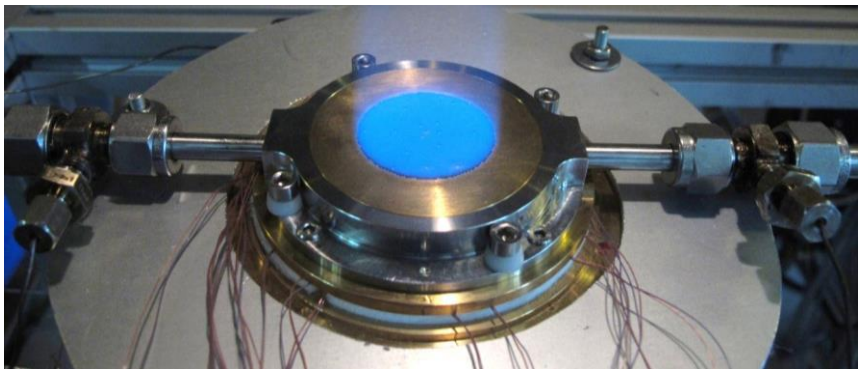
Oel-Waerme-Institut
An-Institut der RWTH AACHEN

Master thesis in the field of combustion technology, process engineering and mechanical engineering: Experimental investigation of laminar burning velocities of liquid fuels

Master students from IIT Madras can apply for a master thesis in Aachen, Germany.



TOPIC

The laminar burning velocity is an important parameter for the description of combustion processes. It can be used e.g. for the validation of reaction mechanisms and is often required for the design of industrial burners. In this thesis the Heat Flux method shall be applied for the measurement of laminar burning velocities of various liquid fuels (alcohols, alkanes as well as mixtures) with air.

The Heat Flux burner consists of a thin brass burner plate with a hexagonal hole pattern over which the flame is stabilized. The advantage of using the Heat Flux method is that flames can be stabilized at gas velocities higher and lower than the adiabatic burning velocity on this burner. Thus the burning rate can be determined by interpolation instead of extrapolation. The calculation of the laminar burning velocity is based on temperature measurements of the burner plate in correlation to the flow velocity of the unburned raw gas.

SCOPE OF THE MASTER THESIS

- Literature research on laminar burning velocities of liquid fuels
- Planning and implementation of modification measures on the Heat Flux test bench (piping, heat exchangers, measuring instruments, ...)
- Performing experiments for the determination of the laminar burning velocity
- Comparison of the results with the literature and evaluation of the measurement data

Prior knowledge in handling test benches is advantageous, but not required. The work can be started immediately. A scientific publication of the results obtained is planned.

CONTACT / SUPERVISOR

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If you are interested to also apply for an IGCS-scholarship, you will need to have the supervision confirmation for this project and apply for the scholarship until 07. Juli 2019 (deadline). You find all information regarding the application procedure on IGCS' website and scholarship call.