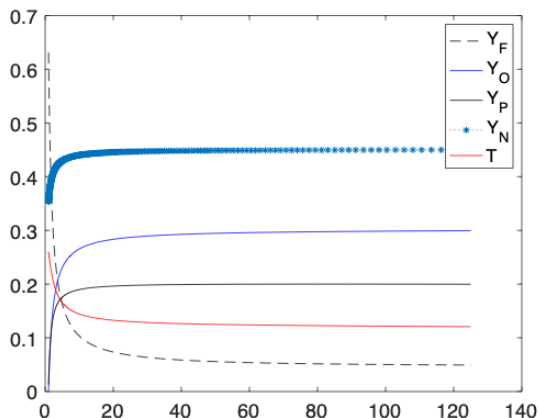


## Bachelor/Master thesis- Project work

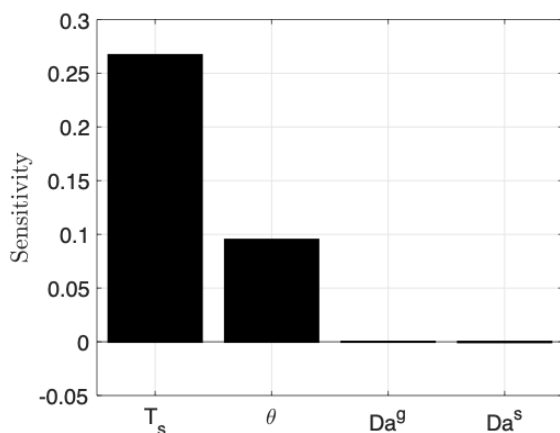
### Sensitivity analysis based on Adjoint approach for solid fuel particles

Simulation of reactive flows or solid fuels requires modelling specially for kinetic part. Most of this models consist of many parameters that usually come from experiments or small simulations with certain uncertainties. Investigating the rule of these uncertainties requires doing sensitivity analysis.

The goal of our team is to simulate the solid fuel combustion (Fig.1) and evaluate the sensitivity of any quantity of interest with respect to different model parameters (Fig.2).



figure(1) Flow field of a single coal particle



figure(2) Sensitivity of total heat release with respect to combustion parameters

#### Your activities:

- runs different simulation for 1D unsteady solid fuel particle
- analysis the results of the simulations and compares with the literature

#### What you will learn:

- you will gain a good understanding of the sensitivity analysis methods and simulation of react multiphase substance.

#### The ideal candidate should:

- have basic thermodynamic, combustion knowledge and adjoint method (not necessary)
- be familiar with programming, preferable (Python, Matlab)

**THIS THESIS CAN BE COUPLED WITH A HiWi JOB ON THE SAME TOPIC!**

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