

Interactive comment on “Characterization of iodine particles with Volatilization-Humidification Tandem Differential Mobility Analyser (VH-TDMA), Raman and SEM techniques” by Z. D. Ristovski et al.

R. Saunders

r.w.saunders@leeds.ac.uk

Received and published: 12 April 2006

The paper describes analytical results obtained from iodine oxide particle samples produced from a variety of sources under a variety of experimental conditions. Of particular atmospheric interest is the conclusion of I_2O_4 composition for particles generated from the photo-oxidation of CH_2I_2 in a reaction chamber in agreement with the findings of an earlier study of the same system (Jimenez et al., 2003). I would like to raise the following points;

1. I draw the authors' attention to the recent paper (Saunders and Plane, 2005), in which we discuss the quantitative EDX analysis of iodine oxide particles produced from the photo-oxidation of I_2 with O_3 in the laboratory at room temperature, atmospheric pressure and low RH (dry). Highly consistent atomic ratios from a number of individual particle aggregates were found which indicated that the composition was I_2O_5 . We also remarked upon the contradiction of this result with that indirectly inferred in the Jimenez et al. study (2003). It would prove an interesting comparison with our particle images if the authors included a medium - high resolution SEM image of the sample collected from their reaction chamber experiments, particularly as none have been published from the CH_2I_2/O_3 system to date.

2. Figure 7, which shows the EDX spectra of photo-chemically produced aerosol compared with an I_2O_5 standard, would at first sight seem to show that the aerosol was composed of I_2O_5 - there being very little difference in the relative I and O peak heights and areas. Although no count scale is given in the figure, surely there would be a more marked difference in the peak heights / areas if I_2O_4 was indeed the particle composition? Presumably, the spectra were normalised in some way for comparison but no mention is made of this.

3. Also in Figure 7, the peak at approx. 3.5 keV labelled as I(L) has no basis with regard to the iodine reference data (CRC Handbook, 2004-2005) whereas the L peak evident at approx. 4.85 keV has not been labelled. The I(M) label adjacent to the O(K) peak does not apply to any distinguishable feature in the spectrum.

4. The Raman spectra shown in Figures 5 and 6 while of interest, do not give any corroborative evidence that I_2O_4 is the composition of the photo-chemically generated aerosol. As such, the I_2O_4 labelling on these figures is somewhat misleading, particularly as these figures precede the EDX spectra from which the composition was inferred.

References:

CRC Handbook of Chemistry and Physics, 85th Edition, 2004-2005.

Saunders, R.W., and J.M.C. Plane, Environ. Chem., 2, 299-303, 2005.

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)

Jimenez, J.L., et al., J. Geophys. Res., 108, 4318, 2003.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 1481, 2006.

ACPD

6, S511–S513, 2006

Interactive
Comment

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper