

Molecular oxygen has been spotted beyond the Milky Way for the first time

The elusive molecule turned up in a quasar more than half a billion light-years from Earth

By **Ken Croswell**

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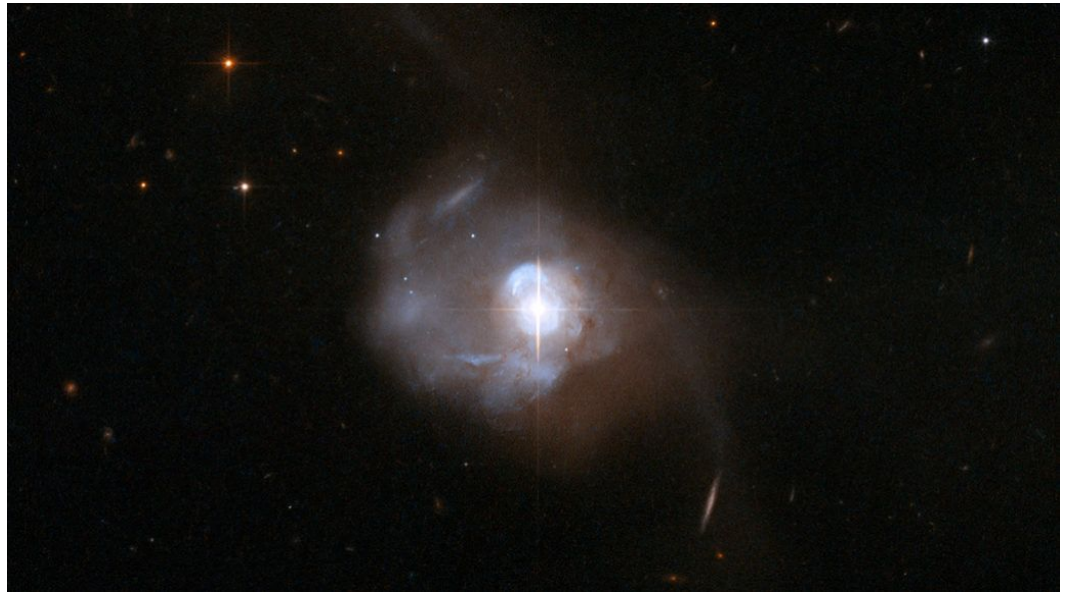
For the first time, astronomers have found molecular oxygen — the same gas humans need to breathe — in a galaxy outside the Milky Way.

Oxygen is the third most common element in the cosmos, after hydrogen and helium. So astronomers once thought molecular oxygen, O₂, would be common in the space between the stars. But despite repeated searches, no one had ever seen molecular oxygen beyond our galaxy — until now.

Junzhi Wang, an astronomer at Shanghai Astronomical Observatory in China, and his colleagues spotted the molecule's calling card in a galaxy named Markarian 231. Lying 560 million light-years away in the constellation Ursa Major, [Markarian 231 is the nearest galaxy to Earth that contains a quasar](#), where gas whirls around a supermassive black hole and gets so hot that it glows brilliantly. (SN: 8/31/15).

Using radio telescopes in Spain and France, the astronomers saw radiation at a wavelength of 2.52 millimeters, [a signature of O₂'s presence](#), the team reports in the Feb. 1 *Astrophysical Journal*. “This is the first detection of molecular oxygen in an extragalactic object,” Wang says.

Excerpted from: <https://www.sciencenews.org/article/molecular-oxygen-spotted-beyond-milky-way-first-time>



Questions:

1. Who found molecular oxygen outside the Milky Way?
2. What is the “calling card” of oxygen referred to in paragraph 3?
(HINTS: How did the astronomers know oxygen was in Markarian 231?
What does it mean to ‘spot’ something?)

3. Using the chart below:

What would we call the radiation that the researchers detected?

