Call for 2018 CSC Fellowship Applicants

Research Field: Mass spectrometry/Atmospheric aerosol chemistry and air quality

University: Karlsruhe Institute of Technology (KIT)

Department-Institute: Institute of Meteorology and Climate Research (IMK-AAF)

Supervising scientist: Dr. Harald Saathoff/ Prof. Dr. Thomas Leisner

Position: PhD Student ☒ Sandwich PhD Student ☒ Postdoc ☒

Research Area:

The chemical composition of aerosol particles can be explored at high time resolution and various degrees of chemical resolution by means of mass spectrometry. This state of the art technique helps to improve our understanding of atmospheric aerosols and their implications for climate and public health. The AIDA facility at IMK-AAF is a renowned aerosol and cloud chamber (84.5 m³) for the investigation of aerosol and cloud processes, improving our understanding of aerosol chemistry and cloud physics. The recent addition of various mass spectrometers (aerosol mass spectrometer, HR-TOF-AMS; single particle mass spectrometer, SPMS; chemical ionization mass spectrometer, FIGAERO-CIMS) to the suite of aerosol and gas instruments at AIDA allows for insights into chemical processes related to aerosol particle formation and aging as well as formation and composition of cloud condensation nuclei (CCN) and ice nuclei (IN). This setup is also used in the field for aerosol-cloud interaction studies on high-altitude research stations, at urban locations for air quality studies, or more remote environments to investigate interaction of natural and anthropogenic emissions relevant for both gas and particle phase chemical processes. Laboratory experiments and further instrument development complement the work carried out in the mass spectrometry lab at IMK-AAF.

Examples of single particle fractions (upper panel, SPMS) and particle mass concentrations (lower panel, AMS) and view into the measurement container with 3 mass spectrometers.
Specific Requirements:

- We are looking for a highly motivated student or postdoc with an interest in atmospheric sciences, preferentially atmospheric aerosols, and enthusiasm for experimental work.
- A willingness to solve technical problems and work on technical aspects of the mass spectrometers is preferential.
- The ability to spend several weeks per year in the field is required.
- We are looking for a candidate with a strong commitment to research ethics, teamwork, and a good background in either chemistry, physics, environmental science/engineering or meteorology.

What can be learned?

- The role of atmospheric aerosols for air quality and their interaction with clouds.
- Using modern aerosol mass spectrometric tools for addressing these scientific topics.
- Experience in simulation chamber experiments and dedicated field measurements.
- Data analysis employing different software tools (e.g. Matlab, IGOR, etc.).
- You may become member of the KIT Graduate School for Climate and Environment (GRACE) offering further training opportunities and support of conferences or research visits in other countries (https://www.grace.kit.edu/english/index.php).

Work Place: KIT Campus Nord, Eggenstein-Leopoldshafen, Germany

Earliest Start: April 2018 (typically October 2018)

Language Requirement: English

Contact: Dr. Harald Saathoff (harald.saathoff@kit.edu).
You may also ask one of our Chinese students, Wei Huang and Xiaoli Shen, for more information (http://www.imk-aaf.kit.edu/44.php).