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Building 99, Seminar Room I+II (EG)

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Far-infrared synchrotron-based spectroscopy of polycyclic aromatic hydrocarbons (PAHs) and light protonated molecules

The AILES beamline of SOLEIL synchrotron facility has been optimized to extract photons in the $15\text{-}1500\text{ cm}^{-1}$ (0.5 THz – 50 THz) range. This continuum radiation is well adapted to Fourier Transform infrared (FTIR) interferometry. In this talk, I will present recent results obtained using the high resolution FTIR interferometer associated to the AILES beamline. This presentation will be organized around two main themes.

In the first part, I will present the rotationally resolved spectra of the low frequency vibrational modes of PAHs recorded in the far-infrared. The analysis of these spectra remains challenging due to the high spectral density of these fundamental bands. This part will be treated through an example: the analysis of the [1,6]-naphthyridine spectra (a nitrogen-containing naphthalene derivative) which has been studied by complementary techniques in the microwave and in the far-infrared domains.

In the second part, I will discuss the preliminary results obtained using the hollow cathode discharge cell developed on the AILES beamline which allows the acquisition of high resolution spectra of cationic molecules. As an example, I will detail the analysis and fit (using an appropriate Dunham Hamiltonian) of the KrH^+ spectrum.

Host: Melanie Schnell - CFEL Molecular Physics seminar