

## CARBON MOLECULE CHEMISTRY: GENERATION AND SPECTROSCOPIC CHARACTERIZATION OF TRIPLET HC<sub>5</sub>H AND SUBSTITUTED ANALOGUES

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Triplet HC<sub>5</sub>H,<sup>a</sup> along with several derivatives (RC<sub>5</sub>R'; R, R' = H-, CH<sub>3</sub>-, (CH<sub>3</sub>)<sub>3</sub>C-), have been observed and characterized by IR, UV-vis, and ESR spectroscopy in cryogenic matrices. The structural similarity of RC<sub>5</sub>R molecules to known interstellar molecules allows their consideration as plausible interstellar species. The electronic spectrum of HC<sub>5</sub>H clarifies some ambiguities concerning earlier attempts to detect this species and provides a foundation for further gas-phase spectroscopic studies. The optical spectra of HC<sub>5</sub>H and analogs also exhibit rich vibronic fine structure, and will be discussed in the context of the diffuse interstellar bands (DIBs). In addition, the photoisomerizations of RC<sub>5</sub>R molecules will be briefly discussed.

<sup>a</sup>N. P. Bowling, R. J. Halter, J. A. Hodges, R. A. Seburg, P. S. Thomas, C. S. Simmons, J. F. Stanton, and R. J. McMahon. *J. Am. Chem. Soc.* (2006) ASAP.