

Master's Thesis

The Institute for Combustion and Gas Dynamics–Reactive Fluids (Prof. Dr. Christof Schulz) offers a **master's thesis opportunity** to

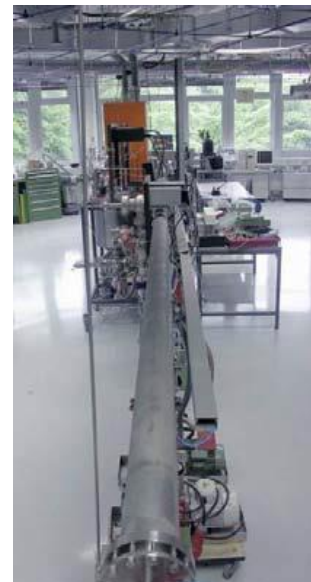
Study the influence of non-ideal effects in shock tubes

Shock-tube experiments are well established for the investigation of ultra-fast reactions that are important for the development of chemical reaction mechanisms for high-temperature gas-phase reactions like the ones that occur in combustion processes. The data analysis is typically based on the assumption that the reaction conditions behind the shock wave are homogeneous and stationary and that ignition in case of combustion studies starts in the entire volume close to the end flange where the gas heat-up through compression initially begins. In reality, deviations from this ideal behaviour can affect the measurement and hence the quality of the derived reaction mechanisms – especially under moderately-high temperature conditions. Within the frame of this thesis experiments in shock tubes will be performed to characterize the influence of non-ideal effect with piezoelectric sensors and laser-optical measurements. A LabVIEW program will be developed by the student for the data evaluation. The student candidate will perform experiments of non-reactive mixtures (argon and nitrogen) in a shock tube under the guidance of a post-doctoral researcher.

Requirements:

- Study of mechanical engineering
- Knowledge in combustion science and optics is preferable
- Fluent in English
- Skills in LabVIEW programming
- Available 5 days / week (no part-time)

We are seeking candidates with interest in interdisciplinary work with excellent experimental skills and high level of commitment and enthusiasm for scientific research.



A shock tube

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