

THE VIBRATION-ROTATION EMISSION SPECTRA OF HgH₂ AND HgD₂

ALIREZA SHAYESTEHI, SHANSHAN YU, PETER F. BERNATH, *Department of Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1, Canada.*

Gaseous HgH₂ and HgD₂ were observed for the first time in a discharge of mercury vapor and molecular hydrogen at room temperature. The emission spectra were recorded in the 1200 – 2200 cm⁻¹ spectral region using a Fourier transform spectrometer with 0.01 cm⁻¹ resolution. The antisymmetric stretching fundamental bands of HgH₂ and HgD₂ were detected at 1912.8 cm⁻¹ and 1375.8 cm⁻¹, respectively, and lines from the six naturally abundant isotopes of mercury were completely resolved. The 002 – 001 and 011 – 010 hot bands were also analyzed for both molecules. Unlike CdH₂ and ZnH₂, no perturbation was observed in the HgH₂ bands. The molecular constants and their isotopic ratios will be presented.