

Interactive comment on “Photolysis of frozen iodate salts as a source of active iodine in the polar environment” by O. Gálvez et al.

Anonymous Referee #2

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This paper presents laboratory experiments on iodate salts and discusses their potential role as a source of reactive iodine in the polar atmosphere. A possible mechanism is described and simple modelling work performed. The details of the experiment are clear. A number of assumptions are made but these are explained to the reader.

I think that this is an important and well-written paper which will open up this field to further investigation of the role of iodate photolysis as a source of iodine, including further laboratory work. It is a useful contribution to the research area which aims to understand the observed abundance of tropospheric iodine and its sources.

Comments

Abstract. Lines 8-12. The way the text is written is potentially confusing: measure-

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ments of the IR absorption are used to derived the UV/vis cross section. This should be rewritten, maybe by giving more information on the intermediate steps in the methodology.

P27918. Line 18. Put references in chronological order.

P27919. Line 20. Insert 'UV-Vis spectra for..'

P29922-27923. Section 2.2. The text has a change of style with phrases like 'it is assumed' rather than 'we assumed', which is much clearer. Lines 16, 24-25 and 6 (on p27923) should be edited.

P27922. Line 25. Rewrite: 'total lamp power'.

P27922. Line 27. 'only 42%' (no a).

P27924. Line 17. 'stabilised'? (not stablished).

P27924. Line 19. Make it clear that this is 'not shown' here. Can you say more about how good this 'linear correlation' is in these cases not shown?

P27924. Line 22. 'exists' (with s).

P27925. Line 4. 'vanished' should be changed to a better word, e.g. 'not only are ammonium and iodate ions consumed, ...'

P27925. Line 10. 'diminishes' (with es).

P27925. Line 18. 'experiment' (no s) and 'Another' (not Other).

P27926. Line 10. 'overlap' (no ping).

P27926. Line 10. 'monitoring'.

P27927. Line 9. 'in the J' (not on the J). Also, change 'along'. Do you mean 'among'?

P27927. Line 15. Change 'could' to 'can'.

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P27927. Line 17. I am not sure why you need 'differential' here? I would say that sigma in eq 4 is just the absorption cross section. Also, I don't think 'differentiated' (why a different word?) is needed in the caption of Figure 7.

P27927. Line 26. 'were recorded' not 'are recorded'.

P27928. Line 17. Editing needed here, e.g. 'limitations associated with distributing the samples homogeneously.'

P27928. Line 23. Insert 'value by up to a...'

P27928. Line 26. 'higher o even'??

P27928. Line 27. 'should be considered..'

P27929. Line 16. With this process the model generates 1-1.5 pptv IO. How much IO is present without this process? What is the difference? That information should be added.

P27939. Figure 4. Explain what the units of the axes are (even if on an arbitrary scale).

P27940. Figure 5. Explain reason for 2 panels. Better to say minutes in words than use " ' " "

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 27917, 2015.