

## News &amp; Comments

## An Alien Atmosphere Can Be Detected by the Webb Telescope

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So far, Earth is the only known place in the universe with life. Modern astronomy and planetary science are working hard to find signs of life beyond Earth. Two scientists Chris Impey and Daniel Apai in a blog post at the conversation explained that the chemical makeup of atmospheres of planets around other stars can soon be measured with the help of the James Webb telescope, in search of the chemical signature of life. These scientists study exoplanets and astrobiology. The first sign of life may be found on planets orbiting other stars, according to many astronomers. According to theoretical calculations, there are around 300 million habitable planets in the Milky Way galaxy alone, and several habitable Earth-sized planets within only 30 light-years of Earth. Indirect methods that measure how a planet affects its nearby star have so far helped astronomers discover over 5,000 exoplanets, some of them potentially habitable. Only the mass and size of an exoplanet can be determined by these measurements. Astrobiologists study starlight that interacts with the surface or atmosphere of distant planets to detect life. There may be a "biosignature" in the light if the air or surface was transformed by life. Exoplanet light can be detected by James Webb using early data. It will soon turn its mirrors toward TRAPPIST-1e, a potentially habitable planet 39 light-years from Earth. By studying planets as they pass in front of their host stars and capturing starlight that filters through planets' atmospheres, Webb can search for biosignatures, but because it's not designed to search for life, it can only investigate a few of the nearest potentially habitable worlds. Carbon dioxide, methane, and water vapor are also the only gases it can detect. However, Webb is unable to detect unbonded oxygen, the strongest indication of life, in certain combinations of these gasses. Future space telescopes might use small, internal masks or large, external spacecraft that resemble umbrellas. Light bouncing off a planet becomes much easier to study once the starlight is blocked. There are also three enormous, ground-based telescopes currently under construction that will be able to search for biosignatures: the Giant Magellan Telescope, the Thirty Meter Telescope, and the European Extremely Large Telescope.

**KEYWORDS**

Astronomy, Exoplanets, Physics, Chemistry, Astrobiology, Stars, Optics, Algae, Light, Aliens, TRAPPIST, James Webb Space Telescope, James Webb

