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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Time-resolved measurements of black carbon light absorption enhancement in urban and near-urban locations of Southern Ontario, Canada" *by* T. W. Chan et al.

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This is a very well designed study and gives good insight into the role of light absorption and its interdependence on other variables such as shape or coating.

Unfortunately I could not find information on the optical setup of the Droplet Measurement Technology photo-acoustic spectrometer, but I doubt that it is optimized to determine the scattering coefficient. Most likely the photomultiplier will give a signal proportional to a weighted integral of the scattering function. This means that depending on the particle size a certain fraction of the scattered light is omitted. Usually, the larger the particles, the more scattered light is truncated. If this is the case it is recommended

to estimate, which fraction of scattered light is lost.

The specific absorption coefficient exhibits a considerable variation for the different types of aerosols, the value of 22.5 m2/g in the suburban station is reasonable. I have my doubts, that the value of 2.6 m2/g in Windsor is not too low. This would mean that the air contains pure carbon spheres with a diameter of at least 0.5 micrometers. For internal mixtures or other shapes the particles even need to be bigger.

When reading this paper I was confronted with a huge quantity of abbreviations, LI, PA, AMS, PPS, SAC, SVF, AMS, just to name a few. I had to make table of abbreviations in order to read the paper. Obviously the authors use these abbreviations in their lab, but this does not mean that all readers are acquainted to it. With a little more compact writing it should be possible to write the full words. If I would not be asked to read the paper, but just looked at it as an interested reader, instead of preparing the table I would have skipped the paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 19939, 2010.