Iridium Encyclopedia Article

Iridium

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Iridium

Iridium is one of the transition **metals**, the elements that occur in the middle of the **periodic table**. It is also classified as a member of the **platinum** group of metals, along with **ruthenium**, **rhodium**, **palladium**, **osmium**, and platinum. Iridium's **atomic number** is 77, its atomic **mass** is 192.217, and its chemical symbol is Ir.

Properties

Iridium is a silvery white metal with a melting point of 4,429°F (2,443°C) and a **boiling point** of about 8,130°F (4,500°C). It has a **density** of 22.65 grams per cubic centimeter, making it the most dense of all elements. Iridium is neither very ductile nor malleable at room **temperature**, although it becomes more ductile at higher temperatures. Iridium is a relatively inert element at room temperature, although it becomes more active at elevated temperatures and reacts with **oxygen**, the **halogens**, and some other elements and compounds.

Occurrence and Extraction

Iridium is one of the rarest elements in the Earth's crust with an abundance estimated at about two parts per billion. The element usually occurs in combination with one or more of the other platinum family elements. It is extracted by a complex series of reactions by which it is separated from other platinum metals with which it occurs.

Discovery and Naming

Iridium was discovered in 1803 by the English chemist **Smithson Tennant**. Tennant was studying a new mineral that contained a number of platinum metals and discovered a black powder that other chemists had also seen, but had not analyzed. Tennant was able to demonstrate that the black powder was a new element. He chose the name iridium for the element after the Greek goddess Iris, whose symbol is a rainbow. Tennant chose the name because the compounds of iridium have a wide variety of colors ranging from dark red to olive-green to dark green to blue-black.

Uses

Very little iridium is produced each year, probably no more than a few metric tons. Most of the metal is used to make alloys with other members of the platinum family, especially platinum itself. Iridium adds strength to an **alloy**, but such alloys are quite expensive. They are used only for rather specialized purposes, such as sparkplugs in helicopters, electrical contacts, and special types of electrical wires.