INFRARED EMISSION SPECTRA OF HOT BeF$_2$ AND MgF$_2$

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High resolution infrared emission spectra of hot BeF$_2$ in the 800–2500 cm$^{-1}$ region have been rotationally analyzed. The $v_1$, fundamental band, $v_1 + v_2$, $2v_2 + v_3$ and $2v_2 + v_3$ combination bands, and more than 15 hot bands were assigned. The $v_1$ ($\sigma_g$), $v_2$ ($\pi_v$) and $v_3$ ($\sigma_u$) frequencies were directly obtained by fitting several hot bands and combination bands together. A complete analysis of all the bands is in progress and will be presented. High level ab initio calculations have been performed for the MgF$_2$ molecule to predict its vibration-rotation spectrum. An infrared emission spectrum of MgF$_2$ was recorded and will be assigned with the aid of ab initio calculations.