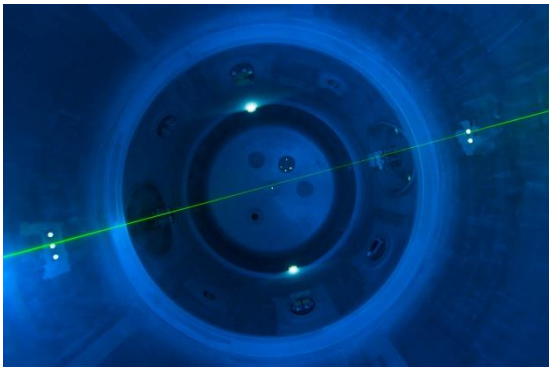
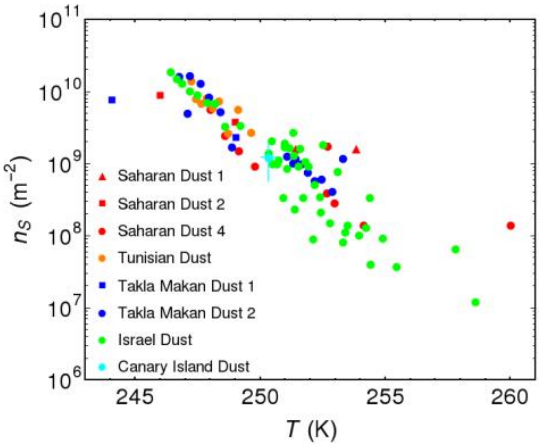
Master Thesis

Influence of coatings of atmospheric relevant aerosol on ice formation

Atmospheric aerosols contain liquid or solid particles from different sources. Their variable composition and structure impedes a comprehensive description of the ice nucleating behavior. Heterogeneous ice nucleation, induced by only a small number fraction of atmospheric aerosol particles, is the major formation process for the ice phase in mixed- phase clouds and is, therefore, an important topic of current cloud and climate research. The major part of the emitted aerosols is initially transported within the atmosphere before they contribute to ice formation. During transportation the aerosols undergo different processes like coating with atmospheric trace substances which might influence the ice nucleating behavior of the aerosols.





In recent years numerous experiments on heterogeneous ice nucleation on different atmospherically relevant aerosols were performed in the AIDA cloud chamber at IMK-AAF. In the context of this master thesis especially the experiments with coated aerosols like desert dust, soot or minerals will be evaluated and compared to results of uncoated aerosols. If needed, more experiments could be done by the candidate together with the AIDA team.

The candidate can be student of meteorology, physics, chemistry or another scientifically related field. Furthermore, the candidate should have some basic experiences in data analysis and data visualization (e.g. MatLab, IDL or something like that) and some basic knowledge in aerosol and cloud physics. In return, the candidate receives the possibility to have a close look into the topic of heterogeneous ice nucleation and to gain experiences in experimental work, data analysis and scientific presentation.

location: KIT Campus North, IMK-AAF
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