

Publication**Real-time characterization of ultrafine and accumulation mode particles in ambient combustion aerosols****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4519800**Author(s)** Bukowiecki, N.; Kittelson, D. B.; Watts, W. F.; Burtscher, H.; Weingartner, E.; Baltensperger, U.**Author(s) at UniBasel** [Bukowiecki, Nicolas](#) ;**Year** 2002**Title** Real-time characterization of ultrafine and accumulation mode particles in ambient combustion aerosols**Journal** Journal of Aerosol Science**Volume** 33**Number** 8**Pages / Article-Number** 1139-1154**Keywords** nanoparticles; urban aerosol; diesel exhaust; diffusion charging; photoemission**Mesh terms** Science & TechnologyTechnologyLife Sciences & BiomedicinePhysical SciencesEngineering, ChemicalEngineering, MechanicalEnvironmental SciencesMeteorology & Atmospheric SciencesEngineeringEnvironmental Sciences & EcologyMeteorology & Atmospheric Sciences

The diffusion charging sensor (DC), photoelectric aerosol sensor (PAS) and condensation particle counter (CPC) are real-time particle instruments that have time resolutions <10 s and are suitable for field use. This paper shows how the relative fraction of nuclei mode particles (D less than or equal to 50 nm) in ambient combustion aerosols can be determined, along with the coverage degree of the respective accumulation mode particles with a modal diameter of similar to 100 nm. Main tools for interpretation are the diameter of average surface D-Ave,D-S (obtained from CPC and DC measurements) and PAS/DC versus D-Ave,D-S scatter plots. Compared to the scanning mobility particle sizer (SMPS), which is a standard instrument for aerosol particle size distribution measurements, the presented method has a limited accuracy, but is substantially faster. Additionally, it is experimentally less demanding than SMPS measurements, especially for field applications.

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