

The author addressed the questions raised in the first review but one, the mechanism of ROOOH decomposing into OH.

As we state on page 14, we don't know the mechanism of the ROOOH leading to OH.

The original claim of the paper that ROOOH is the missing source of interference got toned down. Still I don't see how the night time increase of the interference reported by Mallik et al or Novelli et al can be explained by night time formation of ROOOH from RO₂+OH. My last remaining minor issue is to ask the authors to note this contradicting published result in their work.

We have added twice (Page 14, line 21 and Page 17, line 28)

It is however not very likely that it can explain an increase in the interference at night, such as observed by (Novelli et al., 2014a).

However, we are not sure which measurements you mean by Mallik et al: the only paper we found by Mallik et al. is on measurements in Cyprus, and we could not find any information on OH interference at night (not even during the day).

By all my reservation that ROOOH is a major contributor to the LIF interference reported mainly by us and Bill Brune's group, the chemistry of RO₂+OH and the product ROOOH is very interesting and therefore I recommend publication.

To address the remaining open question of the mechanism requires additional work that may be beyond the scope of this study. I still would like to encourage the authors to look into :

- to change the residence time after passing the pinhole to derive from the temporal behavior of OH loss and production terms inside as shown by Novelli et al.
- change the diameter and length of the inlet behind the pinhole to investigate if wall contact is important. If so, does the choice of material or coating at the wall makes a difference. For our LIF we tested and can exclude the walls being involved as we used Macrolon tm (plastic), stainless steel, aluminum anodized & not anodized and none changed the result.
- does the use of a glass capillary change the result as the gradual pressure drop would reduce the effect of a shock wave, indicating if the cluster formation is of any importance. For us I can neglect this.
- does a flat plate or just a conical beam skimmer vs a Laval nozzle as pin hole affect the outcome as the flow through a free expansion of the jet behind a flat plate still generates an eddy whereas this is surpassed in a Laval nozzle.
- does the use of a single beam vs multi pass cell makes a difference?

We agree that the ideas for additional measurements are interesting, but as you say, they are well beyond the scope of this paper. We would be much more motivated to do any more work on this subject, if we had data sets from remote biogenic environments, obtained with our FAGE and showing large disagreement with models. However, we do not have any such data. Therefore it seems useless to us to find out more information on how and why we observe OH in the presence of ROOOH.