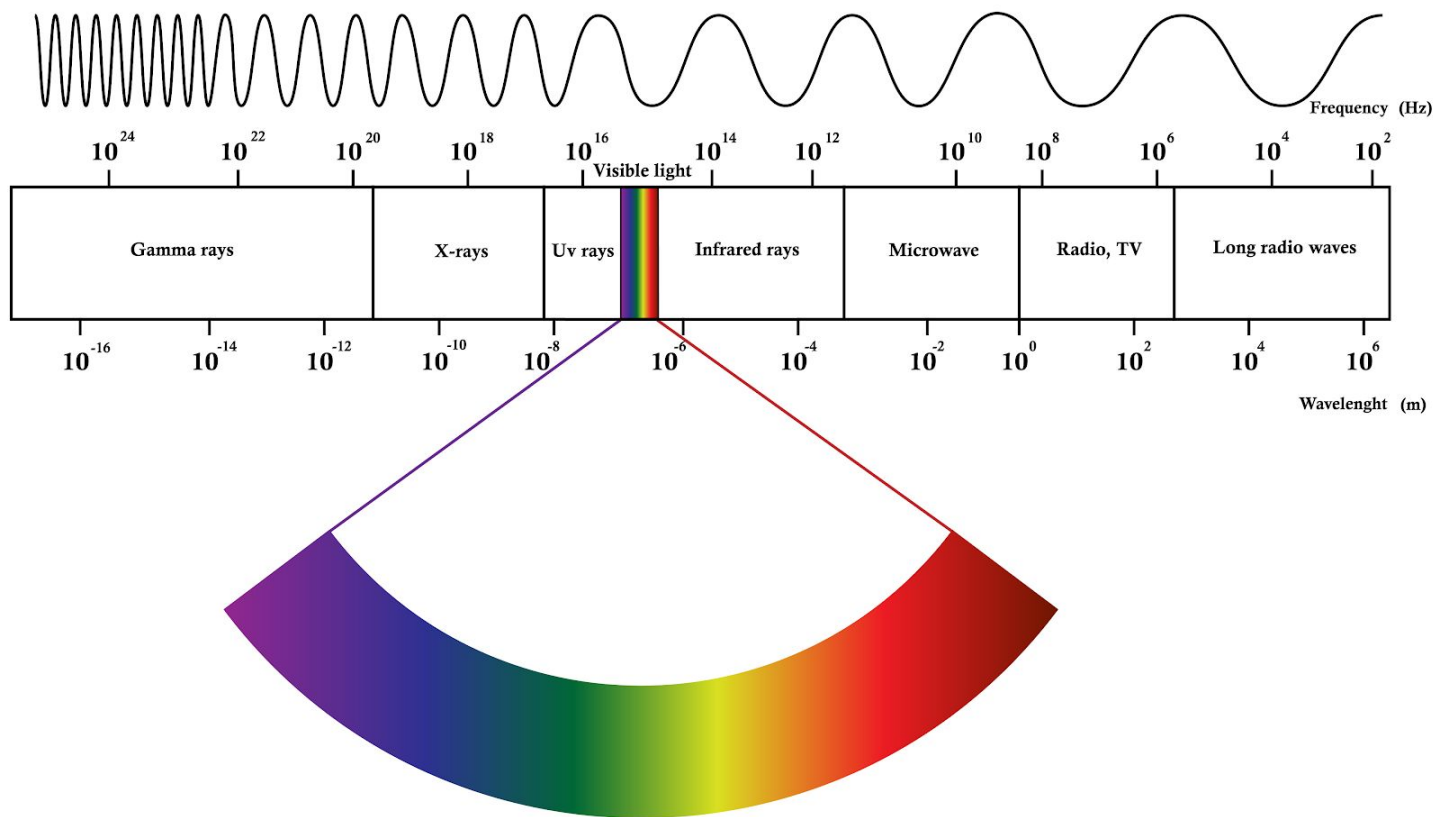


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