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Database and Library Development of Organic Species using Gas Chromatography and Mass Spectral Measurements in Support of the Mars Science Laboratory RAUL GARCIA, Howard University, PAUL MAHAFFY, NASA Goddard Space Flight Center, PRABHAKAR MISRA, Howard University — Our work involves the development of an organic contaminants database that will allow us to determine which compounds are found here on Earth and would be inadvertently detected in the Mars soil and gaseous samples as impurities. It will be used for the Sample Analysis at Mars (SAM) instrumentation analysis in the Mars Science Laboratory (MSL) rover scheduled for launch in 2011. In order to develop a comprehensive target database, we utilize the NIST Mass Spectral Library, Automated Mass Spectral Deconvolution and Identification System (AMDIS) and Ion Fingerprint Deconvolution (IFD) software to analyze the GC-MS data. We have analyzed data from commercial samples, such as paint and polymers, which have not been implemented into the rover and are now analyzing actual data from pyrolyzation on the rover. We have successfully developed an initial target compound database that will aid SAM in determining whether the components being analyzed come from Mars or are contaminants from either the rover itself or the Earth environment and are continuing to make improvements and adding data to the target contaminants database.

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