
UP 2: Atmosphäre - Spurengase, Aerosole und Labormessungen

Zeit: Dienstag 14:00–14:30

Raum: HS 5

Hauptvortrag

UP 2.1 Di 14:00 HS 5

A summary of results from laboratory ice nucleation experiments: current state of scientific understanding and parameterization developments — ●CORINNA HOOSE and OTTMAR MÖHLER — Karlsruher Institut für Technologie, Institut für Meteorologie und Klimaforschung, Karlsruhe, Deutschland

Laboratory experiments under controlled conditions with well-characterized aerosol particles are conducted by many research groups worldwide with the aim to gain new insights into the mechanism of heterogeneous ice formation. Several parameterizations of ice formation in tropospheric clouds for use in numerical models are based on these data. We present a compilation of laboratory results on hetero-

geneous ice nucleation in the deposition, condensation and immersion nucleation modes on mineral dust, soot, biological and organic particles. The data set is analysed with respect to consistent signatures, such as size or surface area dependence, ice nucleation efficiency below and close to water saturation, sensitivity to coatings or surface treatments, and composition. It is shown that a proportionality of the ice nuclei number to the particle surface area is found in immersion and condensation freezing experiments for mineral dust particles, even across different experimental methods and over a wide range of particles sizes and temperatures. Some biological particles exhibit similar ice nuclei numbers per surface area to mineral dusts, while others are significantly more active.