SYNCHROTRON BASED FOURIER TRANSFORM FAR-INFRARED SPECTROSCOPY OF CH3NO2

SYLVESTRE TWAGIRAYEZU, BRANT E. BILLINGHURST AND TIM MAY , *Canadian Light Source Inc., University of Saskatchewan, 44 Innovation Blvd, Saskatoon, SK S7N 2V3*; MAHESH B. DAWADI, DAVID S. PERRY, *Department of Chemistry, The University of Akron, Akron OH 44325*.

As a slightly asymmetric top molecule (κ = 0.25) with both a free internal rotor and a methyl group, CH_3NO_2 is a benchmark system for studies of torsional motion in a 6-fold potential and of the coupling between a large amplitude vibration and other small-amplitude vibrations. For this purpose, rotationally resolved infrared spectra of CH_3NO_2, have been recorded using the Far-Infrared beamline at the Canadian Light Source, which is equipped with a high resolution Bruker IFS 125HR spectrometer. The observed infrared spectra, in the range 550-1000cm^{-1}, are the average of 300 interferometer scans collected at a nominal resolution of 0.00096cm^{-1}. Two a-type bands, centered at 657.08cm^{-1} for NO symmetric bend and at 917.99cm^{-1} for CN-stretch, have been measured. The initial analysis of a number of torsional states is currently being carried out and the progress will be reported in this talk.