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MOMA_LDMS: Instrument Concept and Results

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The Mars Organic Molecule Analyzer (MOMA) is a powerful multi-source mass spectrometer-based investigation of the potential for life on Mars. MOMA has been selected as a core element of the Pasteur payload on the ESA ExoMars mission MOMA is the prototype design to the next generation *in situ* life detection instrumentation. Here, we discuss the MOMA laser desorption mass spectrometer (LDMS) sensor subsystem (MOMA_LDMS) that incorporates several methods of volatilizing and ionizing chemical compounds from intact samples without further processing or manipulation. State-of-the-Art laser desorption coupled to an ion-trap mass spectrometer provides enhanced mass resolution over a broad dynamic range and detailed structural information on key organic molecules and compounds. Preliminary results on several Martian analog samples and carbonaceous chondrites using our MOMA LDMS breadboard instrument will also be presented.