



High resolution UV SO₂ absorption cross sections for planetary atmosphere studies

R. Blackwell-Whitehead(1), D. Blackie(1), G. Stark(2), J.C. Pickering(1), J. Rufus(1), and P. Smith(3)

(1)Imperial College, UK, (2) Wellesley College, USA, (3) Harvard–Smithsonian Center for Astrophysics, USA. (r.blackwell@imperial.ac.uk)

SO₂ is an important constituent of the atmospheres of Io and Venus. Accurate photoabsorption cross-section data at the temperatures of these planetary atmospheres are required for the interpretation of SO₂ observations and for reliable photochemical models.

The previous laboratory photoabsorption measurements have been unable to resolve the very congested SO₂ spectrum. However, using the Imperial College UV Fourier transform spectrometer, new high resolution (resolving power $(\lambda/\delta\lambda \sim 450000)$ SO₂ absorption spectra have been recorded over a range of temperatures and pressures. As part of this new series of measurements we have completed room temperature measurements of SO₂ cross sections in the 190–220nm and 220–328nm regions (Stark et al., JGR Planets 104, 16, 585 (1999) and Rufus et al., JGR Planets 108, 2, 5 (2003)). Further measurements at 160K in the 190–220nm region have also been recorded and the results are in preparation.

Our current laboratory work focuses on a complementary set of SO₂ photoabsorption cross section measurements at 200K, in the wavelength region 220–328nm and preliminary results will be presented.

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