

Interactive comment on “Absolute rate constant and O(³P) yield for the O(¹D)+N₂O reaction in the temperature range 227 K to 719 K” by S. Vranckx et al.

Anonymous Referee #2

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This paper reports some careful and extensive measurements on the reaction of O¹D with N₂O. The authors use a highly sensitive, but indirect method to follow the kinetics, reporting values that are in basic agreement with some other recent measurements, but are greater than some other direct measurements. An important aspect of this work is that as well as obtaining the overall kinetics of the reaction, the authors have also established lower and more precise determinations of the branching ratio to O³P.

I would strongly recommend publication of this work, but suggest that the authors might want to address the following issues:

1) The paper could do with a little more to attract the core audience of ACP. As a

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kineticist, I find the paper very interesting, but is there enough in the abstract and introduction to grab the attention of the general ACP reader?

2) It is not necessarily the job of the authors to identify issues or errors in previous work, but I feel that the discrepancy with the work of Blitz et al does warrant some further comment. The 'normal' approach to evaluating kinetic data would be that lower rate coefficients are usually correct (higher values may be due to side reactions with more reactive impurities, precursors or radical-radical reactions). Of course it is possible that some side reactions will regenerate the radical reagent slowing the overall rate of radical removal, but it is difficult to envisage a mechanism by which O1D might be regenerated. I do feel that the authors might want to comment on this issue. To the sceptical observer there might be potential complications in the current study due to side reactions. Have the authors carried out any numerical simulations to investigate the effect of any possible side reactions?

3. The temperature dependence of the kinetics is quite interesting and is discussed in detail on p 8893, however, it would be helpful to direct the interested reader to additional references.

Typo on line 4 of p 8892 - should be s-1

The 2 us rise time of the electronics as mentioned in figure 6 seems surprising and contradicts the prompt rise in signal for fig 3.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 8881, 2008.

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