

## Searching for Possible Life Signatures on Planet Mars

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*Abstract: According to a well-known and popular thesis in natural sciences: “The water is the bed of life.” Where water exists or was existing, there we meaningfully can search for existing or past-away life forms. Water was existing on planet Mars in the past, as verified by the two – and still working – NASA rover robots in the past four years. They identified crystals on the Mars surface that could not have come to existence without the presence of water, stated by scientists familiar with geo-chemistry. The purpose of the currently (2008) ongoing NASA Phoenix space mission, using on-site electro-chemical laboratory measurements started in early June and lasting till late December, is to initiate the search for life signatures on the Mars surface near the planet’s North Pole, where the surface resembles the tundra-like surfaces on Earth, and water molecules under the uppermost surface layers were identified from spectroscopic data of the Mars Odyssey orbiter. This presentation offers a brief overview of the research capabilities of the Phoenix spacecraft which successfully landed on Mars in May 2008, and briefly describes the completed search activities and the obtained on-site laboratory results as of mid October. The Phoenix spacecraft is a standing (not roving!) laboratory. Its robotic arm can perform search activities on about one square meter Martian surface area near the landing site. The next Mars Science Laboratory (MSL) mission – planned for launch from Earth in 2009 – will employ a heavy-duty robot rover and utilize a new landing technique. This presentation concludes with a brief description of the major new capabilities of the MSL spacecraft.*