

I am not an assigned reviewer of this manuscript, but was curious to learn about its topic.

1) Being a kineticist, I looked at the Table 2 (Kinetic data for the simulation of reactions in aqueous aerosols). I found that Table confusing:

1a) Reaction R2 is given as $\text{Cu}^+ + 2 \text{H}^+ + \text{O}_2^- \rightarrow \text{Cu}^{2+} + \text{H}_2\text{O}_2$

Is the rate expression for this reaction $v = k[\text{Cu}^+][\text{H}^+]^2[\text{O}_2^-]$? If so, that should be made clear, but the reaction would be unimportant given the value of the rate constant. It seems more likely that the rate expression is $v = k[\text{Cu}^+][\text{O}_2^-]$; if so, then perhaps the reaction should be written: $\text{Cu}^+ + (2 \text{H}^+) + \text{O}_2^- \rightarrow \text{Cu}^{2+} + \text{H}_2\text{O}_2$

with a note on the Table specifying that species in parentheses do not contribute to the rate equation.

Similar questions apply to R5.

1b) Reaction R9 has O_2^- reducing Cu^{2+} to Cu^+ while reaction R2 has O_2^- oxidizing Cu^+ to Cu^{2+} , both with rate constants at the diffusion limit. Perhaps I am exhibiting my ignorance of aqueous-phase chemistry, but I find this hard to believe.

1c) Reactions R1 and R3 do not exhibit mass balance.

On another topic: Perhaps the title shou

Some minor points:

a) In my experience “K” (upper case) is used for equilibrium constants and “k” (lower case) for rate constants, while the present manuscript uses the opposite convention.

b) Table 3 appears to have equilibrium data but no kinetic data. Also, I assume that the redox chemistry of iron is included in the model, even though it is not included in Table Perhaps the table should be retitled something like “Equilibria for copper and HO_x chemistry in aqueous aerosols”

c) I noticed on line 94 that “ironic” is used for “ionic”