

Atmospheric Sciences
Department of Environmental Sciences
University of Basel

Call for Master's Thesis Project in Atmospheric Science

Topic:

Detection of Highly Reactive Compounds in Aerosol Particles as an Indicator for Particle Toxicity

Description:

A recent study by the World Health Organisation estimates that 1 in 8 deaths globally are a result of air pollution exposure. Aerosol particles are the most toxic component of air pollution, and despite a wealth of evidence linking aerosol exposure to a range of diseases and respiratory conditions, the mechanisms responsible for this are poorly understood. A growing body of evidence suggests that highly reactive chemical compounds present in aerosol particles may play a crucial role in determining their toxicity. Detecting highly reactive chemical species poses an analytical-chemical challenge due to their high reactivity, low ambient concentration and inherently short lifetime; therefore new, innovative techniques are required to detect these chemical species and determine their influence on air pollution toxicity.

We are looking for a highly motivated student, with a background in environmental science, chemistry or a related discipline, to undertake a master's project to further develop a novel method to detect reactive organic radical compounds present in aerosol particles. The project will involve synthesising aerosol nanoparticles in controlled laboratory experiments, in order to further characterise the role that highly reactive chemical species play in aerosol toxicity. The student will gain experience in using a wide range of analytical techniques and instrumentation, as well as laboratory-based chemistry, contributing to research at the forefront of our field.

Interested students can apply by sending a CV and a short motivation letter, or request further information by contacting Dr. Steve Campbell (stevenjohn.campbell@unibas.ch) and Prof. Dr. Markus Kalberer (markus.kalberer@unibas.ch).