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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Organic peroxides gas-particle partitioning and rapid heterogeneous decomposition on secondary organic aerosol" *by* H. Li et al.

Anonymous Referee #1

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This group continues to provide very impressive data on speciated organic peroxides in aerosols. The majority of previous studies of SOA formation focused on total peroxide content of SOA; it is very nice to see more speciated measurements both for gas-phase and particle-phase peroxides. The result that the particle/gas partitioning coefficient of peroxides is higher than expected is very important. The effect of water on peroxide content is also very important. I do not have any major additions to the comments of the reviewers who posted their reports before me. Only minor comments are listed below.

Abstract: will promote -> promote.

Abstract: "saves OH" is an ambiguous statement. Please rephrase.

Experimental section (p. 28138) and elsewhere: the authors should make it very clear (and probably add a disclaimer of some sort in the abstract) that they realize that the concentrations they use in their experiments are very high, and therefore, yields of peroxides may not represent actual yields of peroxides in oxidation of alpha-pinene in nature.

Future studies: It would be really great if the authors analyzed a field sample from an alpha-pinene-dominated region, such as boreal forests, and determined the same peroxides they observe in their lab experiments in field samples by the same methods they use. No action is needed in response to this comment.

p. 28136: I presume "GABRIEL" stands for something? (Guyanas Atmosphere-Biosphere exchange and Radicals Intensive Experiment with a Learjet)

p28148: please verify the 1.5×10-30 cm3 molecule-1 s-1 value; it seems to be too low to me.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 28133, 2015.