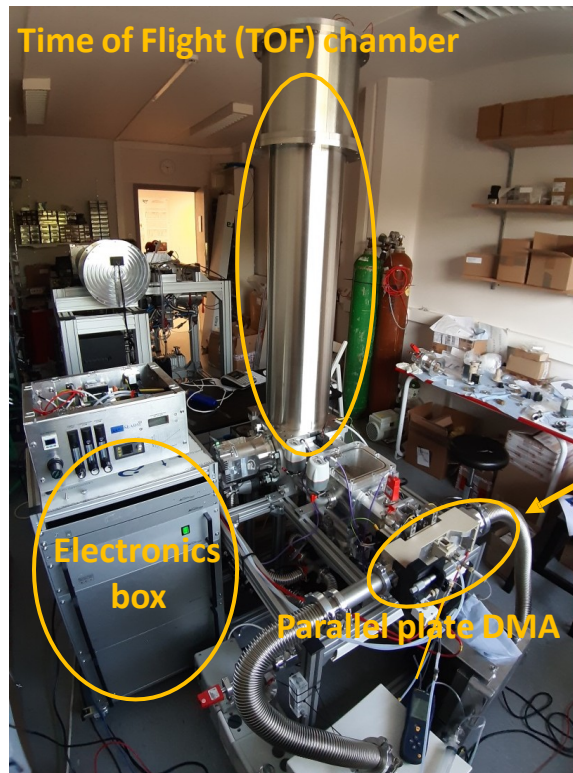


Preliminary characterization of a newly developed Differential Mobility Analyzer Atmospheric Pressure interface

Fabian Schmidt-Ott^{1,2}, Dimitris Papanastasiou², Time Of Flight Mass Spectrometer (DMA-API-TOF-MS) ¹The Cyprus Institute, Cyprus, ²University of Helsinki, Finland
 Alexander Lekkas², George Biskos^{1,4}, Anne Maisser¹ ³Fasmatech, Greece, ⁴Delft University of Technology, Netherlands

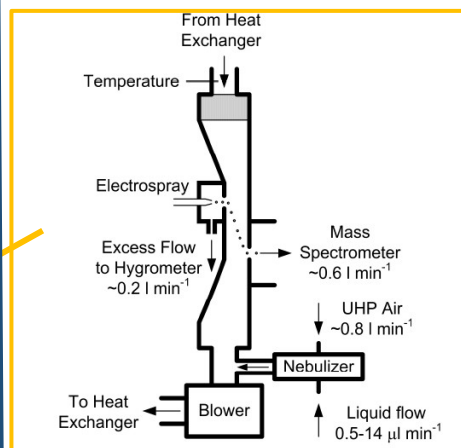
Introduction



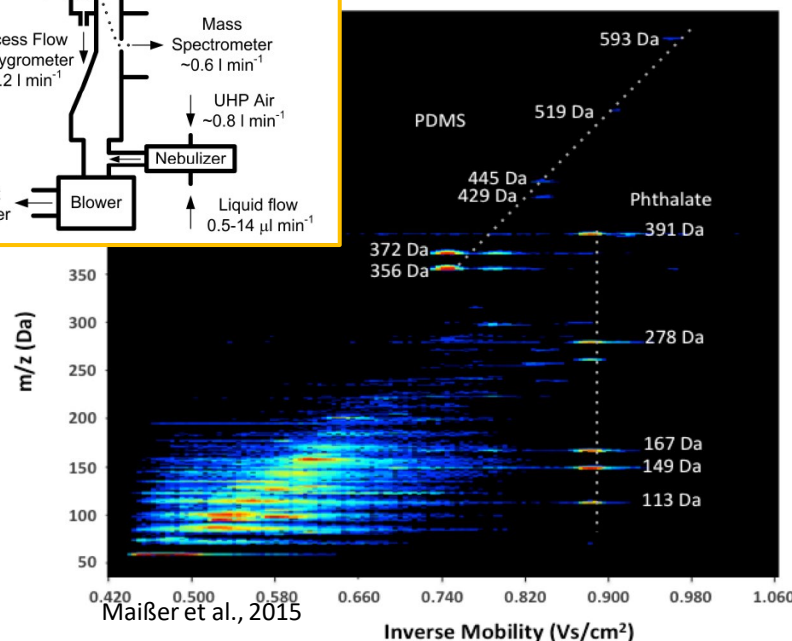
Specifications

- Atmospheric pressure sampling
- Resolution: 35.000 Th/Th
- Measuring range: 16 to 20,000 Da
(reference: H₂O: 18 Da, Au₅₅: 10,833 Da)

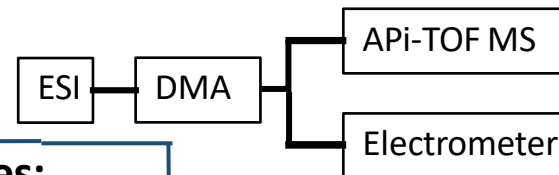
DMA-MS configuration - Advantages:



1. Measure mass of size (mobility) resolved clusters
2. Identify the composition and structure of mono-mobile clusters
3. Study of fragmentation

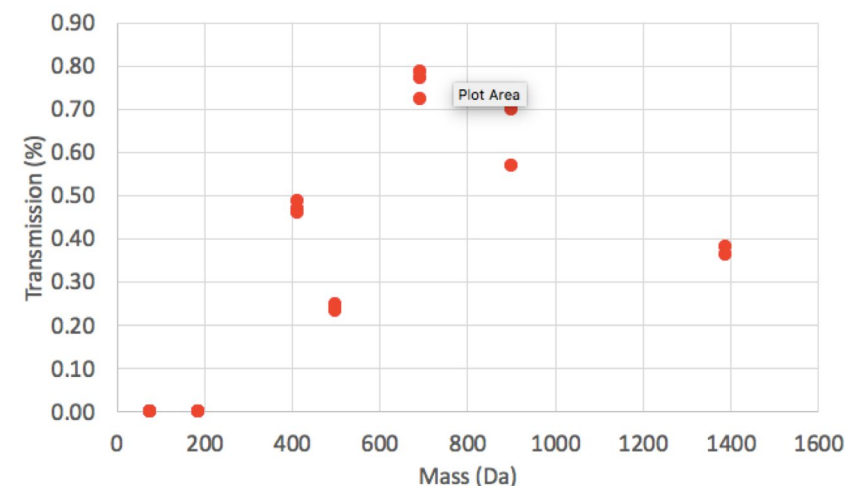


Transmission measurement



Max. transmission: 0.8 %

Junninen et al, 2010: 0.46 %
 Leiminger et al., 2019: 1 %



Objectives:

1. Characterize API-TOF MS
2. Understand initial steps of ion induced nucleation
3. Cluster formation by a number of aerosol generators

References:

Junninen, H., Ehn, M., Petäjä, T., Luosujärvi, L., Kotiaho, T., Kostianen, R. & Worsnop, D. R. (2010). A high-resolution mass spectrometer to measure atmospheric ion composition. *Atmospheric Measurement Techniques*, 3(4), 1039-1053.

Leiminger, M., Feil, S., Mutschlechner, P., Ylisirniö, A., Gansch, D., Fischer, L & Steiner, G. (2019). Characterisation of the transfer of cluster ions through an atmospheric pressure interface time-of-flight mass spectrometer with hexapole ion guides.

Maißer, A., Thomas, J. M., Larriba-Andaluz, C., He, S., & Hogan Jr, C. J. (2015). The mass-mobility distributions of ions produced by a Po-210 source in air. *Journal of Aerosol Science*, 90, 36-50.