

Laser technique has implications for detecting microbial life forms in Martian ice

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An innovative technique called L.I.F.E. imaging used successfully to detect bacteria in frozen Antarctic lakes could have exciting implications for demonstrating signs of life in the polar regions of Mars, according to an article published in the current issue of *Astrobiology*.

Michael Storrie-Lombardi, PhD, from Kinohi Institute (Pasadena, CA), and Birgit Sattler, PhD, from the University of Innsbruck, Austria, used laser-induced fluorescence emission (L.I.F.E.) imaging to detect red and infrared fluorescence activity produced by cyanobacteria present in the [ice](#) of frozen Antarctic lakes. This noninvasive technique does not destroy individual target organisms or disrupt the structure of microbial communities or the surrounding ice matrix.

The authors' work, described in the article "Laser-Induced Fluorescence Emission (L.I.F.E.): In Situ Nondestructive Detection of Microbial [Life](#) in the Ice Covers of Antarctic Lakes" was conducted as part of the 2008 Tawani International Expedition to Schirmacher Oasis and Lake Untersee in Dronning Maud Land, Antarctica.

This L.I.F.E. technique, which required minimal, inexpensive, off-the-shelf equipment, demonstrated a promising, feasible strategy for detecting photosynthetic activity of [microbes](#) via orbital monitoring of ice formations on Earth, on Mars, and in frozen regions of planets in nearby star systems. The technique could also be employed by an interplanetary rover conducting on-site analyses and sample collection.

More information: The article is available free online at
www.liebertpub.com/ast

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