

SPACE LIFE SCIENCES SYMPOSIUM (A1)  
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OBSERVING NATURE OF EARTH'S MICROBES ON MARS AND BRINGING BACK THE  
SPACECRAFT ALONG WITH MARS'S SOIL AND ROCK SAFELY**Abstract**

This paper attempts at description of i) a proposed exploration through controlled experiments, of the potential for survival in the Mars environment, of two species of micro-organisms, known for their robustness, found on the earth, soil samples of the Mars, ii) the proposed structure of the MARS module that carries the payload to the Mars and brings the Mars soil samples and the micro-organisms back to the earth. The size and the weight of the MARS module, the means of launching into the orbit, lifting off at the Mars and re-entry and recovery, the trajectories and the duration of the mission are expected to be similar to those of the last NASA mission to the mars.

i)For the proposed study, two species of micro-organisms, known for their robustness, found on the earth are chosen. These organisms (Tardigrades and Deinococcus radiodurans), are carried to the Mars, in a spacecraft. A series of experiments are proposed to be conducted, in which these are exposed in a controlled manner, to the environment of the Mars, on the surface and under the soil over a long duration of time and the health of these organisms is monitored. The environmental parameters obtainable on the Mars that differ in value substantially from those on the earth are, the pressure, temperature, oxygen content of the atmosphere, the ultra-violet, x-ray or cosmic radiation over the surface, and the active chemical composition of the soil. The receptacle for these organisms, the proposed method of controlled exposure, the instrumentation and equipment required for the measurement, data processing and transmission to the earth are described.

ii)The structure of the proposed MARS module, resembling much like an eggshell is shown in some detail. An animated graphic showing the structure of the MARS module and various stages of the mission of the vehicle is played.

Results supporting the proposed mission plan will be shown