



ID de Contribution: 11

Type: Oral presentation

The interpretation and optimization of the SAM GCMS runs aboard the Martian rover, Curiosity. .

mercredi 10 février 2021 14:00 (15 minutes)

Mars has long been considered a planet with high astrobiological interests. Scientific research has shown that the Martian surface, due to its resemblance with Earth environments in its early history, could have seen the emergence of life. Exploratory missions, such as the one conducted by the rover Curiosity since 2012, have deployed scientific tools to find chemical and mineral evidence of past and present habitable environments on its surface. The Sample Analysis at Mars (SAM) instrumental suite aboard Curiosity was designed to detect elements potentially associated with life on Mars by exploring molecular and elemental chemistry. More specifically, the Gas Chromatograph Mass Spectrometer (GCMS) component of SAM has helped identify a wide range of organic compounds indigenous to the red planet. However, the complexity of the data collected requires experimental work and instrumental optimizations to be fully understood and explained. To follow this effort, laboratory analyses were conducted on different SAM GCMS spare columns to help the interpretation of the flight model in situ results and prepare future runs. This specific study focuses on four of the six SAM GCMS columns: GC1 and GC2 used for the first TMAH run on Mars; as well as GC4 and GC6 which were studied to help the MSL science team to gain perspective on the capabilities of these columns to identify highly volatile compounds (Phosphine, Methane, H₂S, etc.). The configurations and conditions of the GCMS runs are key factors to maximize our chances of identifying organic molecules on the Martian surface.

Field

Planetology (including small bodies and exoplanets)

Day constraints

Ideally in order of preference: 1. Wednesday 10th; 2. Monday 8th; Friday 12th; Thursday 11th, 4. Tuesday 9th.

Auteur principal: MCINTOSH, Ophélie (UNIV VERSAILLES ST-QUENTIN|UMR8190)

Orateur: MCINTOSH, Ophélie (UNIV VERSAILLES ST-QUENTIN|UMR8190)

Classification de Session: Talk

Classification de thématique: Astrophysics