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, $^{60}$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.