

Interactive comment on “Physical properties of iodate solutions and the deliquescence of crystalline I₂O₅ and HIO₃” by R. Kumar et al.

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Authors Response to Anonymous Referee 1

General comment:

The ‘size effect’ of DRH referred to by the referee was discussed in lines 10-23 in the conclusions section of the original paper and we clearly state that our reported DRH values will be lower limits for the compounds investigated. In support of this, we stated that our earlier study (Saunders et al., 2010) indicated no deliquescent growth for nano-size iodine oxide particles at up to RH = 90% i.e. beyond the ‘bulk’ values reported in this current paper. In terms of ERH, no quantifiable data was reported

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due to the highly viscous nature of the iodate droplets at low RH – there is no reason to suppose that similar behaviour would not occur at smaller droplet sizes – see the recent cited paper by Mikhalov et al. Atmos. Chem. Phys., 9, 9491-, (2009), in which the experimental techniques referred to by the referee are utilised for the study of the efflorescence behaviour of viscous-glassy nano-size droplets.

Specific comment;

Although the centiPoise (cP) is not the SI unit of dynamic viscosity, we would prefer to keep this form as it is still commonly used and allows the data to be expressed in a more easily interpreted integer form. We have now stated the SI equivalence (1 cP = 1e-03 Pa s) at the first opportunity in the revised paper.

Technical comment:

One of the primary purposes of the paper was to highlight that while aqueous solution properties of I₂O₅ and HIO₃ are identical, because of the different crystal structures, the temperature-dependent DRH values for the solids are different. To make this point clear, it seems sensible and appropriate to directly compare the results for the two compounds by reporting the data and analysis together, rather than separately as suggested by the referee.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 20823, 2010.

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