DMPS/SMPS intercomparison

Comparison in sizing for different DMPS/SMPS systems within the Nordic countries

So far, six systems have been calibrated using a simple intercomparison unit that has been sent to the different participating groups:

1. Lund University, Department of Physics, Division of Nuclear Physics, Lund, Sweden
   System Malmö (operated continuously in central Malmö)
   System Abisko (operated continuously at a station in Abisko in northern Sweden, two calibrations for two different types of DMAs)
   System RESPI (used within a set up for respiratory deposition)
2. National Environmental Research Institute, Department of Atmospheric Environment, Roskilde, Denmark
3. Copenhagen University, Department of Chemistry, Copenhagen, Denmark
DMPS/SMPS intercomparison set up

PSL monodisperse particles

Micro-Neb Nebulizer

Filter

Three way valve

Needle valve

2.0 lpm

Pressurized Air

Mixing Chamber

Supplied by Lund

One inlet open to atmosphere (additional inlets closed)

2.0 – 4.0 lpm

CPC

Reference 2.0 lpm

Drier

Bipolar Charger

Your System operated at defined flowrates

CPC
Comparison in sizing $D_p = 101\text{nm}$

![Graph showing comparison in sizing $D_p = 101\text{nm}$]
Comparison in sizing $Dp = 277\text{nm}$

- **Theoretically**
- **Malmö**
- **Abisko_AL**
- **Abisko_SS**
- **Roskilde**
- **Copenhagen**

![Graph showing comparison in sizing $Dp = 277\text{nm}$ with various locations and theoretical values.](image-url)
Comparison in sizing Dp = 420nm

- theoretically
- Malmö
- Abisko_AL
- Abisko_SS
- Roskilde
- RESPI
- Copenhagen

Dp (spheres) vs. Dp (DMPS/SMPS)
SMPS/DMPS intercomparison

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In the future, the following groups will have the chance to participate in the intercomparison workshop:

4. Göteborg University, Göteborg, Sweden (hopefully on Monday next week with two systems)
5. Norwegian Institute for Air Research, Oslo, Norway
6. University of Stockholm, Institute for Applied Environmental Research, Stockholm, Sweden
7. University of Helsinki, Helsinki, Finland