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.