THE MILLIMETER DIRECT ABSORPTION AND FOURIER TRANSFORM MICROWAVE SPECTRUM OF VANADIUM SULFIDE ($X^4\Sigma^-$)

GILLES ADANDE, L.M. ZIURYS, *Department of Chemistry, Steward Observatory University of Arizona, Tucson, 85721.*

The pure rotational spectrum of VS ($X^4\Sigma^-$) has been measured with Fourier transform microwave (FTMW) and millimeter-wave direct absorption methods in the frequency range of 5-40 GHz and 210-315 GHz. Discharge assisted laser ablation (DALAS) of a vanadium rod in presence of H_2S gas was used to synthesize the radical in the microwave region. In the millimeter-wave range, the species was produced from the mixture of CS_2 and VCl_4 vapor in a DC discharge. The hyperfine structure was resolved and accurate fine and hyperfine parameters were obtained. Insights into the bonding character can be gleamed from the hyperfine constants, and an estimate of the position of two low-lying interacting electronic states can be obtain from the fine structure parameters. Details of these results will be discussed.