ROTATIONALLY RESOLVED ABSORPTION OF O_2 IN THE VISIBLE AT 90K

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The atmospheric red bands of molecular oxygen due to $\mathrm{b}^1 \sum_g^+ \leftarrow X^3 \sum_g^-$ magnetic dipole electronic transition have been obtained using the phase shift and pulsed cavity ring down technique. A low temperature cell was designed and adapted to the CRD experiment to measure absorption bands at any temperature between 10 K and 298 K using liquid He or liquid N_2 as cryogens. The spectra were obtained at room temperature and at 90 K. The rotationally resolved spectra of the (0,0) vibration band, A-band, at 762nm and the (2,0) vibration band, γ-band, at 628nm were obtained and compared with the simulated spectrum. This information was used to confirm the temperature of the cell.