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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Physical properties of iodate solutions and the deliquescence of crystalline I_2O_5 and HIO_3" *by* R. Kumar et al.

Anonymous Referee #1

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Statement:

The authors report on laboratory measurements of physical properties of iodate solutions as well as efflorescence and deliquescence data on the I_2O_5 and HIO_3 crystals. The lack of relevant laboratory data and the importance of iodine compounds on the secondary aerosol formation in the atmosphere provide a dire need for this work. The authors show that their results agree with previous laboratory data, which supports their conclusions e.g. on the value of entalphy of the solution for I_2O_5.The authors present their scientifically relevant results in a systematic manner, which is easy to follow.

Thus, I recommend this manuscript to be accepted for publication in Atmos. Chem. Phys. with only technical comments that I list in more detail below.

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Discussion Paper

General comments:

The methodology limits the smallest solution droplet size to be in tens of micrometer size. This needs to be underlined in the conclusions section. Clearly there is a need to perform complementary laboratory experiments with other available methods, e.g. hygroscopic tandem differential mobility analysis, with which deliquescence and efflorescence can be studied down to tens of nanometers in size.

Specific comments:

Please use SI units for viscosity.

Technical comments:

Sect 3.4.1, page 20833: For clarity, please discuss the results of deliquescence of the two compounds one at a time.

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