Promethium - Pm

Chemical properties of promethium - Health effects of promethium - Environmental effects of promethium

Atomic number	61
Atomic mass	(147) $g.mol^{-1}$
Electronegativity according to Pauling	unknown
Density	6.475 $g.cm^{-3}$ at 20°C
Melting point	1168 °C
Boiling point	2460 °C
Vanderwaals radius	unknown
Ionic radius	unknown
Isotopes	9
Electronic shell	[Xe] $4f^5$ $6s^2$
Energy of first ionisation	534.6 $kJ.mol^{-1}$
Energy of second ionisation	1050 $kJ.mol^{-1}$
Standard potential	- 2.42 V
Discovered by	Marinsky 1945

Promethium

Promethium is a rare-earth metal that emits beta radius. It is very radoiactive and rare, so it is little studied: its chemical and physical properties are not well defined. Promethium salts have a pink or red colour that coluors the surroundings air with a pale blue-green light.

Applications

Most promethium is used for research purpose. It can be used as beta radiation source in luminous paint, in nuclear batteries for guided missiles, watches, pacemakers and rados, and as a light source for signals. It is possible that in future it will be used as portable X-ray source.

Promethium in the environment

Promethium dose occurs in the Earth's crust in tiny amounts in some uranium ores. It is not stable so it undergoes radioactive decay. All the promethium which might once have existed on Earth when it formed would have vanished within 10000 years.

Health effects of promethium

Promethium has no role to play on living things and is slightly dangerous because of its intense radioactivity. Test on animals showed that it become localized on the surface of bones from which it can be only slowly removed.

Environmental effects of promethium

Promethium is practically non-existent in nature, so it poses no threat to the environment. It has to be haldled carefully because of its high radioactivity.