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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measuring Light Absorption by Organic Aerosols: Correction Factors for Solvent Extraction-Based Photometry Techniques" *by* Nishit Shetty et al.

Anonymous Referee #4

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Given the comments already made by the other three anonymous reviewers, I will refrain from repeating what they have stated. I agree with Reviewer #1's assessment that the conclusions from this work are not sufficiently general to be of use for correcting bulk, solvent-based absorption measurements. As the other reviewers have pointed out, the measured correction factors incorporate not just geometric differences in bulk and particle absorption but also solvent- and constituent-specific factors, including solubility. And, there are correction factors measured at nearly identical SSA or OC/TC values that differ by factors of 2-3 (Figures 2 and 4) – such scatter is too great to draw a meaningful conclusion about the dependence of the correction factors on SSA or OC/TC ratio. It appears as if no dependence, i.e. a horizontal line, would describe the

trends about as well as the arbitrarily-chosen power law function.

In short, the main conclusion from this study is that there are different correction factors for water and methanol/acetone with water extracting less absorption than the other solvents. This conclusion is not new and may not be general to other types of absorbing organic aerosols or even other types of biomass burning aerosols. What is more, the extent of scatter makes potential use of these factors problematic. Hence, the factors measured here are not broadly applicable. Furthermore, the purported dependence of these factors on SSA or OC/TC is overstated making that conclusion suspect as well.

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