

Interactive comment on “Validation of the calibration of a laser-induced fluorescence instrument for the measurement of OH radicals in the atmosphere” by W. J. Bloss et al.

Anonymous Referee #1

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Review of ACPD Manuscript #2003-128 "Validation of the calibration of a laser-induced fluorescence instrument for the measurement of OH radicals in the atmosphere" by Bloss et al.

General comments The paper compares OH concentrations derived from hydrocarbon decay rates with OH concentrations measured by LIF calibrated using the water photolysis technique. Calibration of instruments measuring highly reactive gases like OH is difficult, therefore validation of the calibration techniques by comparison with other techniques is very important. The paper is clearly written and the conclusions are sound. I recommend publication in ACP with consideration of following minor changes.

Special comments P6038, L22f : It would be better to use mixing ratios for the upper

limit for NMHC as it can then be put into perspective with the experiment more easily. Also, an upper limit for NO_y of 200ppmv is not really a small number. What are the initial NO_x concentrations during experiments ? Table 2 would possibly be a good place to add some other initial conditions like NO_x etc.

P6044, L2 : Two experiments with Toluene are performed, 1 & 3. What are the differences ? The obvious one is the initial Toluene concentration, but are there other differences ? It would be good to explain the differences as well for experiments 8 & 9.

P6044f : Probably it would be better to renumber/rearrange the experiments/figures so that the experiments for p-Xylene and Benzene are grouped accordingly. On P6049 the argument is made that the Toluene experiments bracket the 1,3,5-TMB experiment, so a rearrangement like for the p-Xylene and Benzene figures might not be that useful.

P6047, L11 ff : Although [OH]HC is independent of the absolute HC concentration, it does depend on the relative change of [HC]. What is the statistical uncertainty of the FTIR/HPLC measurements ? It would be good to have those listed somewhere.

P6048 : Could there be other sources of [OH] interferences ? How does the discrepancy look for different laser powers ? If the laser is the source of the fake OH, a square power dependence should be recognizable. What about other possibilities of internal OH production, like on surfaces or in not well flushed pockets inside the instrument ? It might be very interesting to further investigate what the reason for this discrepancy is and for which HC's it occurs. What about Alkenes ?

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 6029, 2003.

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