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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Hydroxyl radicals from secondary organic aerosol decomposition in water" *by* H. Tong et al.

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This paper investigates the generation of OH radicals when extracting SOA into water with the presence or absence of Fe2+ ions. This research is interesting.

P30025, l 14-17: The maximum values of OH formation efficiency appeared with similar ratios of FeSO4 to SOA for β-pinene SOA and α-pinene SOA. Is there any explanation for this phenomenon since organic peroxides in the two types of SOA are different? What is the reason that OH formation efficiency decreased with high ratio of FeSO4/SOA in the other two types of SOA? While the OH formation efficiency increased continuously in limonene SOA with increasing ratio of FeSO4/SOA.

P30025, l 26-30: What is the change trend of ([BMPO-OR]+ [BMPO-OH]) and ([BMPO-

OR]/[BMPO-OH]) as a function of the ratio of FeSO4/SOA. Does the pH of the solution affect ([BMPO-OR]/[BMPO-OH])?

P30026, l 12-13: How about the formation efficiency of BMPO-OH adduct by mixtures of tert-Butyl hydroperoxide with Fe2+?

P30027, l 2-4: The paper "Decreasing effect and mechanism of FeSO4 seed particles on secondary organic aerosol in α-pinene photooxidation. Environmental Pollution, 193: 88-93" proposed that "The formed OH radicals would promote chemical aging of SOA especially in the presence of iron ions". This paper is quite relevant to the topic of this study and I urge the authors to compare the results with this paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 30017, 2015.