

2A09: MEASUREMENT OF NANOPARTICLES OF ORGANIC CARBON IN NON-SOOTING FLAME CONDITIONS.

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The authors' DMA plots ranged clearly below 1 nm in particle size while conventional DMA systems are able to measure down to 3 nm and even down to, with certain corrections for sensitivity (dropping down to 0 %).

Reply by Lee Ann Sgro

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The reason for the cut off below 3 nm for most conventional DMA systems is a combination of extreme diffusional losses throughout the instrument, low charging efficiency for such small particles and the sharp cut off in the detection efficiency for commercial Condensation Nucleus Counter (CNC) detectors, which is well known to drop quickly from 100 to 0% below 3 nm. The DMA system we used integrates an electrometer rather than a CNC to detect the charged particles that exit the classifier within a certain electrical mobility range. Also, we run higher than typical inlet aerosol and sheath flow rates through the classifier to increase particle throughput and reduce diffusional losses.