THE VIBRATION-ROTATION EMISSION SPECTRA OF HgH_2 AND HgD_2

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Gaseous HgH_2 and HgD_2 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 HgH_2 and HgD_2 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 CdH_2 and ZnH_2, no perturbation was observed in the HgH_2 bands. The molecular constants and their isotopic ratios will be presented.