

Environmental Chamber at University of Copenhagen

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Introduction

In atmospheric and climate science there is considerable interest in the characterization of aerosols particles because of their impact on climate, visibility, and human health. Environmental chambers for aerosol studies are extremely useful tools to investigate the formation mechanism, chemical composition and physico-chemical properties of particles [1]. We summarize the status of the Environmental Chamber facility at University of Copenhagen and describe the on-going experiments and research plans.

Description

The apparatus is a 26 m³ (315x295x265 cm) teflon (DuPont) bag connected to the the following instrumentation: gas and mono/polydisperse aerosol generation system; Ozone generator; Ozone and NO_x monitors, Scanner Mobility Particles Sizer (SMPS); Ultrafine Condensation Particle Counters; static diffusion Cloud Condensation Nuclei Counter (CCN); continuous flow CCN; Gas Chromatography Mass Spectroscopy (GC/MS) system (on-going). Moreover, the bag is coupled to a modified H-TDMA system with a 3.5 m long laminar flow tube for evaporation studies of aerosol particles [2,3,4].

Research plan

First experiments are presently carried out in the chamber. The characterization of particles generated from ozonolysis of alpha-pinene and other parental Volatile Organic Compounds is studied in terms of gas and particle composition, evaporative behavior and cloud activity. Our results, especially concerning evaporation, will be compared with thermodynamic model predictions and reproduced by microphysical models.

REFERENCES

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