

THE MICROWAVE SPECTRUM AND DIPOLE MOMENT OF *CIS*-HEX-3-ENE-1,5-DIYNE

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The microwave spectrum of *cis*-hex-3-ene-1,5-diyne has been observed using a Fourier transform spectrometer. Twenty-two transitions were fit to eight constants to 3.9 kHz. The rotational constants have been determined as $A = 6955.300(2)$ MHz, $B = 2621.515(1)$ MHz, and $C = 1900.734(1)$ MHz. The constants were calculated using *ab initio* methods at the MP2/6-31G* level as $A = 6906.098$ MHz, $B = 2579.524$ MHz, and $C = 1878.047$ MHz showing reasonable agreement with experiment. The electric dipole moment was measured to be $0.18(1)$ D. This molecule is the parent molecule of a series of compounds which undergo the 'Bergman cyclization' reaction, and thus serves as a precursor to aromatic compounds. It also has important implications in biological systems, and may exist in the interstellar medium.