HIGH RESOLUTION FT STUDY OF THE INFRARED AND VISIBLE EMISSION SPECTRA OF AgH AND AgD

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The infrared and visible (A-X) emission spectra of $^{107/109}AgH$ and $^{107/109}AgD$ have been recorded with a Fourier transform spectrometer. The silver hydride molecules were generated by heating Ag metal to $1050 - 1325^oC$ in a high-tempeature furnace containing a few torr of an Ar/H mixture subjected to a $3kV/330mA$ discharge. The observed spectra consist mainly of rovibronic transitions belonging to the $\Delta v = 0, \pm 1, \pm 2$ sequences. The higher quality measurements from this study together with previous grating data on the A-X system of AgH, and micrawave data were first treated in a combined isotopomer fit to yield improved empirical molecular parameters for both the ground and first excited electronic states of each species. The A-state potential curve of AgH has an anomalous shape resulting from avoided crossings. In an attempt to better determine the A-state potential curve and its mass-dependent Born-Oppenheimer breakdown parameters, the combined data were directly fitted to potential energy functions.