FOURIER TRANSFORM EMISSION SPECTROSCOPY OF THE $E^2\Pi$–$X^2\Sigma^+$ TRANSITIONS OF SrH, SrD AND BaH.

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Emission spectra of SrH, SrD and BaH have been studied at high resolution using a Fourier transform spectrometer. The SrH and SrD molecules have been produced in a high temperature furnace by the reaction of strontium metal vapor with H_2/D_2 in the presence of a slow flow of Ar gas. The spectra observed in the 18000–19000 cm^{-1} region consist of the 0–0 and 1–1 bands of the $E^2\Pi$–$X^2\Sigma^+$ transition of the two isotopologues. A rotational analysis of these bands has been obtained by combining the present measurements with previously available pure rotation and vibration-rotation measurements for the ground state, and improved spectroscopic constants have been obtained for the $E^2\Pi$ state.

The high resolution spectrum of the $E^2\Pi$–$X^2\Sigma^+$ transition of BaH has been observed using a Ba hollow cathode lamp operated with 150 V and 300 mA current with a slow flow of 700 mTorr of Ar and 40 mTorr of H_2 gases. The spectrum in the 14000–15600 cm^{-1} region was recorded at a resolution of 0.015 cm^{-1} with the 1-m Fourier transform spectrometer associated with the McMath-Pierce Telescope of the National Solar Observatory at Kitt Peak. A rotational analysis of the 0–0, 1–1 and 2–2 bands has been performed and improved spectroscopic constants were determined for the $E^2\Pi$ state by combining the data with existing vibration-rotation measurements of the ground state.