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ESA’s Mars Express and NASA’s Mars Exploration Rovers have discovered extensive deposits of sulfate minerals on the surface of Mars. These findings provide some of the most compelling evidence that there were once large deposits of liquid water on the Martian surface. We have performed a kinetic study investigating the stability of MgSO₄ brine solutions under simulated Martian conditions. This included precise control of temperature (0 °C), pressure (6-7 mbar) and atmospheric composition (100% CO₂). Our results indicate that highly concentrated brines (20-25 wt%) dramatically alter the evaporation/sublimation rates when compared to water/water ice, with a rate approximately 10 fold lower than expected. These concentrated brines also promoted the existence of metastable liquids, which suggests a unique niche for Martian life. Sulfate reduction is thought to be one of the earliest forms of respiration to arise on the early Earth. This is based on a wide range of evidence, including phylogenetic studies of present day sulfate reducers and isotopic fractionation studies of sulfur bearing minerals. Therefore sulfate-reducing microorganisms potentially serve as a model for Martian life. The ability of sulfate-reducing microorganisms to survive and possibly grow under simulated Martian surface and subsurface conditions is currently being investigated. This research will explore the utility of sulfate reduction as a form of respiration for Martian microbes, give valuable insight into possible biosignatures produced by such organisms on Mars, and provide an initial glimpse into the energetics of such a system.

These are the instructions for the Abstracts for the Bioastronomy 2007 meeting. In the abstract please include the title, all the authors and all their affiliations. Please provide the email address for only the lead author. The “Nnn” in the title will be the abstract number, which we will edit later. The abstract length is 250 words. The abstract is due online on February 15, 2007, by 23:59 Hawai’ian Standard Time (HST=GMT – 10 hours). The abstracts will be reviewed by the Scientific Organizing Committee, and those accepted will be published in the journal Astrobiology, and a special volume will be passed out at the meeting as part of the registration packet. Paper acceptance notifications will be sent out and a program online no later than April 1, 2007. We also plan to have refereed proceedings from the meeting. The editors will be Karen Meech, Michael Mumma, Janet Siefert, and Dan Werthimer. We are currently making decisions on the publisher, paper length and format, and submission deadlines, and this information will be up on our meeting web page as soon as available.
It is important to note that the meeting pre-registration deadline is earlier than the abstract
deadline: **January 15, 2007**. This is because of some required payments that need to be made in advance to the hotel. We strongly encourage people to book early; this will help us know the meeting financial picture better and may allow us to offer more travel support earlier. We are currently seeking funds for travel support. Please submit requests online through the meeting webpage:  www.ifa.hawaii.edu/UHNAI/bioast07.htm