Response to the editor, Dr. Su

The editor's comment is in **bold**. Author response is in plain text. Modifications to the manuscript are in *italics*. Page and line numbers in the responses correspond to those in the revised manuscript paper.

Editor's comment:

Dear authors
One comment on page 6824 line 7-11: "Until recently, SOM was modeled as a low-viscosity liquid into which gas-phase species from the surrounding environment diffused quickly ... lower than would be consistent with a liquid material"
For the completeness, I would suggest to mention the "less solid" nature of sub-30 nm particles and potential influence of particle size and oxidation station on the viscosity of SOM (Saukko et al., 2012;Cheng et al., 2015).
Congratulations on your manuscript proceeding to ACP.
Best wishes,
Hang

Reference:

Saukko, E., Lambe, A. T., Massoli, P., Koop, T., Wright, J. P., Croasdale, D. R., Pedernera, D. A., Onasch, T. B., Laaksonen, A., Davidovits, P., Worsnop, D. R., and Virtanen, A.: Humidity-dependent phase state of SOA particles from biogenic and anthropogenic precursors, Atmos. Chem. Phys., 12, 7517-7529, 10.5194/acp-12-7517-2012, 2012.

Cheng, Y., Su, H., Koop, T., Mikhailov, E., and Pöschl, U.: Size dependence of phase transitions in aerosol nanoparticles, Nat Commun, 6, 10.1038/ncomms6923, 2015.

We thank the editor for the feedback that was provided. The revised manuscript takes into account these aspects. The second to last paragraph of the discussion part is expanded as follows to clarify these points:

...from semi-solidity to liquid. There might also be a limit on how small the non-liquid monomers can be, which were 20 to 40 nm in the present study and were coagulated to make the larger non-spherical particles; Cheng et al. (2015) have suggested that monomers on order 20 nm and smaller might be liquid.

References:

Cheng, Y., Su, H., Koop, T., Mikhailov, E., and Pöschl, U.: Size dependence of phase transitions in aerosol nanoparticles, *Nat. Commun.*, 6, 10.1038/ncomms6923, 2015.