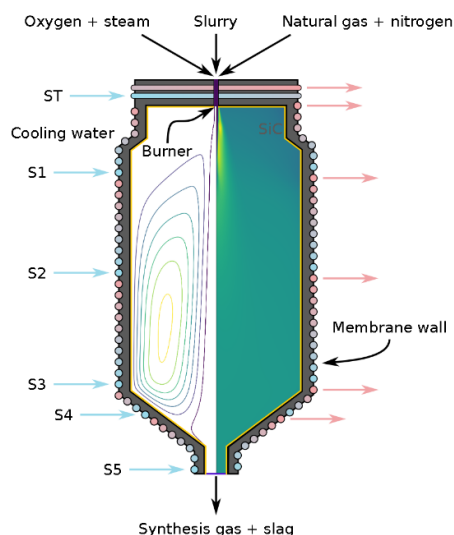


Master thesis

Mathematical modelling and simulation of material properties

Motivation

High-pressure entrained flow gasification is an efficient technology for the conversion of low-quality carbonaceous feedstocks (such as biomass, plastic waste or tire waste) into high-quality synthesis gas, which can be used for the production of renewable liquid fuels and chemicals in a circular economy. The biogenic and anthropogenic feedstocks are fed as suspensions of pyrolysis oils and chars into the process. The pyrolysis oils consists of various (oxygenated) hydrocarbons, for which experimental material property data are unknown. For the mathematical description of their material properties, we are improving and developing various methods and are conducting simulations.



Possible tasks

- Literature study
- Development of object-oriented software methods in Python and C
- Calculation of material properties using numerical methods
- Validation of predictions with experimental data for selected compounds
- Documentation

Contact

If you are interested, please send me an Email with a brief statement of your motivation. Please also include your study programme, your semester and an overview of your grades. If you have any questions, please do not hesitate to contact me.

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