Xenon Encyclopedia Article

Xenon

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Xenon

Xenon is a noble gas element denoted by the atomic symbol, Xe. It has an atomic number of 54 and an atomic weight of 131.29. Under ordinary conditions, xenon is a colorless, odorless, and tasteless gas that exists in the atmosphere in small quantities. It is monatomic and becomes liquid at -162.4°F (-108°C). In the family of inert gases, xenon stands out as the only one that forms chemical compounds that are stable at room temperature.

Xenon gets its name from the Greek word for *strange* or *foreign* because it was so hard to find and understand. It was first isolated by Sir William Ramsay and British chemist Morris Travers (1872-1961) in 1898. Earlier, Ramsay had discovered argon and helium; with Travers, he continued to search for the remaining elements in the inert gas family, which they theorized must exist due to the gases' position on the periodic table. They identified xenon by the characteristic color of its spectral lines.

In 1962, British chemist Neil Bartlett (1932-) created a stable compound of xenon, platinum, and fluorine ($XePtF_6$). Because of his discovery, this family of gases is often called *noble* rather than *inert*. Scientists soon formed compounds with some of xenon's sister elements, but none are stable under normal conditions. Although journalists at the time were quick to claim a revolution in chemistry, the possibility that noble gas compounds might exist had been predicted decades earlier, and their actual formation did little to revise scientific thought concerning chemistry.

Although traces are also found in minerals, air is the only commercial source of xenon, which is produced by separation from liquefied air. Today, xenon is used in brilliant arc lamps for motion film projection, in high-pressure ultraviolet radiation lamps, and in special flashbulbs used by photographers. In a vacuum tube, it produces a brilliant blue glow when excited with electricity. One of xenon's radioactive isotopes is used to trace the movement of sands along the coasts of the ocean. Xenon has also found a niche in high-energy physics as a liquid used in bubble chamber s, which detect nuclear radiation. Experimental applications of xenon include its use during diagnostic procedures to clarify X-ray pictures of the human brain. Xenon is also used as a anesthetic.