# THE VIBRATION-ROTATION EMISSION SPECTRA OF GASEOUS $ZnH_2$ AND $ZnD_2$

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High resolution infrared emission spectra of gaseous $ZnH_2$ and $ZnD_2$ have been recorded with a Fourier transform spectrometer. The molecules were generated in an emission source that combines an electrical discharge with a high temperature furnace. The vibration-rotation emission spectra of $ZnH_2$ and $ZnD_2$ were recorded in the 1200-2200 $cm^{-1}$ region at an instrumental resolution of 0.01 $cm^{-1}$. The antisymmetric stretching fundamental bands, 001-000, of $^{64}ZnH_2$ and $^{64}ZnD_2$ were observed near 1889.4 $cm^{-1}$ and 1371.6 $cm^{-1}$, respectively, and for the minor isotopes of zinc, $^{66}$Zn and $^{68}$Zn, the band origins were shifted by approximately 1-2 $cm^{-1}$. Preliminary analysis of the spectra resulted in $r_0$ values of 1.535271(1) Å and 1.531833(9) Å for $^{64}ZnH_2$ and $^{64}ZnD_2$, respectively. Several hot bands of $ZnH_2$ involving $\nu_1$, $\nu_2$ and $\nu_3$ have also been observed, and analysis of these bands will lead to an equilibrium structure ($r_e$) for $ZnH_2$. The results will be presented at the symposium.