

Interactive comment on “Heterogeneous ozonation kinetics of 4-phenoxyphenol in presence of photosensitizer” by S. Net et al.

Anonymous Referee #1

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This paper presents the results of an interesting work into the interaction between ozone and photosensitisers under irradiation. The topic is up to date and relevant to the chemistry of the atmosphere, but the paper needs some improvements before acceptance. In particular, it is not very clear what is the purpose of sections 3.4-3.6, also because some models are presented and discussed but they are not used to fit the experimental data. This is the weakest part of the manuscript and should be extensively modified.

General and specific remarks

a) This paper presents results concerning mainly two systems: $4PP + O_3$ and $4PP + 4CB + O_3 + hv$. No data are reported about the possible role of 4CB as photosensitiser when employed without ozone. It is recommended that some data are re-

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ported/discussed, even briefly, about the following systems: $4PP + 4CB + hv$ and $4PP + 4CB + O_3$. The present lack of discussion in this sense would in fact bring some shadow over the results and their interpretation.

b) Figure 1 should report somewhere (legend or caption) the adopted concentrations of ozone.

c) Section 3.2, Figures 1 and 3. There is reference to the concentrations of the compounds, probably in dichloromethane that is the solvent at the basis of the GC-MS analysis. However, no description is given of the amounts of either 4PP or 4CB on silica. The loading of the organic compounds on silica is very important and should be reported whenever relevant (Experimental part, section 3.2). In section 3.2 there is also no reference to Figure 3, it should be added.

d) Sections 3.3-3.6. The experimental data are fitted with a modified L-H kinetic equation, which is used to derive KO_3 , the adsorption constant of ozone. However, the later sections discuss the L-H and the L-R mechanisms. The two approaches are described but no conclusion is given about their ability to describe the experimental data. Also note that, within the L-R mechanism, the derivation of a KO_3 loses physical sense. Overall, sections 3.4-3.6 are the weakest part of the manuscript because it is not clear what is the author's intention.

Minor issues

- 1) Page 21650, line 14. "heterogonous" should read "heterogeneous".
- 2) Page 21651, line 9. "them is ideal" should read "them ideal".
- 3) Page 21652, line 11. "DCM" is very probably an abbreviation for dichloromethane, but it should be specified.
- 4) Page 21652, lines 24-25. "spectra" should be better replaced by "mass chromatograms".

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- 5) Page 21654. Please check “phenol I’s evolving” (probably incorrect).
- 6) Page 21655, line 17. “Later” should read “Latter”.
- 7) Page 21656, line 6. “4-PP” should read “4-CB”.
- 8) Page 21657, line 19. “one difference that is” should read “the difference that”.
- 9) Page 21658, line 16. “Hinschelwood” should read “Hinshelwood”.
- 10) Page 21658, line 17. “1983” should read “1986” to make it consistent with the references. Also in page 21659, lines 5,7,21.
- 11) Page 21658, line 28. “bellow” should read “below”.
- 12) Page 21659, line 2. “mechanism” is repeated twice.
- 13) Page 21659, line 14. “falls” should read “fall”.
- 14) Page 21651, lines 14,15. “and thus OH radical” should read “and thus of OH radicals”.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 21647, 2009.

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