

## TRAPS

### *Mass characterization of airborne nanoaerosol*

**Category:**

**C. Particle Characterisation in and ex-situ**

**Institute:**

**KIT**

**Location:**

Karlsruhe Institute of Technology  
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**Short technology description/Overview** (*approx 300 words*):

Charged nanoaerosols with diameter from 3 to 300 nm dispersed in a carrier gas can be sampled from ambient air or a reservoir at pressures from 10 to 1000 mbar. Particles are transferred into a vacuum system by a tunable aerodynamic lens. By concentrating the charged particles in an electro-dynamic cage particle densities of up to  $10^8 \text{ cm}^{-3}$  are reached.

We provide a high resolution time-of-flight particle mass spectrometer with high dynamic range. An ultra-short-pulse laser is used for laser ablation experiments. Mass distributions of Nanoparticles as well as of charged fragments can be achieved.

Within the vacuum system, particles can be accessed by user instrumentation at pressure  $< 10^{-6}$  mbar or deposited onto surfaces or TEM-grids.

**Main Features (Equipment Capabilities):**

- Nanoparticle Mass Characterization by Laser Ablation & Time-of-Flight Mass Spectrometry
- Requirements:  
Airborne Nanoaerosol source (10-1000 mbar) primary (upstream)  
particle number concentrations from  $10^4$  to  $10^{10}$  particles per  $\text{cm}^3$

**Typical Samples & Images:**



Any further Information: J. Meinen et. al., Aerosol Science and Technology **44**, 1-13 (2010).