

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 created BILLI, the Bio-Indicator Lidar Instrument, for faraway sensing and sniffing life on distant planets. The device will be able to search for signs of past or present life without any human assistance. Additionally, this device can perform a ground level analysis of the atmospheric contents from far away. This ability will help make the detection results of signs of life more accurate. BILLI's measurements do not require resources other than electrical power and they can be carried out quickly over a large area.

Benefits:

- Detects small amounts of complex organic materials and categorizes them at the same time
- Can detect these organic materials from several hundred meters away
- Doesn't require nonrenewable resources that tend to be used quickly

Applications:

- Sensing from far distances
- Homeland security
- Observing the environment

Description of technology:

BILLI is a planetary astrobiology instrument based on a real-time technique of remote detection, meaning the data is detected from far away and then processed in milliseconds to be used immediately as feedback. BILLI also uses a real-time remote discrimination technique, allowing it to classify the detected signs of life found at the ground-level planetary atmosphere immediately. This first planetary atmospheric bio-indicator instrument will increase the chances of finding extraterrestrial life, such as aliens, because it can be built into rovers and landers to search planets from far away.

Original source: <https://technology.nasa.gov/patent/GSC-TOPS-168>