

General comments:

Curry et al. present updated values for reactive uptake of glyoxal and methylglyoxal for use in models. These are based on RH parameterizations of maritime and remote aerosols and clouds that are comprised of sodium chloride or mixtures of ammonium nitrate and ammonium sulfate. These parameterizations are based on recent (bulk and aerosol) laboratory data that have probed gas-particle partitioning as a function of pH and aerosol or bulk solution chemical composition. This work will result in a more accurate reflection of SOA formed from the water-soluble aldehydes glyoxal and methylglyoxal. I have a few comments, but recommend publication in ACP after minor changes.

Specific comments:

1. Methods and Data: Statistical analysis and parameter estimation: It should be clarified in this section (rather than 3.2) that the authors also tested pH and aerosol chemical composition and the results of those are in the SI.
2. Methods and Data: Calculating the Henry's constant: clarify that the $K_{H,w}$ values are the effective Henry's law constants that incorporate hydration.
3. Section 3.2: It looks as though there is a strong correlation of γ_{GLY} with pH in Fig. S1 so it is not clear how the authors determined that pH is not necessary.
4. Figure 1 and Figure 2: The "average γ_{GLYX} " and "average γ_{MGLY} " values are recommended due to large scatter and lack of correlation with RH. What "average" are the authors referring to? The black line does not appear to be the mean of the γ_{GLYX} or γ_{MGLY} values.

Minor comments:

5. Introduction: Work by David De Haan's group should also be cited for brown carbon formation, e.g.: Powelson et al. (2014) ES&T "Brown carbon formation by aqueous-phase aldehyde reactions with amines and ammonium sulfate"
6. Atmospheric Implications: Consider citing Sareen et al. (2017) ES&T, "Potential of Aerosol Liquid Water to Facilitate Organic Aerosol Formation: Assessing Knowledge Gaps about Precursors and Partitioning" as salting constants were included in this work and they do find that methylglyoxal is a minor contributor as Curry et al. predict.
7. Figure S1: consider changing y-axis to γ_{GLYX} for consistency with the main text.
8. References: check for formatting issues (e.g. "Henry's Law" in Aster et al., "ChemPhysChem" in Herrmann et al., "(NH₄⁽⁺⁾)" in Nozière et al., etc.)