FOURIER TRANSFORM INFRARED EMISSION SPECTRA OF MgF$_2$

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High resolution infrared emission spectra of hot MgF$_2$ in the 700 to 1300 cm$^{-1}$ region have been recorded. The molecules were generated by heating solid MgF$_2$ to 1675 °C. Four vibrational bands were rotationally analyzed yielding band origins and rotational constants. Observed bands are: 001-000 ($\Sigma_u^+ - \Sigma_g^+$), 01$^1$1 – 01$^1$0 ($\Pi_g - \Pi_u$), 02$^1$1 (f parity) – 02$^2$0 (f parity) ($\Delta_u - \Delta_g$), and 03$^3$1 – 03$^3$0 ($\Phi_g - \Phi_u$). High level ab initio calculations were essential in making assignments and in helping to fit the data. The $\Delta_u - \Delta_g$ band was only observed for f-parity because the e-parity is significantly perturbed by l-resonance.