

Open PhD position (13 TV-L) at the Institute for Combustion and Gas Dynamics – Reactive Fluids

Position number: 642-20

Participation in the research unit FOR2284: “Model-based scalable gas-phase synthesis of complex nanoparticles” within the frame of the subproject TP1: Investigations of the reaction kinetics of precursor systems in the shock tube and the flow reactor experiments supported by quantum chemical / statistical calculations

The use of synthetic nanoparticles is playing an increasingly important role in the day life and the potential for use of nanomaterials is practically limitless. In addition to the chemical composition, the particle size opens up a new dimension in the production of functional particles with previously unexpected and desired properties. The synthesis of high-purity nanoparticles has so far been largely based on empirical assumptions for the precursor decomposition. The understanding of the underlying chemistry (kinetics) of the precursor enables to understand, optimize and scale synthesis processes so that highly specific nanoparticles of different material systems can be selectively produced on a large scale. A shock-tube and a flow reactor are used to determine the homogeneous and heterogeneous kinetics of silicon-containing precursors. The quantitative and qualitative evaluation of the experiments is carried out with time-of-flight mass spectrometry and gas chromatography / mass spectrometry (GC/MS).

You are responsible for the planning, implementation and evaluation of experiments and for working with other project partners. You will present the results in regular meetings with the other project partners and at international conferences. You support the Institute for Combustion and Gas Dynamics - Reactive Fluids by participating in the preparation and implementation of courses and administrative tasks. You will also supervise student work, e.g. Bachelor and master theses.

As part of the activity, the opportunity for further academic qualification is offered.

Your qualification:

- Master degree in mechanical or chemical engineering, physics, or chemistry
- Good knowledge in reaction kinetics
- Preferably, knowledge in laser diagnostics and optics

We are an internationally leading research institute offering

- A dynamic and flexible work environment
- Interdisciplinary research at a very high level
- An international team of researchers with a broad network of collaboration

Time of occupation:

as soon as possible

Contract duration:

Dec. 31st, 2021 (project end, extension is possible)

Salary:

13 TV-L (100%)

Application deadline:

Oct. 31st 2020

Submit your application, via email to
Prof. Dr. Christof Schulz (christof.schulz@uni-due.de)
Dr. Mustapha Fikri (mustapha.fikri@uni-due.de) or

University of Duisburg-Essen, IVG – Reactive Fluids (www.uni-due.de/ivg/rf)