

Chemistry is Out of This World: Dry Ice on Mars

Space scientists discovered dry ice on Mars by closely observing the planet's changing temperature and atmosphere.

Dry ice is also found on Mars! Each Martian winter, a large amount of carbon dioxide in the atmosphere undergoes a process called *deposition*, changing directly from a gas to a solid. This solid carbon dioxide, or dry ice, covers the water-ice polar caps in each hemisphere. Scientists are still trying to understand how this dry ice reaches the ground—does it fall like snow, or form like frost on a window? When the weather becomes warmer, the dry ice sublimates, just like in our activity, and rejoins the atmosphere as carbon dioxide gas.

Just as every person has a different fingerprint, every chemical element absorbs and emits light differently. Scientists analyze the colors and brightness of light reflected off of planets (and stars!) to learn more about the chemicals that light interacted with. In the 1940s, scientists studied infrared light from the surface of Mars, and noticed the spectrum “fingerprint” for carbon dioxide. A different group of scientists was able to discover the planet's typical temperature range by measuring thermal energy reflected from the Martian surface. This temperature range includes all the right conditions for dry ice to form and sublimate with the seasons.



Scientists discovered
dry ice on Mars
using chemistry!