

Interactive comment on “Influence of semi-volatile aerosols on physical and optical properties of aerosols in the Kathmandu Valley” by Sujan Shrestha et al.

R. Pokhrel

rpokhrel@uwoyo.edu

Received and published: 29 April 2017

Authors did not talk about the drying of ambient aerosol which would bias the aerosol optical properties measurements due to hygroscopic nature of ambient aerosol. Since typical relative humidity (RH) at Kathmandu would be 60 % or higher, this will have a large impact on scattering measurements. There is evidence that on changing RH from 40 to 90 % scattering changes by the factor of 1.6 at the green wavelength (Arnott et al., 2003). Were the data corrected for RH?

There will be particle loss in thermal denuder due to thermophoretic and diffusional processes (Wehner et al., 2002). In addition, activated carbon used in the cooling section also introduce additional particle losses. Past studies show 10-30 % of particles

C1

losses in Thermal denuder with activated carbon in cooling section depending on flow, TD configurations, and the set point temperature (Pokhrel et al., 2017; Fierz et al., 2007; Wehner et al., 2002). This loss will impact particles number concentration as well as optical measurements. How authors account this effect in their study?

References: Arnott, W. P., H. Moosmüller, P. J. Sheridan, J. A. Ogren, R. Raspert, W. V. Slaton, J. L. Hand, S. M. Kreidenweis, and J. L. Collett Jr., Photoacoustic and filter-based ambient aerosol light absorption measurements: Instrument comparisons and the role of relative humidity, *J. Geophys. Res.*, 108(D1), 4034, doi:10.1029/2002JD002165, 2003 Fierz, M., Vernooij, M. G. C. and Burtscher, H.: An improved low-flow thermodenuder, *J. Aerosol Sci.*, 38(11), 1163–1168, 2007. Pokhrel, R. P., Beamesderfer, E. R., Wagner, N. L., Langridge, J. M., Lack, D. A., Jayarathne, T., Stone, E. A., Stockwell, C. E., Yokelson, R. J., and Murphy, S. M.: Relative importance of black carbon, brown carbon, and absorption enhancement from clear coatings in biomass burning emissions, *Atmos. Chem. Phys.*, 17, 5063-5078, doi:10.5194/acp-17-5063-2017, 2017. Wehner, B., Philippin, S., Wiedensohler, A.: Design and calibration of a thermodenuder with an improved heating unit to measure the size-dependent volatile fraction of aerosol particles, *Journal of Aerosol Science*, 33, 1087-1093, 2002.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2017-287, 2017.