

Near-Infrared Optical Constants of Sulfuric Acid

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In the classic measurements of Palmer and Williams (Appl. Optics 14, 208, 1975) of the optical constants of sulfuric acid there is a lack of measurements from 2.5 μm to nearly 2.9 μm , a region containing a spectral window that allows probing Venus's lower cloud region and observing the evaporation of cloud droplets to form gaseous H_2O and SO_3 . We are extending the Palmer and Williams' optical constant data by measuring the 0.8 to 3 μm spectral transmission of sulfuric acid at various concentrations using cells with pathlengths from 0.01 mm to 1 mm. These measurements provide the absorption coefficient and imaginary index of sulfuric acid and, with Kramers-Kronig analysis, the real index. The current measurements are for room-temperature solutions and are in good agreement with the measurements by Palmer and Williams.