

## Mars Organic Molecule Analyzer (MOMA): Instrument Concepts and Results

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The Mars Organic Molecule Analyzer (MOMA) is a powerful multi-source mass spectrometer-based instrument suite for investigation of potential life on Mars. MOMA has been selected as a core element of the Pasteur payload on the ESA ExoMars mission that will launch in 2016. The MOMA instrument is the next generation design for *in situ* life detection instrumentation. The MOMA suite includes a gas chromatograph (GC) and a 266 nm Nd:Yag laser allowing for several methods of volatilizing and ionizing chemical compounds from intact samples over a broad mass range with little or no sample manipulation. Both the LD and GC share an ion-trap mass spectrometer for the detection of volatile (amino acids) and more 'labile' or heavier (small peptides) up to 2000 atomic mass units (amu). The Ion Trap Mass Spectrometer (ITMS) provides enhanced mass resolution over a broad dynamic range and detailed structural information (MS/MS) on specific (single mass) organic molecules and compounds in a given sample substrate. In this paper, we present our current MOMA-LDMS prototype design and some preliminary results on organic compounds of interest including several Martian 'analogue' samples.