

Call for 2018 CSC Fellowship Applicants

Research Field: Diode laser spectroscopy/Water isotopes/Cloud physics

University: Karlsruhe Institute of Technology (KIT)

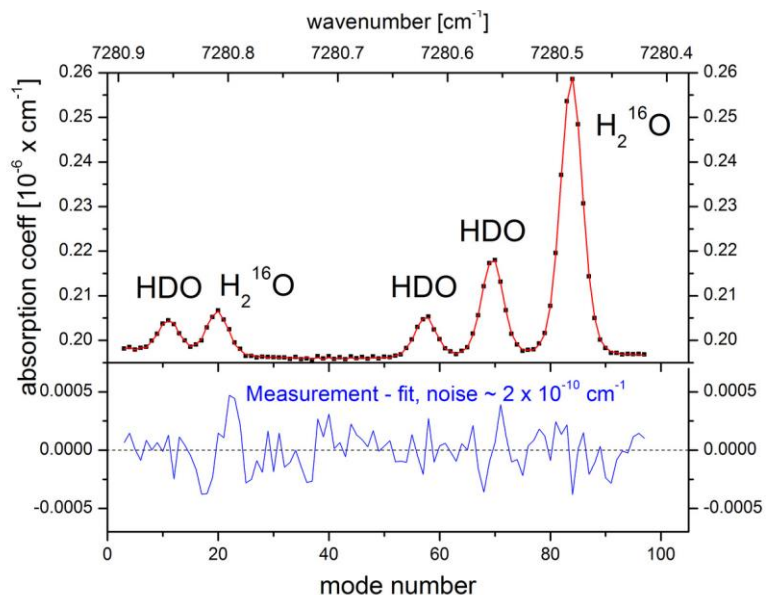
Department/Institute: Institute of Meteorology and Climate Research (IMK-AAF)

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

Position: PhD Student Sandwich PhD Student Postdoc

Research Area:

Several atmospheric processes can be investigated using **atmospheric water isotopes as tracers**. For example, to what extent does the tropopause temperature control stratospheric water vapour, what are super saturations in fast-rising convection, how and where do clouds freeze, what is the profile of evaporation of precipitation? Despite this potential importance, fundamental parameters like isotope fractionation coefficients are not well validated especially for conditions of the upper troposphere/lower stratosphere. The AIDA facility at IMK-AAF is a renowned aerosol and **cloud simulation chamber** (84.5 m³) for the investigation of aerosol and cloud processes, improving our understanding of **aerosol chemistry and cloud physics**. In recent measurement campaigns **new tuneable diode laser based water isotope spectrometers** have been developed and applied to the AIDA facility. The AIDA simulation chamber is excellently suited to study ice and mixed phase clouds under a wide range of atmospheric conditions and to determine fundamental knowledge on water isotope behaviour as well as on cloud microphysics. Main research subject will be further **instrument development** for reliable water isotope measurement, **laboratory experiments** at the AIDA facility and potentially **field studies** with mobile instruments.



Picture of the AIDA aerosol and cloud chamber and an absorption spectrum of different water isotopologues.

Specific Requirements:

- We are looking for a highly motivated student or postdoc with an interest in atmospheric sciences, preferentially atmospheric trace gases, aerosols and clouds, and enthusiasm for experimental work.
- A willingness to solve technical problems, to work on tuneable diode laser spectroscopy, and the ability to spend some weeks in the field is preferential.
- 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 water isotopes for studying atmospheric dynamics and aerosol cloud interactions.
- Using modern tuneable diode laser spectrometers and advanced aerosol instruments for addressing these scientific topics. Application of laser and molecule spectroscopy.
- Experience in simulation chamber experiments and dedicated field measurements.
- Data analysis employing different software tools (e.g. Matlab, IGOR, LabView, etc.).
- You may become member of the KIT Graduate School for Climate and Environment (GRACE) offering further training opportunities including support of research visits in other countries (<https://www.grace.kit.edu/english/index.php>).

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

Earliest Start: July 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>).