

Colloquium Thermo- and Fluid Dynamics

Robust laser diagnostics for testing combustion performance in gas turbine combustors

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Aircraft gas turbines will continue to be the main form of propulsion for air travel in the coming decades. Due to the high complexity of current developments in downsizing and the development of lean combustion concepts, the knowledge-based design of gas turbine combustors is becoming increasingly important. In the interplay between experiment, theory and numerical simulation, the aim is to understand the underlying phenomena and to simulate the processes in the combustion chamber. Crucial for this are experiments that provide insights into these combustion processes. In this context, non-intrusive measurements of the effusion cooling and the dynamic development of the turbine entry temperature distribution are presented. In addition to optically accessible combustion chambers, suitable laser-optical measurement techniques are required, which are discussed in this presentation.



Prof. Andreas Dreizler has been Professor of Mechanical Engineering at the Technical University of Darmstadt, Germany, and Head of the Institute for Reactive Flows and Diagnostics since 2008. He is Director of the Research Center Turbulent, Chemically Reactive, Multiphase Flows Near Walls. His international leadership is based on the use of advanced laser diagnostics and well-designed benchmark experiments, which are used by hundreds of colleagues and companies worldwide to validate numerical simulation models and has received several personal awards, including the prestigious Gottfried Wilhelm Leibniz Prize (2014). Recently, he was one of four applicants to be awarded an ERC Synergy Grant on hydrogen combustion.

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Time: 16:15 - 17:15 h

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Host: Dr. Christos Frouzakis