

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

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CHARACTERIZATION OF THE RAMAN LASER SPECTROMETER (RLS) FLIGHT MODEL FOR  
THE ESA'S EXOMARS 2020 MISSION

## Abstract

The Raman Laser Spectrometer (RLS) is one of the three purely scientific instruments of the ExoMars 2020 mission, placed into the ALD (Analytical Laboratory Drawer) within the Rosalind Franklin Rover, for analysing crushed samples obtained with the Rover drill, from up to 2 meters depth beneath the Mars surface. The RLS Instrument, will be able to work under a ‘collaborative science mode’, with its ALD instrument partners: MicrOmega (IR and VIS spectrometer) and MOMA (Gas Chromatograph-Mass Spectrometry). This capability would boost the potential scientific return, since the analysed samples will be studied by the three instruments. The RLS Instrument, will be the first Raman spectrometer for space use, opening a period of new-generation instruments for planetary exploration, where much more and more accurate scientific information could be obtained. The development of the Instrument was done among a Spain-France-UK-German consortium, led by INTA (the Spanish Aerospace and Technological Development Institute) and it was finally delivered to ESA’s contractor (TAS-I) on December 2018. Since then, and under its final configuration on the Rover ALD, several end-to-end tests were done at Instrument level (using the Instrument Calibration Target) and characterizing several important aspects for the future Instrument operation (spectral calibration, noise levels, operation algorithms...). These results, and its comparison with the ones obtained in the laboratory, with Mars representative samples, before its delivery, will be described in this contribution.