Friedrich-Alexander-Universität
Technische Fakultät

The Institute of **Advanced Optical Technologies - Thermophysical Properties (AOT-TP)** offers

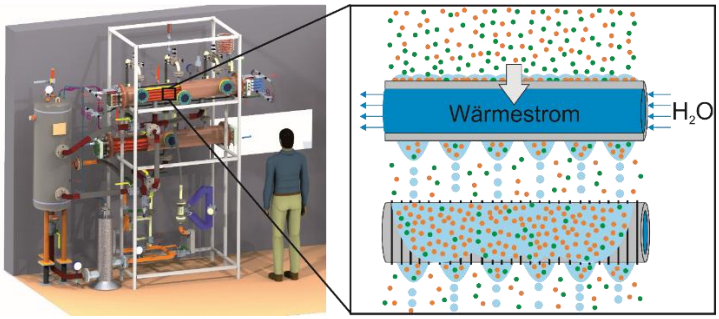
Master Theses

in connection with the research topic

Investigation of the condensation of binary hydrocarbon mixtures on smooth and finned tubes and tube bundles

In the course of the increasingly noticeable climate change and the accompanying political restrictions on the emission of greenhouse gases, it is the task of research to develop ways of reduce the emission of gases that are harmful to the climate. In addition to reducing CO_2 emissions, it is still necessary to replace conventional refrigerants with high GWP (Global Warming Potential) values with alternative refrigerants with appropriate thermophysical properties. Due to their low GWP values, hydrocarbons and hydrocarbon blends are promising alternatives, with the use of the latter bringing some decisive advantages. For example, they can often be used as so-called "drop-in" solutions in systems where the previously used refrigerant has been banned.

Since the condensation behavior of natural hydrocarbon mixtures on smooth or finned single tubes and tube bundles has not yet been sufficiently investigated, experimental data must be obtained for a better understanding of the processes involved in condensation heat transfer and ultimately for more efficient design of industrial condensers. For these optimizations, a sound understanding of the heat transfer in mixture condensation is necessary. This is to be generated within the framework of the research project at AOT-TP in cooperation with Wieland-Werke AG, which is funded by the Bavarian Research Foundation. For this purpose, an experimental setup was designed and built to investigate the heat transfer coefficient on condensation tubes with different surface structures at different temperatures and varying mixture compositions. A special feature of this system is that the mixture composition can be analyzed during the measurement by Raman spectroscopy.



To support work within the described research topic, we are looking for dedicated students with an interest in thermal engineering, optical metrology and thermophysical properties. We offer an open, multidisciplinary and international working environment with excellent potential for scientific and personal development.

Start: as soon as possible

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