remain regarding combustion efficiency and pollutant emissions, particularly nitrogen oxides (NO_x). The reliable prediction and optimization of biomass conversion processes therefore require a detailed understanding of the fundamental fuel conversion mechanisms.

As the first step of the thermochemical conversion process, devolatilization plays a decisive role for the conversion behaviour of the fuel in the reactor. For this reason, the devolatilization is investigated at the Chair of Energy Systems separately in a wire-mesh reactor. Thus, various influences such as the influence of temperature, pressure or heating rate can be determined experimentally.

The aim of this work is the experimental investigation of the influence of temperature, pressure and residence time on devolatilization from pencil residue. The results are to be compared with literature and classified in the thesis.

Requirements:

- Enjoy experimental activities
- Independent way of working
- Reliability and personal responsibility

Work Packages:

- Familiarisation with pyrolysis conditions, in particular the release of volatiles and nitrogen species
- Carrying out and evaluating the experimental investigations
- Documentation of the experimental work and regular discussions with the supervisor

Start: sofort

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