



Absorption Cross-Section Measurements of Various Iodine Oxide Species Relevant to Iodine Oxide Particle Formation

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Absorption cross sections of an array of iodine oxide species were measured at 355 nm using laser-depletion coupled to PhotoIonisation - Time of Flight Mass Spectrometry (PI-TOFMS). Iodine oxides were formed by generating O^3P via 248 nm flash photolysis of ozone in the presence of I_2 at 7 Torr. Absorption cross-sections of IO, OIO, I_2O_3 , I_2O_4 , I_3O_6 and I_3O_7 as well as some higher oxides have been measured by the depletion of the species subsequent to a 355 nm YAG laser pulse perpendicular to the sampling inlet of a PI-TOFMS instrument. The depletion of each species was compared to the relative decrease of NO_2 under the same conditions, such that the final cross sections are relative to the absorption cross-section of NO_2 at 355 nm ($\phi \approx 1$). The absolute absorption cross-sections measured have been used to scale qualitative absorption spectra to give quantitative absorption spectra, which facilitate the calculation of atmospheric photolysis rates and the corresponding effect on global chemistry models.