

THE MILLIMETER-WAVELENGTH SULFUR DIOXIDE ABSORPTION SPECTRA MEASURED UNDER SIMULATED VENUS CONDITIONS

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Over 130 laboratory measurements of the 2-4 millimeter wavelength opacity of sulfur dioxide in a carbon dioxide atmosphere under simulated conditions for the upper Venus troposphere (temperatures between 308-343 K and pressures between 0.03- 2 bar) have been made. These measurements along with the centimeter wavelength measurements by Steffes et al. (Icarus, 2014, in press) have been used to empirically assess existing formalisms for sulfur dioxide opacity in a carbon dioxide atmosphere (Fahd and Steffes (Icarus, 97, 1992) and Suleiman et al. (JGR 101, E2 1996)). The Van Vleck and Weisskopf Model (V VW) used by Fahd and Steffes with the new JPL rotational line catalog (Pickett, et al. 1998) was found to fit 85.88% of all 500 measurements within the 2-sigma uncertainty. This model was implemented in the

new Georgia Tech Venus Radiative Transfer Model (GT-VRM) which has been used to compute disk-averaged brightness temperatures of Venus and compare them to observations made. This work will improve retrievals of the atmospheric abundance of sulfur dioxide from observations of the Venus atmosphere.

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