Kwong et al. present studies detailing the heterogenous OH oxidation of sodium methyl sulfate (CH_3SO_4Na) and sodium ethyl sulfate ($C_2H_5SO_4Na$) particles. The particles were exposed to OH radicals in a well-characterized flow reactor that has been applied in many heterogenous oxidation kinetic studies over the last 10 years or so. Ensemble aerosol mass spectra were obtained with DART. The organic sulfates were found to have effective rate constants ranging from (3.79-4.64)*10^{-13} cm^3 $molec^{-1}$ s^{-1} and effective uptake coefficients ranging from 0.17-0.19. For both organic sulfates, HSO_4^- was detected as an oxidation product, implying the formation of aqueous sulfate radical. Proposed reaction schemes detailing functionalization and fragmentation-dominated reaction pathways are examined. Overall, the experiments seemed to have been done carefully and the results are presented concisely. However, in my opinion more effort needs to be made to place these results in atmospheric context before I could support publication in ACP.

Main comments

1. An effective OH rate constant of ~4*10^{-13} cm^3 $molec^{-1}$ s^{-1} corresponds to an OH oxidation lifetime of nearly 20 days assuming a 24-hour average OH mixing ratio of 1.5*10^6 cm^{-3}. As far as I can tell, this timescale is too long to compete with other removal processes for organic sulfates such as wet or dry deposition. If anything, the results suggest to me that, to a first approximation, it is reasonable to treat organic sulfates as chemically stable over atmospherically relevant timescales. However, If the authors are aware of atmospheric measurements that suggest atmospheric degradation of organic sulfates, that would be a strong addition to the paper and further motivate the present work.
2. The authors propose that sulfate radicals generated from OH oxidation of organic sulfates could contribute to secondary condensed-phase chemistry, but the relevant oxidation timescales are not discussed. They state that sulfate rate constants range from 10^6 - 10^9 M^{-1} s^{-1}, and imply that because these are comparable to OH rate constants (10^7 to 10^{11} M^{-1} s^{-1}), secondary sulfate chemistry might be important. I disagree with this conclusion because this cited range of sulfate rate constants is one to two orders' magnitude lower than OH rate constants. Furthermore, it is not appropriate to make this conclusion without citing corresponding ranges of condensed phase sulfate vs OH radical concentrations, and calculating the corresponding oxidation lifetimes with respect to sulfate radicals vs OH radicals. If the authors are aware of atmospheric measurements that suggest influence of sulfate radical-initiated oxidation chemistry, that would be a strong addition to the paper and further motivate the present work

Additional/Minor comments

3. I did not notice discussion of control experiments detailing exposure to ozone or 254 nm photons to rule out the contributions of ozonolysis or photolysis to the degradation of organic sulfates.
4. A short description of the DART technique should be added to the experimental section for readers that are not familiar with the method (including this reviewer).

5. **P3, L17**: I calculate that a vapor pressure of 0.0465 torr corresponds to a saturation concentration of 3.3E5 ug/m3 at 20 deg C and 1 atm. If that vapor pressure is accurate, this statement is likely not true: “volatilization and gas-phase oxidation of sodium methyl sulfate are expected to be insignificant in these experiments.” (The range of mass concentration is not provided, but I am assuming it is far less than $3*10^5$ ug/m3, although this should be clarified). Some other more plausible evidence is needed to support the claim that volatilization/gas-phase oxidation is unimportant.
6. **P3, L30**: Please clarify how the was the residence time of 1.3 min was determined, i.e., calculated from reactor volume and flow rate or obtained from a measured residence time distribution.
7. **P5, L13**: typo (“occur” → “occurring”)
8. **P6, L23**: change “have an order of magnitude ranging” to “values”
9. Figures 1 and 5, 2 and 8, 3 and 6, and 4 and 9, and corresponding discussion, could easily be merged/consolidated to decrease the number of figures.