

## SPECTROSCOPY OF NCNCS AT THE CANADIAN LIGHT SOURCE: THE FAR-INFRARED SPECTRUM OF THE $\nu_7$ REGION FROM 60-140 $\text{cm}^{-1}$

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We report on the analysis of our spectrum from 60-140  $\text{cm}^{-1}$  of the  $\nu_7$  bending fundamental and associated hot band sequence of NCNCS, obtained on the far-infrared beamline at the Canadian Light Source synchrotron. The data were collected in May 2013, building upon what we learned conducting experiments in May 2011 and 2012 on this molecule. Calculations indicated that the  $\nu_7$  system was very weak (one of the four weakest fundamental bands, all of comparable strength), but its spectrum became evident when 30 mTorr of NCNCS was admitted into the 2-m-long sample cell, through which the synchrotron beam passed 40 times. The best spectrum so far has been obtained with 121 mTorr of gas. Loomis-Wood plots reveal many branches, some of which were unambiguously assignable to  $\Delta\nu_7 = +1$  subbands for  $\nu_7'' = 0, 1, 2, 3$  and for  $K_a = 0, 1, 2$  with  $\Delta K_a = 0$  (a-type subbands) by comparison of lower-state combination differences with those obtained from the published pure-rotational data. We will continue the analysis by assigning as many a-type subbands as possible and by searching for b-type subbands with  $\Delta K_a = \pm 1$  so that the connections between  $K_a$ -stacks can be measured. Finally, we will simultaneously fit the infrared and rotational data with a generalized semi-rigid bender Hamiltonian.