Iridium Encyclopedia Article

Iridium

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Iridium

Iridium, atomic number 77, is an extremely dense element belonging to the platinum group of metals. It has an atomic weight of 192.22 and is denoted by the atomic symbol Ir. At ordinary temperatures, iridium is a silver-white metal that resists corrosion better than most other elements. The metal is reasonably ductile when hot, but can become brittle when cooled.

During the 1700s, the valuable metal platinum was extracted by dissolving its ore in a mixture of nitric acids and hydrochloric acids. This technique, however, always left a residue of black powder, and pure platinum remained difficult to obtain. Most scientists thought that the powder was carbon in the form of graphite. In 1803 three French chemists-- Hippolyte-Victor Collet Des Cotils (1773-1815), Antoine-François de Fourcroy (1755-1809), and Louis-Nicolas Vauquelin--guessed that some new element might be present.

But Smithson Tennant, an English chemist, was the only person to recognize that the black powder contained two new metallic elements, which belong to the family of transitional elements on the periodic table. He discovered the first of these in 1804 and named the heavy, white metal iridium, after the Greek goddess of the rainbow, Iris, because the metal's compounds are brilliantly colored. A year later, Tennant isolated the second metal, osmium. Today, iridium is still produced from platinum ores, and separating the platinum from the iridium remains a tedious, complex process.

Although pure iridium is used in special aircraft spark plugs, it is too brittle to be used by itself in most applications. Iridium mainly serves as a hardening agent in alloys containing platinum, which are almost as resistant to corrosion as iridium but much easier to fabricate.

Jewelry, pen points, and compass bearings are often made of iridium alloys. In industry these alloys are commonly used to make equipment that must survive very high temperatures and corrosive environments. For example, containers that are used in melting glass or growing laser crystals often contain iridium, as do *thermocouple*s --instruments designed to measure temperature and heat--and surgical instruments. Iridium is also used as an insulation that is applied over other materials.