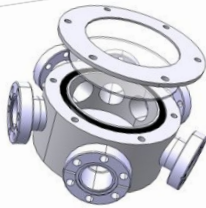


Design of a small Martian chamber for simulating the RLS-ExoMars operation mode



¹ Catalá, A. (alejandro.catala.espi@cab.inta-csic.es); ¹ López, G.; ¹ Rull, F.; ² Vegas, A.
¹ Unidad Asociada UVA-CSIC al Centro de Astrobiología (CAB-INTA), ² TCP Sistemas e Ingeniería

Chamber body



80mm diameter stainless steel

6x DN16CF vacuum ports
 • Electric connections
 • Gas flow valves
 • Pirani pressure gauge
 • Motorised linear motion manipulator

Pressure and Martian gas flow control

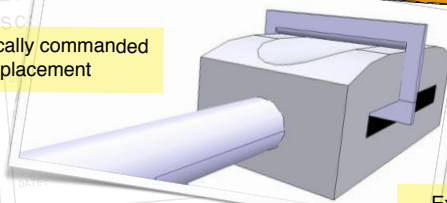
Temperature monitoring and control through RTD, TEC and cold plate

User-friendly PC software for control and monitoring

30mm travel range for flattening blade

Sample holder + Flattening tool

Electronically commanded displacement



ExoMars-like aluminium sample holder

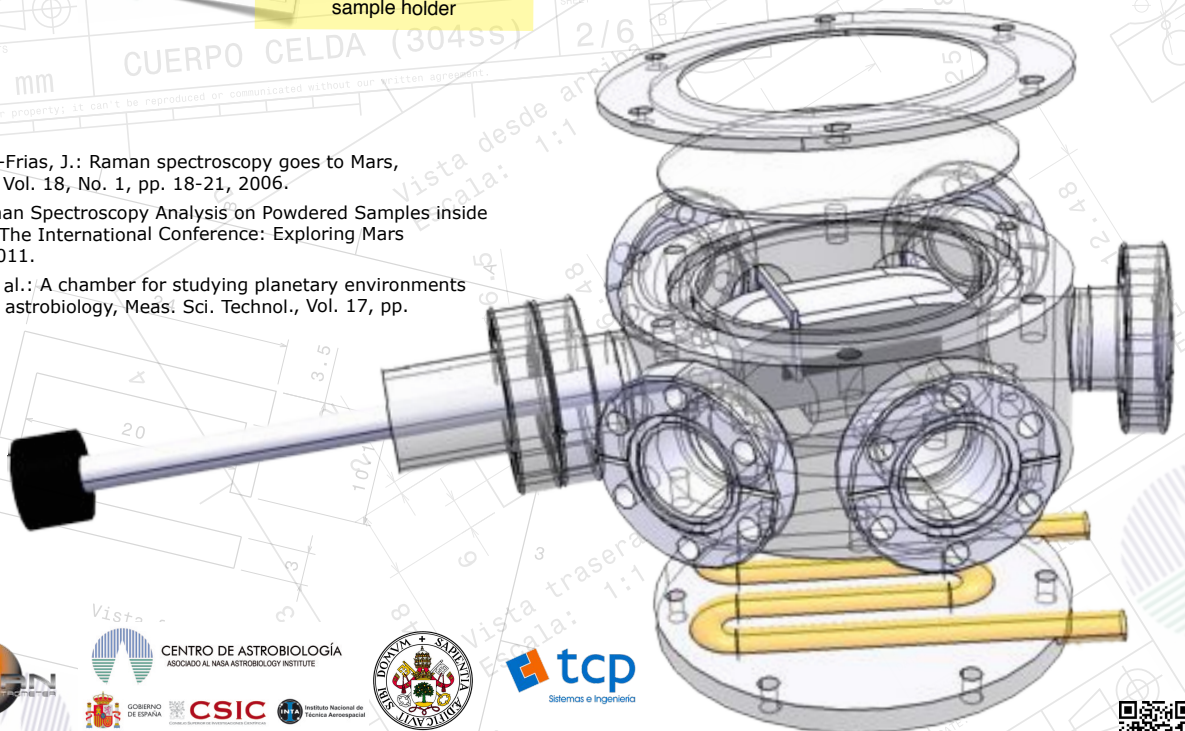
The Raman Laser Spectrometer (RLS) is part of the Pasteur payload of the ExoMars rover [1]. Its mission on the Red Planet will be to perform Raman analysis on powdered samples prepared from cores extracted from the Martian shallow subsurface.

Up to now, the scientific operation mode of the instrument is being tested under "terrestrial" conditions [2]. Despite some chambers have been developed for Martian ambient simulation [3], this one presented here aims to fulfil the specific environmental requirements related to the ExoMars operation mode.

This is the next logical step in the scientific process for, not only evaluating the RLS operation mode, but also for building the scientific database of Raman spectra which will be used during the data exploitation phase of the mission, as a base for the identification of compounds found on the Martian shallow subsurface.

References

- [1] Rull, F. & Martínez-Frías, J.: Raman spectroscopy goes to Mars, Spectroscopy Europe, Vol. 18, No. 1, pp. 18-21, 2006.
- [2] Rull, F. et al.: Raman Spectroscopy Analysis on Powdered Samples inside the Exomars Mission, The International Conference: Exploring Mars Habitability, Lisbon, 2011.
- [3] Mateo-Martí, E. et al.: A chamber for studying planetary environments and its applications to astrobiology, Meas. Sci. Technol., Vol. 17, pp. 2274-2280, 2006.



CENTRO DE ASTROBIOLOGÍA
 ASOCIADO AL NASA ASTROBIOLOGY INSTITUTE

GOBIERNO DE ESPAÑA
 CSIC

Instituto Nacional de Astrofísica, Optoelectrónica y Espacio



tcp
 Sistemas e Ingeniería

