



The Combustion Institute

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CombustionInstitute.org

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PhD position in numerical modeling of fuel combustion kinetics and model uncertainty quantification

The Institute for Combustion Technology (ITV) led by Prof. Dr.-Ing. Heinz Pitsch focuses on research in the fields of combustion and its applications in engines, gas turbines and furnaces, chemical kinetics of combustion, turbulence theory, and multiphase flows. Our approach is the combination of simultaneous theoretical model development, numerical simulation, and experimental validation.

A current research emphasis at ITV is the development of tailor-made biofuels and e-fuels as part of the Cluster of Excellence "Fuel Science Center". At our institute, engine experiments are performed and fundamental kinetic measurements are conducted in various configurations including a laminar flow reactor, a high-pressure combustion chamber, and a counterflow burner. The results of these measurements are used for model development, for example in the fields of chemical kinetics and turbulent combustion. Computational Fluid Dynamics (CFD) simulations are performed using in-house codes for direct numerical simulations (DNS), large eddy simulations (LES), Reynolds-averaged Navier- Stokes (RANS) simulations, and 1-D laminar flame calculations.

Job Duties

- Numerical modeling of the fundamental chemical processes of fuel combustion
- Development of chemical kinetic models for conventional and alternative fuels
- Development of advanced methods and simulation frameworks for kinetic model generation and optimization
- Interdisciplinary research on reduced kinetic models for CFD simulations

Requirements

- M.Sc. degree (or equivalent) in Mechanical Engineering, Chemical Engineering, or a related subject with above-average grades
- Interest in chemical kinetics, uncertainty quantification, optimization
- Interest in programming and numerical modeling
- Excellent oral and written English communication skills, German language knowledge is a plus
- An efficient and independent work style
- Willingness to take on responsibility
- Ability to work in an interdisciplinary team

Terms

- The successful candidate will be employed by the university.
- This is a full-time position.
- The position is to be filled at the earliest possible date and initially limited to one years. Retention for at least two years is planned.
- The successful candidate has the opportunity to pursue a doctoral degree in this position.
- The salary corresponds to level EG 13 TV-L. (~45,900.00 € for the first year and more than 50,000.00 € annual salary from the second year)

RWTH Aachen University is certified as a Family-Friendly University.

We particularly welcome and encourage applications from women, disabled persons, recognizing they are underrepresented across RWTH Aachen University.

The principles of fair and open competition apply and appointments will be made on merit.

How to Apply

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