

Dear Dr. Markus Ammann, The Editor,

Here are our responses:

Response #1) We believe the title is reasonable. We measured not only peroxyhemiacetals as molecular ions, but organic peroxides as fragments in FTICR-MS/MS ( $m/z$ - 81.06971 in Fig 5,  $m/z$ - 59.01377 & 87.00832 in Fig 7). So, organic peroxides are also laboratory evidence. We simulate OH formation from photolysis of organic peroxides in atmospheric conditions, so we refer this to “implications to aqueous OH.”

Response #2) We do not know how O<sub>2</sub> is fragmented from peroxyhemiacetals. We found O<sub>2</sub> loss from our standard peroxyhemiacetal from t-BuOOH and methylglyoxal, so we expect the same for peroxyhemiacetals formed via aqueous OH reactions of methylglyoxal. But O<sub>2</sub> loss from organic peroxides is evident and we proposed the fragmentation mechanism in Supplementary Material. The presence of organic peroxides, known peroxyhemiacetal formation with aldehydes by Ziemann’s work and chemical formula obtained by ultra-high resolution FTICR-MS support the formation of peroxyhemiacetals in our work.

Sincerely,

Yong B. Lim

Yong Bin Lim, PhD  
Brainpool Fellow  
Center for Environment, Health and Welfare Research  
Korea Institute of Science and Technology