

From Interstellar Ices to Polycyclic Aromatic Hydrocarbons

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Evidences of the Potential Identification of Polycyclic Aromatic Hydrocarbons of the Helicene Class as Carriers of the Diffuse Interstellar Bands

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The elucidation of the identity of potential carriers of the Diffuse Interstellar Bands (DIB), e.g., Polycyclic Aromatic Hydrocarbons (PAHs), is the subject of theoretical efforts. Following that aim, a combination of spectroscopy data [Obenland et al. 1975], statistical analysis, aromaticity arguments, and reactivity examinations has been evaluated to obtain reliable evidences regarding the potential identity of the PAHs responsible for several DIB bands in the ultraviolet-visible range. The results of these investigations suggest the tendency of the environment to form long and distorted molecules of the helicene family. The analysis indicates that the gravity-free environment is promoting addition reactions in positions 3 and 4 of the phenanthrene moiety that generate the twisted molecules rather than the planar molecules generated by addition in other terminal positions. It is the first time that the helicenes have been suggested as prospective carriers of the DIB bands.

REFERENCES

Obenland, S., and Schmidt, W. (1975) *Journal of the American Chemical Society*, 97, 6633