GAS-PHASE ELECTRONIC SPECTRA OF CARBON CHAINS

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Electronic transitions of carbon chains and their ions are being measured in the gas-phase. The neutral species, such as C_nH n=6,8,10, have been observed by cavity ringdown absorption,[a] whearas the carbon anions by a two photon detachment approach. Comparison is made with astronomical data on diffuse interstellar bands. The case of C_7^- is striking;[b] the origin band of the $A^2\Pi_u \leftarrow X^2\Pi_g$ transition, as well as the strong vibronic transitions, coincide with DIBs. This provides compelling evidence for the first identification of a carrier.

[a] H. Linnartz, T. Motylewski and J. P. Maier, J. Chem. Phys., 109, 3819, (1998).
[b] M. Tulej, D. A. Kirkwood, M. Pachkov and J. P. Maier, Astrophys. J., 506, L69, (1998).