CONFIRMATION OF VIBRATION COUPLING IN THE SYMMETRIC CH STRETCH AS REVEALED BY COHERENCE-DETECTED FTMW-IR SPECTROSCOPY OF CH_3OD.

SYLVESTRE TWAGIRAYEZU, TROCIA N. CLASP, DAVID S. PERRY, *Department of Chemistry, The University of Akron, Akron OH 44325*; JUSTIN L. NEILL, MATT T. MUCKLE, and BROOKS H. PATE, *Department of Chemistry, University of Virginia, McCormick Rd., P.O. Box 400319, Charlottesville, VA 22904*.

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 CH_3OD contain only one vibrational band origin whereas 12 interacting vibrational bands of CH_3OH are observed in the same interval. There are no interacting vibrational bands in the CH_3OD 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 CH_3OH 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.