

Master Thesis:

Second order nonlinear light scattering of atmospheric aerosols

Description: Water-solid surface interactions play a vital role in environmental process (e.g. ice nucleation and cloud formation in atmosphere). This have a direct and indirect influence on our environment e.g. the optical properties, precipitation occurrence and lifetime of clouds). It is necessary to investigate the water-mineral surface interactions on the molecular level under atmospheric conditions.

In this work non-linear second harmonic angular scattering will be used to elucidate the molecular structure of water at solid surfaces. Second Harmonic Generation (SHG) is a powerful surface sensitive spectroscopic tool for studying molecules near surfaces and at interfaces. Scattering Second Harmonic Generation (SSHG), however, has an access to natural aerosol materials which cannot be obtained in form of macroscopic single crystals.

The student will deal with cutting edge technologies including high power ultra fast laser systems. He will study atmospheric interactions which play key role in our climate using state of the art spectroscopic and data analysis tools

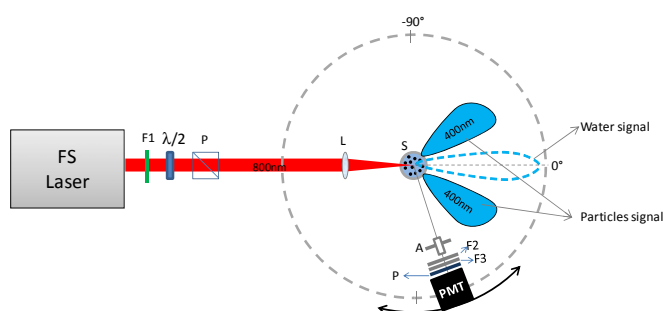
Keywords: Environmental physics, Atmospheric physics and chemistry, Non-linear optics, Spectroscopy, Interfaces

Qualification: Physics / Optics. (Strong background in Mathematics is an advantage)

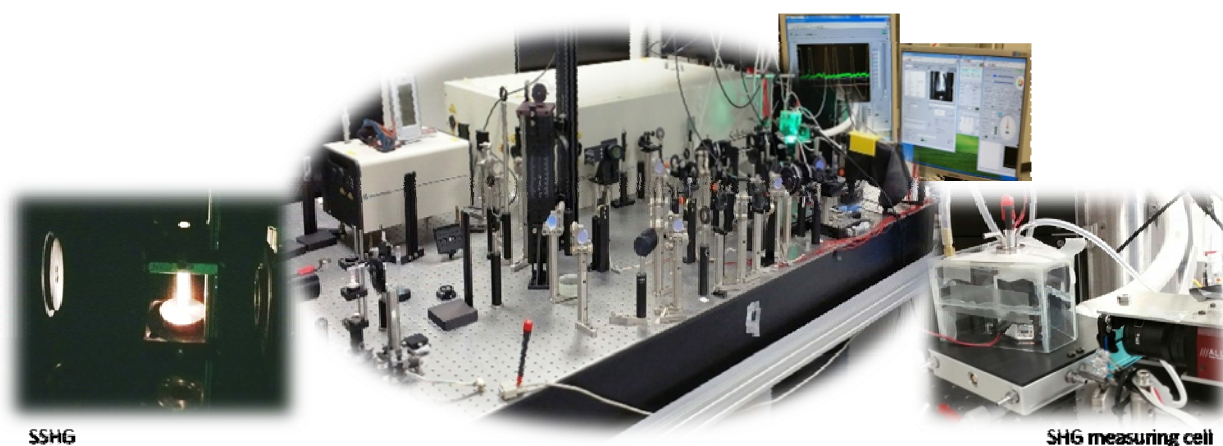
Institute/Department: Institute for Meteorology and climate research - Atmospheric Aerosol Research (IMK-AAF)
Prof. Dr. Thomas Leisner

Starting date: by appointment

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Angular Scattering Second Harmonic Generation



Supercooled SHG and SSHG system at IMKAAF-KIT