A NEW APPROACH TO INVESTIGATE PAH DERIVED CATIONS AS DIB CARRIERS

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Polycyclic aromatic hydrocarbons (PAHs) and their cations are considered as attractive candidates for the Diffuse Interstellar Bands, some discrete absorption features observed throughout the visible and near-infrared spectral range whose origin is still investigated. So far, not a single PAH species has been identified on the basis of a spectral agreement. This indicates either that the molecular diversity is very large or that the candidates that have been considered are not the correct ones. In particular, small/medium-sized PAHs are submitted to photodissociation under UV photons from stars. It is therefore of interest to characterize the spectroscopy of key breakdown products. These spectroscopic studies should be performed in conditions that mimic those found in interstellar space, that leads to additional experimental difficulties. We will describe the approach we are developing with the PIRENEA set-up[a] [b] and present results on 1-methylpyrene cation and derived species. Experimental measurements are guided by calculations based on density functional theory and its time-dependent implementation.

[a] F. Useli-Bacchitta, A. Bonnamy, G. Malloci, G. Mulas, D. Toublanc, and C. Joblin, *Chem. Phys.* **371** (2010), 16-23.
[b] Joint ANR project GASPARIM, ANR-10-BLAN-501