186.2
Re
75

Rhenium

Uses of Rhenium

Rhenium is used with platinum as catalysts in production of lead-free high efficiency octane fuel.

It is used in alloys for jet engines and in tungsten and molybdenum alloys.

It is widely used as filaments for mass spectrographs and as electrical contact material.

Discovery

Both Dmitri Mendeleev and Henry Moseley predicted the existence of undiscovered elements using their periodic tables. One of these had properties similar to Manganese, later to be named Rhenium.

Since Moseley arranged elements by atomic number, he knew an element with atomic number 75 was missing.

In 1925, in Berlin, Germany, Walter Noddack, Ida Tacke, and Otto Berg found the new element in platinum ores and columbite using X-Rays.

Their discoveries were disputed by many, but repeated experiments proved that a new element had indeed been discovered.

56 years after Mendeleev had published his periodic table; the periodic table finally contained the 75th element. Rhenium was the second last element discovered with at least one stable isotope.

Rhenium is one of the rarest elements in Earth's crust with an average concentration of 1 ppb!

Properties

Rhenium is a rare, silvery-white, lustrous, dense metal.

It resists corrosion and oxidation but slowly tarnishes in moist air.

Of the elements, only Carbon and Tungsten have higher melting points and only Iridium, Osmium, and Platinum are denser.

Rhenium is one of the five major refractory metals (metals with very high resistance to heat and wear).

Isotopes

Rhenium has 33 isotopes whose half-lives are known, with mass numbers ranging from 160 to 192. Naturally occurring Rhenium is a mixture of two isotopes, ^{185}**Re** and ^{187}**Re**, with natural abundances of 37.4% and 62.6% respectively.