Simulation of dust separation on a wet scrubber with the principle of heterogeneous condensation

Thematic background
The generation of energy from biomass is an important component to achieve the goals set for climate protection. However, the emissions of wood firing systems are still a problem. Especially the emissions of ultrafine particles (UFP) have to be considered due to their negative health effects. The removal efficiency of the UFP with conventional separators such as electrostatic precipitators and wet scrubbers is still insufficient. One innovative approach is the separation by heterogeneous condensation. The particles will be activated by supersaturation and grow in the wet scrubber so that they can be separated efficiently. The necessary processes to achieve a supersaturation and the particle separation can be simulated.

Objective
The objectives of this student research project is to simulate the process with ASPEN based on real data, determine the parameters to achieve a supersaturation and the best separation conditions.

Tasks
1. Introduction to topic and software
2. ASPEN simulation
3. Sensitivity analysis
4. Report writing and presentation

Requirements
- Basic knowledge regarding air quality control
- Understanding of technical processes
- Ability and interest in simulation software
- Independent working style

Start date: immediately!

Supervisor and contact
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