

Interactive
Comment

Interactive comment on “Influence of particle charging on TEOM measurements in the presence of an electrostatic precipitator” by N. K. Meyer et al.

Anonymous Referee #3

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General comments:

The manuscript describes a topic of significant interest for the scientific community. The paper is well written. The authors suggest a possible reason for their observation but clearly state that further investigation of the effect of particle charge on TEOM derived mass concentrations is necessary. Unfortunately the described effect of particle charge on TEOM measurements has not been verified against standard filter based measurements in this manuscript. Instead of comparing the performance of a new measurement method for the test of ESP on wood burning appliances with the gold standard a CPC is used to demonstrate unchanged particle number concentration with and with-

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out neutralizer. Although measurements with the CPC support the conclusions drawn by the authors these measurements are not sufficient to exclude all other possible effects of particle charging that might influence mass concentrations measurements in their experimental setup. Even with comparable particle number concentrations actual mass concentrations depend on the shape of the particle number size distribution. To exclude changes of the shape of the number size distribution on observed mass concentrations (e.g. due to changed agglomeration rates with and without neutralizer) further information must be provided to the reader. Such information should preferably include filter based measurements or measurements of the number size distribution with an SMPS. The latter would, however, require proof of unchanged shape factors of the measured aerosol to exclude measurement artifacts. Without further data the observed effect particle charge is still interesting but the manuscript lacks the proof that it can be attributed to the TEOM.

Specific comments:

1. The authors should briefly describe the concept of normalization to 13% O₂ as this may not be common knowledge of the readers of AMT
2. The influence of aerosol dilution on the number or volume size distribution should be either described or given as a reference.
3. The authors give two different descriptions of the physical setup of the tapered element. It would help to give one correct version.

Interactive comment on Atmos. Meas. Tech. Discuss., 1, 435, 2008.

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