SYNCHROTRON-BASED HIGH RESOLUTION SPECTROSCOPY OF N-BEARING PAHS

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For thirty years\textsuperscript{b}, the Polycyclic Aromatic Hydrocarbons (PAHs) have been suspected to give rise to the numerous Unidentified Infrared Bands (UIBs) observed in most astrophysical objects. Pure carbon molecules as well as derivatives with nitrogen atom(s) incorporated into the carbon skeleton have been considered. These N-bearing molecules are interesting candidates for astronomical research since they possess a larger permanent dipole moment than purely carbon-based PAHs. Most of the data reported in the literature deal with rotationally unresolved data. During the last decade, high-resolution microwave spectroscopy initiated high resolution studies of this broad family of molecules\textsuperscript{c}. Recent advances in laboratory techniques permitted to provide interesting new results to rotationally resolve the IR/Far-IR vibrational bands of these relatively large C-bearing molecules\textsuperscript{d}, in particular, making use of synchrotron radiation as the IR continuum source of high resolution Fourier transform (FT) spectrometers. We will present an overview of the synchrotron-based high resolution FTIR spectroscopy of 5 aza-derivatives of naphthalene (isoquinoline, quinoline, quinoxaline, quinazoline, [1,5] naphthyridine) using a room temperature long path absorption cell at the French facility SOLEIL. In support to the rovibrational analysis of these FIR spectra, very accurate anharmonic DFT calculations were performed\textsuperscript{e}.

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