PhD position in the field of numerical model development and uncertainty quantification for fuel combustion kinetics

Our Profile
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 lies in the development and investigation of tailor-made biofuels and e-fuels as part of the Cluster of Excellence “Fuel Science Center”. In particular, our institute explores the chemical kinetics of these fuels through fundamental experiments and simultaneous numerical modeling. Measurements are performed in various configurations, including a laminar flow reactor and a counterflow burner. The results of these measurements are used for the development of chemical mechanisms for the novel fuel candidates, which ultimately form the backbone of computational fluid dynamics (CFD) calculations applied in the design of energy conversion devices.

Your Tasks
- 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, optimization, and uncertainty quantification
- Interdisciplinary research on reduced kinetic models for CFD simulations
Your Profile:
- M.Sc. degree (or equivalent) in Mechanical Engineering, Chemical Engineering, or a related subject with above-average grades
- Interest in chemical kinetics, uncertainty quantification, and machine learning
- 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

Our Offer:
- The hiring takes place in the employment relationship
- This is a full-time position
- The position is rated TV-L 13

RWTH is certified as a family-friendly university. We particularly want to promote the careers of women at RWTH Aachen University. In case of equivalent qualification, women will be preferred, provided that they are underrepresented in the organizational unit. Applications from severely disabled people are expressly welcome.

Contact Person:
Florian vom Lehn, M. Sc.
Email: f.vom.lehn@itv.rwth-aachen.de
Phone: +49 (0)241 80-94613

Please address your application to
RWTH Aachen University
Institut für Technische Verbrennung
Templergraben 64
52062 Aachen
Email: jobs@itv.rwth-aachen.de