



Sensors

## Remote Sensing Based on Fluorescence LIDAR

Can detect and identify a wide range of chemicals  
from a distance and in real time

NASA Goddard Space Flight Center has developed BILI, the Bio-Indicator Lidar Instrument, for remotely sensing or sniffing life on distant planets. The device will be capable of autonomously search for bio-signatures and perform ground level aerosol analysis from afar, which will help reduce the risk of sample contamination that could skew the detection results. BILIs measurements do not require consumables other than electrical power and they can be conducted quickly over a broad area.

### BENEFITS

- Detects and discriminates small levels of complex organic materials in real-time
- Detection can occur up to several hundred meters
- No consumables are required

technology solution



## THE TECHNOLOGY

As originally developed, BILI is a novel planetary Astrobiology instrument based on a real-time technique of remote detection and discrimination of bio-signatures dispersed in the ground-level planetary atmosphere, leveraging the fluorescence lidar technology. Capabilities of this first planetary atmospheric bio-indicator survey instrument will dramatically increase the probability of finding the signatures of extraterrestrial life by performing atmospheric volume scans of hundreds of meters in a radial direction around the rover or lander. The Bio-Indicator Lidar technology employs real-time aerosol particle detection and discrimination based on two physical variables: particle fluorescence and particle size in the bio-discrimination space.

## APPLICATIONS

The technology has several potential applications:

- Remote Sensing
- Homeland Security
- Environmental Monitoring

## PUBLICATIONS

Patent Pending

National Aeronautics and Space Administration

**Strategic Partnerships Office**

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