

SPACE EXPLORATION SYMPOSIUM (A3)  
Mars Exploration – Science, Instruments and Technologies (3B)

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DEVELOPMENT OF A VERY DEMANDING SPECTROMETER FOR EXOMARS MISSION

**Abstract**

The Raman Laser Spectrometer (RLS) is one of the Pasteur Payload instruments, within the ESA's ExoMars mission. The RLS instrument consists of three main units, the optical head, the spectrometer unit and the electronics unit, which are interconnected by an optical and electrical harness.

It has been develop the Engineering Qualification Model (EQM) of the Spectrometer unit (SPU), one of the most critical Units inside the Rover's Analytical Laboratory Drawer (ALD) of the RLS instrument. SPU EQM has been qualified in a relevant ambient with very restrictive opto-mechanical design constraints and compliant with planetary protection (PP) and Cleanliness and Contamination Control (CCC) requirements. The objective of this resume is to present the activities carry out in order to follow the AIV plan in order to achieve a Technology Readiness level (TRL) 6 maturity level.

After a wide testing campaign for evaluating Instrument performances by means of environmental assessment (Thermal Vacuum and Mechanical Tests) as well as Optical and Electrical functional Tests., SPU EQM has been successfully delivered to RLS system instrument on February 2017 which will be ready to reach TRL 7, and to develop a FM with almost the same representative design.