THE MICROWAVE SPECTRA OF THE LINEAR OC HCCCN, OC DCCCN, AND THE T-SHAPED HCCCN CO_2 COMPLEXES

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The rotational spectra of OC HCCCN, OC DCCCN, and HCCCN CO_2 have been recorded using pulsed-jet Fourier transform microwave spectroscopy. Accurate molecular constants have been obtained and agree with the results from IR spectroscopy.[a, b] The OC HCCCN is hydrogen-bonded in a linear configuration, and the HCCCN CO_2 is T-shaped with the CO_2 molecule at the nitrogen end of the cyanoacetylene. The ^{13}C, the ^{15}N, and the ^{18}O isotopologues for both the OC HCCCN and OC DCCCN complexes have been observed in natural abundance. The fully substituted molecular structure of the OC HCCCN complex has been determined. The results will be compared with those of the corresponding complexes of HCN.

[a] X. Yang, R. Z. Pearson, and G. Scoles, *Chem. Phys. Lett.* **204**, 145-151 (1993)
[b] X. Yang, R. Z. Pearson, and G. Scoles, *J. Mol. Spectrosc.* **180**, 1-6 (1996)