

# The Makeup of Comets

August 9 2004

---

A new method for looking at the composition of comets using ground-based telescopes has been developed by chemists at UC Davis. Remnants from the formation of our solar system, the makeup of comets gives clues about how the Earth and other planets formed.

William Jackson, professor and chair of chemistry at UC Davis; researchers Alexandra Scodinu and Dadong Xu; and Anita Cochran of the University of Texas at Austin have developed methods to use visible and ultraviolet spectroscopy to study the chemical composition of comets.

Spectroscopy, a powerful technique in chemistry, splits light into a spectrum of color. Chemicals show a distinct pattern of peaks or lines in a spectrum. But the emission spectrum of comets in the visible and ultraviolet bands is full of thousands of lines, making it difficult to identify any one component.

The researchers took one suspected chemical, carbon disulfide, and used spectra measured in the laboratory under conditions similar to those in a comet. They compared this spectrum with that from comet 122P/De Vico to identify carbon disulfide in the comet. The spectrum of this molecule is such that it could not have been detected by other methods.

The technique makes it possible to look at the chemical composition of comets on their first visit to the inner solar system, which are difficult to reach with space probes and may have a different composition than comets that have been close to the sun many times, Jackson said.

Detection of organic compounds such as benzene would show that these and more complex chemicals were present in the early solar system and could have contributed to the origins of life, he said.

The research is published in the June issue of the Astrophysical Journal.

Source: [UC Davis](#)

Citation: The Makeup of Comets (2004, August 9) retrieved 11 May 2024 from <https://phys.org/news/2004-08-makeup-comets.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.