

Equipments for life search exploration on Mars

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Among the planets and giant satellites in our solar system, the characteristics of Mars are most similar to those of Earth. This may suggest that it may be possible for life similar to terrestrial life to arise and to survive on Mars.

Here we propose a new life detection project on Mars to search for methane-oxidizing microbes by fluorescence microscopy combined with amino acid analysis and mass spectrometry. We propose to search for cells from a depth of about 5 - 10 cm below the surface, which is feasible with current technology. Microscopic observation can be done using low mass equipment with low electric power consumption, and has the potential to detect single cells. The subsequent analysis of amino acids will provide the information needed to define the origin of the cell.

Keywords: Mars, Life search, Fluorescence microscope, Amino acid analysis, Mass spectroscopy, Methane oxidizer