

JWST Detects Carbon Dioxide in a Centaur

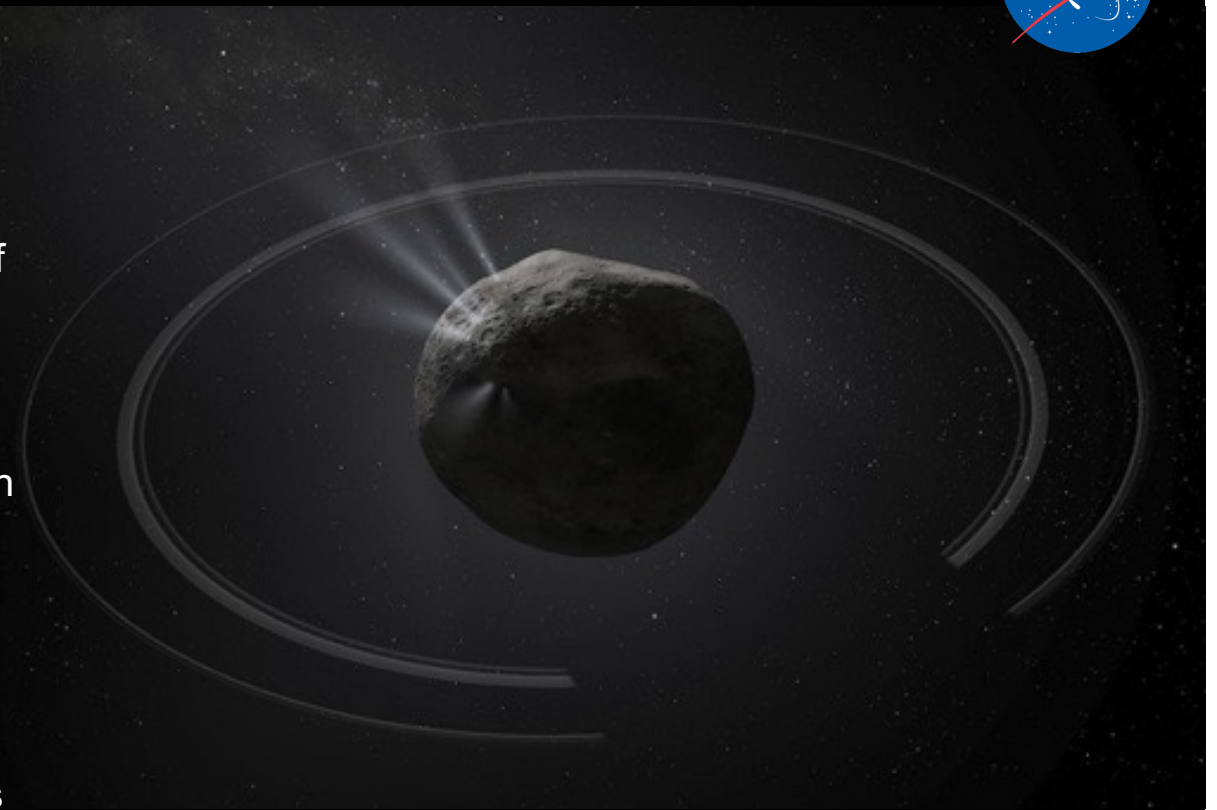


For the first time, NASA's James Webb Space Telescope (JWST) detected carbon dioxide in a Centaur, in this case the object 39P/Oterma. A Centaur is a small planetary body that orbits between Jupiter and Neptune and frequently crosses the orbits of one or more of the gas giant planets within our solar system.

The team of researchers, including planetary scientists from Goddard, used JWST's Near-Infrared Spectrograph (NIRSpec) instrument and ground-based observations from the Gemini North Observatory and Lowell Discovery Telescope to investigate the characteristics of 39P/Oterma in July 2022, as it passed the closest distance to the Sun in its orbit.

Centaur's have attributes of both asteroids and comets, but the amount of carbon dioxide detected was lower than seen in any comet. Water and carbon monoxide, gases common to Centaurs and comets, were not detected.

This discovery could mark a turning point in how scientists understand the formation, evolution, and composition of not only Centaurs, but of the early Solar System.



*Artist's illustration of the Centaur object Chiron, a comet-asteroid hybrid orbiting between Saturn and Uranus.
Image: Dan Durda, Astronomy Magazine.*

Paper: O. Pinto, M. Kelley, G. Villanueva (690), S. Faggi (693), M. DiSanti (693), et al. 2023, *Planetary Science Journal* 4, 208.

Press release: <https://www.universetoday.com/164066/jwst-detects-carbon-dioxide-in-a-centaur-for-the-first-time/>