

Master's Thesis

Development of a concept for the investigation of fundamental fire phenomena

Motivation

Fires are highly complex physico-chemical systems in which fluid dynamics, heat transfer, and reaction kinetics are tightly coupled across multiple phases. Despite extensive research, fundamental aspects of these systems remain insufficiently understood. The development of a robust experimental concept for investigating such systems therefore requires not only a sound theoretical framework and the systematic derivation of relevant research questions, but also the targeted design of suitable experiments.

Project description

The objective of this Master's thesis is to develop research questions for the investigation of fundamental fire phenomena based on an in-depth review of the relevant literature and theoretical background. The focus lies on the independent analysis of relevant physical and chemical relationships as well as on the conceptual development of an appropriate experimental framework. Depending on project progress and the chosen focus, the implementation of selected experiments may form part of the thesis, but will not constitute its primary emphasis.

Tasks

- Comprehensive literature review on fundamental fire and reaction phenomena
- Structured analysis of relevant physical and chemical relationships
- Assessment of existing experimental concepts and model-based descriptions
- Derivation of appropriate research questions from theory and literature
- Conceptual design and critical evaluation of possible experimental designs
- Documentation and discussion of boundary conditions, scaling, and transferability

Background knowledge

Students of engineering or related disciplines. A strong interest in in-depth literature work and a willingness to engage with theoretical questions are expected.

Date, location

Starting immediately, Campus South

Contact

If you are interested, feel free to contact us:

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