

# Call for 2018 CSC Fellowship Applicants

**Research Field:** LIDAR Remote Sensing/Atmospheric Aerosols and Clouds

**University:** Karlsruhe Institute of Technology (KIT)

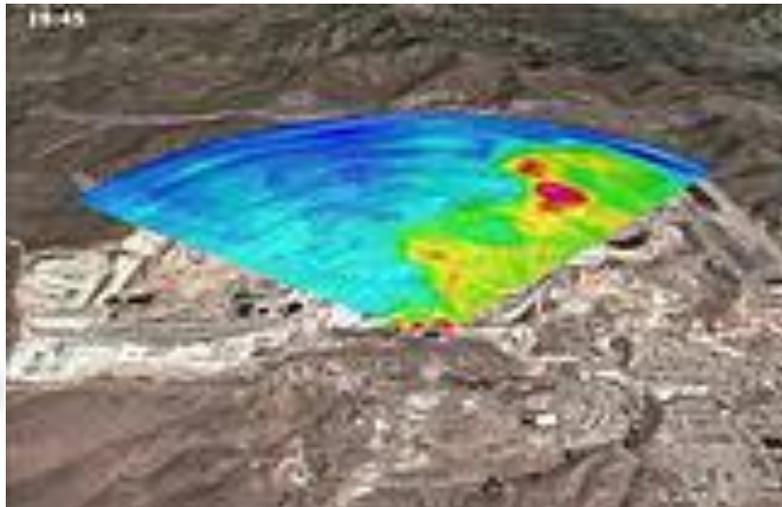
**Department/Institute:** Institute of Meteorology and Climate Research (IMK-AAF)

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

**Position:**                    PhD Student                     Sandwich PhD Student                     Postdoc

## Research Area:

The location and type of clouds and aerosol particles in the atmosphere can be explored at high time and spatial resolution by means of backscattered laser light employing **3D scanning LIDAR systems**. This state of the art technique helps to improve our **understanding of atmospheric aerosols and clouds**, their interaction as well as their implications for weather, climate and air quality. The information obtained by LIDAR measurements can be combined with **detailed stationary characterization of aerosol physics and chemistry** e.g. for source apportionment or assessment of health effects. At IMK-AAF we use a measurement container equipped with a suite of aerosol and gas sensors including various **mass spectrometers** (aerosol mass spectrometer, HR-TOF-AMS; single particle mass spectrometer, SPMS; chemical ionization mass spectrometer, FIGAERO-CIMS). To improve the understanding of aerosol and cloud processes we also use the renowned **aerosol and cloud simulation chamber AIDA (84.5 m<sup>3</sup>)** for the investigation of aerosol optics, chemistry and cloud physics. These tools allow for insights into chemical processes related to aerosol particle formation and composition as well as formation and composition of cloud condensation nuclei (CCN) and ice nuclei (IN). The mass spectrometers and the LIDAR system are used 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. Combined analysis of data from **chamber and field studies** together with suitable modelling and instrument development complement the work.



3D Scanning Raman Depolarization LIDAR and example of a horizontal backscatter scan.

**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 to work on the dedicated application of the aerosol LIDAR 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 physics, chemistry, environmental science/engineering or meteorology.

**What can be learned?**

- The role of atmospheric aerosols for air quality and their interaction with clouds.
- Using a modern 3D scanning aerosol LIDAR and 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](mailto: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>).