MILLIMETER-WAVE SPECTROSCOPY OF NCS:AN ANALYSIS OF VIBRONIC INTERACTION

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The ground electronic state of NCS radical is a $^2\Pi_i$ state and is isovalent with NCO. While NCO is one of the free radicals that have been studied very extensively in the microwave, millimeter-wave and visible-UV regions, high-resolution investigation of NCS has been relatively sparse. We studied the millimeter-wave spectrum of this radical in the ground vibrational state several years ago, and determined precise set of the molecular constants[a]. Since then we extended our measurements to the excited vibrational states, $v_2 = 1$ state in particular. The spectrum was found to be complicated due to large Renner-Teller interaction. The Δ and Σ vibronic states are fitted separately using effective Hamiltonians. A more complete global fit including the $v_2 = 2$ vibronic states is in progress and will be discussed.