

## INFRA (Infrared and ices spectroscopy)

### Objectives

Collecting nanoparticles in a cold sample and the study by the interaction with different electromagnetic sources. Study the NPs interaction with residual gas by FTIR on fly (transmission and reflection). Simulation of interstellar and circumstellar dust with ice processes including photo – and thermal processing. The structure and composition are monitored in situ during the experiment.

### Environmental conditions

- Sample temperature range: from 10K to 300K in sample holder computer controlled.
- Irradiation by: IR source, electron gun, UV discharge lamp, Ion gun and hydrogen cracker.
- Base pressure level of  $10^{-10}$ mbar.
- Vacuum system powered by Turbo pumps, Ion pump and Titanium sublimation pump.
- Measurement of pressure by Bayard-Alpert gauge.
- INTRO chamber for introduce different astrobiological substrates and extract sample for study by AFM and STM.

### Analytical Techniques

- **TPD** (Thermal Programmed Desorption), in real time with QMS 200uma or QMS up to 512uma.
- **FTIR** (Fourier Transform Infra Red)
- **RAMAN**

