

Interactive comment on “Bounce behavior of freshly nucleated biogenic secondary organic aerosol particles” by A. Virtanen et al.

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We thank the referee for the constructive comments. At this point we would like to shortly reply to some major points brought out by the referee.

The experiments reported here and in Virtanen et al. (2010) are the same experiments, we will more clearly state this in the text. In Virtanen et al. (2010) we compared the bounce behavior of particles measured in 3 different environments: we compared laboratory aerosols (ammonium sulphate & polystyrene), pine derived SOA in plant chamber, and atmospheric SOA. In atmospheric conditions the lowest achievable size limit for our method was 30 nm. To make the comparison possible, each data set and measurement needed to be analyzed in a similar manner. This (and also the limitations related to the length of the paper) gave us a restriction to limit our investigation to >

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30 nm size range in Virtanen et al. (2010). However, our measurement set-up in plant chamber experiments allows us to investigate also the sub 30 nm size range in more detail. Thus in this study we expanded our measurement range below 30 nm to qualitatively investigate the bounce behavior of sub 30 nm pine derived SOA particles. In addition, we would like to point out that our method requires the density estimation of the particles. Here we also investigate the effect of estimated density on the results and show that the density has an effect only on sub 30 nm size range. We also relate the different density values giving the ≥ 0 bounce result for the ~ 18 nm sized particles to the different composition of the particles. Our analysis is also supported by the AMS results. This subject matter has not been discussed in earlier publications.

The referee suggests that we postpone the publication of the research until we have the impactor flow model at hand and/or reference measurements using small laboratory aerosols have been performed. We will aim to include the reference measurements made with solid laboratory aerosols to our corrected manuscript.

We will reply to the other comments later and also modify our manuscript according to them.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 9313, 2011.