Far-infrared Fourier Transform Spectroscopy on the AILES beamline of Synchrotron SOLEIL

O. Pirali[a,b]

[a] AILES Beamline, Synchrotron SOLEIL, L'Orme des Merisiers Saint-Aubin, 91192 Gif-sur-Yvette, France, Tel : +33 1 69 35 97 42, E-mail : olivier.pirali@synchrotron-soleil.fr

[b] Institut des Sciences Moléculaires d'Orsay (ISMO), UMR8214 CNRS, Université Paris-Sud, Bât.210, 91405 Orsay Cedex, France

The AILES beamline of SOLEIL facility extracts the far-infrared continuum synchrotron radiation and focuses it onto the entrance aperture of a high resolution Fourier transform interferometer Bruker IFS 125 [1]. At the highest resolution (0.001 cm^{-1}), the synchrotron source allows gains in signal to noise ratio up to 10 compared to classical sources such as globar or mercury lamp, resulting in gains of 100 in measuring duration. Several gas cells can be associated to the FT interferometer and allow recording absorption spectra of various families of molecular species in the far-infrared. In this talk I will present some high resolution spectra of light reactive species [2,3] as well as results concerning relatively large C-bearing molecules (such as Polycyclic Aromatic Hydrocarbons [4] and "diamondoids" [5]) to illustrate the technical capabilities offered by the AILES beamline to the high resolution spectroscopic community.

[1] J.-B. Brubach et al., AIP Conference Proceedings **2010**, 1214, 8.

[2] M.-A. Martin-Drumel et al., Review of Scientific Instruments, **2011**, 82, art.n° 113106

[3] S. Gruet et al., Can. J. Phys., **in press**

[4] O. Pirali et al., Physical Chemistry Chemical Physics, **2013**, 15: 10141-10150

[5] O. Pirali et al., Journal of Chemical Physics, **2012**, 136, art.n° 024310