INTERSTELLAR POLYCYCLIC AROMATIC HYDROCARBONS: OBSERVATIONAL AND LABORATORY INSIGHTS

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Polycyclic Aromatic Hydrocarbons (PAHs) are usually considered as the carriers of the Aromatic Infrared Bands observed in emission between 3.3 and 12.7 μm. However, individual species of this family have not yet been identified. I will describe two strategies that are being used to progress in this identification process.

Firstly, the search for features at longer wavelengths that are much more specific to the exact molecular identity. This is now possible thanks to spectra from the Infrared Space Observatory and the coming data from the Spitzer Space Telescope. This will also be a goal for the Herschel Space Observatory which will explore the far-IR range. The very high resolution of the HIFI instrument will provide a unique opportunity to resolve the rotational structure of the bands associated with the floppy modes of these large molecules.

Secondly, a reflexion on where interstellar PAHs come from and how they evolve due to environmental conditions (UV irradiation, gas and dust interactions). The PIRENEA set-up has been designed to specifically address these questions. I will show how the study of the photodissociation and reactivity of PAHs in conditions which approach those of astronomical objects can give insights into the nature of interstellar PAH candidates.