

PASC (Planetary Atmospheres and Surfaces Chamber)

Objectives

Making possible the recreation of any planetary atmosphere (real or pretended) by an accurate control of the gas composition, total pressure and sample temperature. The sample under study can be irradiated in-situ, and induced chemical transformations followed by FTIR in-situ.

Environmental conditions

- Temperature range: from 4K to 300K (computer controlled).
- Atmosphere: total pressure can range from 5×10^{-9} mbar to 10 mbar.
- Experimental conditions particularly optimized for Mars, Europe and Triton.
- Irradiation sources: deuterium lamp, He I-II discharge lamp, electrons (5KV) and ions (5KV).

Technical parameters

- Cooling by closed circuit of helium liquid.
- Sample max size: \varnothing 25mm x 5mm (height).
- Adapted for FTIR analysis.
- UV Spectroradiometer.
- TPD (Thermal Programmed Desorption), in real time with QMS 200uma.
- RGA composition by quadrupole mass spectrometer and fluxmeters.

Acknowledgements in scientific papers

- **Stability of liquid saline water on present day Mars.** M.P. Zorzano, E. Mateo-Martí, O. Prieto-Ballesteros, S. Osuna, N. Renno. *Geophysical research letters*, vol.36, L20201, 2009. (*Technical support*).
- **The resistance of the lichen *Circinaria gyrosa* (nom. Provis.) towards simulated Mars conditions-a model test for the survival capacity of eukaryotic extremophile.** F.J. Sánchez, E. Mateo-Martí, J. Raggio, J. Meesen, J. Martínez-Frías, L.G. Sancho, S. Ott, R. de la Torre. *Planetary and Space Science* 72 (2012) 102-110. (*Technical maintain*).
- **Supervivencia de líquenes en Marte.** Rosa DE LA TORRE NOETZEL. *Revista Física de la Tierra*. Vol. 28 (2016) 25-39. (*manutención técnica de PASC*).

