



High resolution ultra-violet absorption cross sections of sulphur dioxide at 200K

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Sulphur Dioxide plays an important role within the complex chemistry of both the upper atmosphere of Venus and the volcanically active Jovian moon Io. The lack of high resolution laboratory studies has prevented the full, accurate determination of absorption cross sections which are the basis for reliable photochemical models.

High resolution laboratory measurements of SO₂ absorption cross sections are essential to resolve the complex and congested SO₂ spectrum. However, using the Imperial College UV Fourier Transform Spectrometer new high resolution ($\lambda/\delta\lambda \sim 450,000$) measurements have been recorded over a range of temperatures and pressures.

As part of an on-going series of measurements, current laboratory work focuses on photoabsorption cross sections of SO₂ at 200K across the wavelength range 220 – 325 nm. These measurements not only compliment previous room temperature measurements obtained at Imperial College in the 190 - 220 nm and 220 – 328 nm ranges (Stark et al., JGR Planets 104, 16, 585 (1999) and Rufus et al., JGR Planets 108, 2, 5 (2003)), but also coincide with the wavelength regions being recorded by the Venus Express mission through the UV-IR spectrometer SPICAV (ESA-SCI(2001)6). Our new measurements will allow accurate analysis of the chemical processes in the upper atmosphere of Venus.

These absorption cross section measurements will be the first to be acquired at this temperature and pressure. Preliminary results will be presented.

This work was supported in part by NASA Grant NNG05GA03G, PPARC (UK), and the Leverhulme Trust.