FOURIER TRANSFORM EMISSION SPECTROSCOPY OF THE E^2Π–X^2Σ^+ TRANSITION OF CaH AND CaD

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The emission spectra of CaH and CaD have been recorded at high resolution using a Fourier transform spectrometer and bands belonging to the E^2Π–X^2Σ^+ transition have been measured in the 20100–20700 cm⁻¹ region. A rotational analysis of 0–0 and 1–1 bands of both the isotopologues has been carried out. The present measurements have been combined with the previously available pure rotation and vibration-rotation data to provide improved spectroscopic constants for the E^2Π state. The constants ΔG₁/₂ = 1199.8810(32) cm⁻¹, B_e=4.344659(45) cm⁻¹, α_e=0.121869(88) cm⁻¹, r_e=1.986718 Å for CaH, and ΔG₁/₂=868.7438(46) cm⁻¹, B_e=2.212496(51) cm⁻¹, α_e=0.036509(97) cm⁻¹, r_e=1.993396(23) Å for CaD have been determined.

An analysis of the corresponding transitions of SrH and SrD in the 18600–19300 cm⁻¹ region will also be reported.