

CONFIRMATION OF VIBRATION COUPLING IN THE SYMMETRIC CH STRETCH AS REVEALED BY COHERENCE-DETECTED FTMW-IR SPECTROSCOPY OF CH₃OD.

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Rotational state-selection with E-species transitions ($3_0 \leftarrow 3_{-1,2_0} \leftarrow 3_{1,1_0} \leftarrow 1_1$) is employed to record the infrared spectra in the range 2750-2900 cm⁻¹. The observed spectra of CH₃OD contain only one vibrational band origin whereas 12 interacting vibrational bands of CH₃OH are observed in the same interval. There are no interacting vibrational bands in the CH₃OD spectra because the first tier states are shifted out of resonance. This observation confirms that the dominant coupling pathway in the ν_3 CH stretch of CH₃OH is the third order coupling of the CH stretch to a combination of the COH bend and an HCH bend, which subsequently couples to high order combination bands involving torsional excitation.