THE MICROWAVE ROTATIONAL SPECTRUM OF THE Ne-HCCCN VAN DER WAALS COMPLEX

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We report the results of the first rotational spectroscopic investigation of the Ne-HCCCN van der Waals complex. The measurements were carried out in the frequency range from 4 to 26 GHz using a molecular beam Fourier transform microwave spectrometer. HCCCN was prepared from ethyl propiolate in the usual way,[a] and for our investigation we used a dilution of 0.2% ethynyl cyanide in neon at a total pressure of 3 to 4 atm.

Strong *b*-type and weaker *a*-type transitions we observed. The spectra are consistent with a (vibrationally averaged) T-shaped geometry of the complex. The ^{14}N nuclear quadrupole hyperfine components of the rotational transitions were resolved. The spectral analyses yielded rotational, centrifugal distortion, and ^{14}N nuclear quadrupole coupling constants which were used to derive structural parameters and information about the large amplitude intermolecular motion.

[a] C. Moureau and J. C. Bongrand, *Bull. Chem. Soc.* **5,** 846 (1909).