Interactive comment on "Photolytically-Generated Sulfuric Acid and Particle Formation: Dependence on Precursor Species" *by* David R. Hanson et al.

David R. Hanson

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This reviewer also read our paper very thoroughly and their comments will be very helpful in our efforts to make the work better understood. This reply is meant to address the main issue they brought up, that the base addition was assumed to be well-mixed.

The reviewer is correct in that we do not know how well-mixed the ammonia becomes in the main flow.

Three things:

(1) The base addition port is below the Teflon mesh. We will make this clear in the revised manuscript.

(2) We have modeled this type of addition with computational fluid dynamics in previous publications, Panta et al. (2012) and Hanson et al. (2017), both in J. Phys. Chem. We will add a section in the Supplement discussing those model results and the difference with the current setup, which is mostly the difference in total flow rate, 3 sLpm vs. 6 sLpm in the previous work.

(3) Nonetheless, we have little information on how well-mixed the base is in the current setup. We have done experiments where the total flow exiting the base-addition line was varied from 25 sccm to ∼50 sccm while monitoring the particles. These plots will be added to the Supplement and one is shown below.

This reviewer's comments will mostly be adopted without reservation in the revised manuscript. Details to follow.
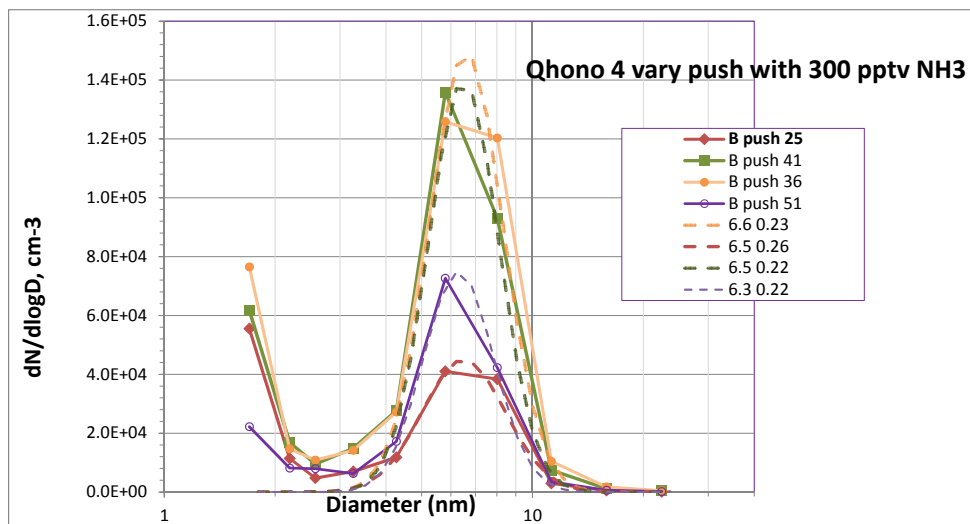
Fig. 1. Showing the effect of changing the total flow from the ammonia source, through an 1/8"
OD tube.