

VIBRATION-ROTATION FLUORESCENCE SPECTRA OF WATER IN THE GROUND ELECTRONIC STATE

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Laser-induced fluorescence has been used to investigate overtone states of water. Specific rovibrational states have been excited by a high-resolution Titanium:Sapphire ring laser in the near-infrared region. The resulting fluorescence light around $3000 - 4000 \text{ cm}^{-1}$ has been dispersed by a Fourier transformation interferometer. Rich collision-induced spectra are obtained. The specific nuclear spin states chosen by the laser excitation are conserved in collisional processes. Variational calculations with an internal coordinate Hamiltonian and a dipole surface have reproduced interesting experimental emission intensity effects.