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

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Rotational spectra of various isotopomers of the van der Waals dimer Ne-HCCH were measured in the frequency range from 4 to 22 GHz using a pulsed jet cavity Fourier transform microwave spectrometer. The spectra indicate that the complex has a linear equilibrium structure, in contrast to the T-shaped structure of Ar-HCCH. Rotational and centrifugal distortion constant were determined for each isotopomer. Effective values for the distance from the center of mass of the HCCH subunit to the Ne atom were obtained. The linear structure is in accord with a recent high quality $ab\ initio$ potential energy surface [a] on Ne-HCCH, that guided the spectral search. Experimental transition frequencies will be compared with those determined from the modified $ab\ initio$ potential energy surface.

[a] F. Y. Naumkin and H. -J. Werner, private communication.