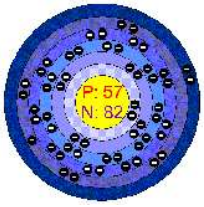
Lanthanum - La

Chemical properties of lanthanum - Environmental effects of lanthanum

Atomic number	57
Atomic mass	138.91 g.mol $^{-1}$
Electronegativity according to Pauling	1.1
Density	6.18 g.cm^{-3} at 20°C
Melting point	920 °C
Boiling point	3464 °C
Vanderwaals radius	0.104 nm (+3)
Isotopes	7
Electronic shell	[Xe] 5d^{1} 6s^{2}
Energy of first ionisation	539 kJ.mol $^{-1}$
Energy of second ionisation	1098 kJ.mol $^{-1}$
Energy of third ionisation	1840 kJ.mol $^{-1}$
Standard potential	- 2.52 V (La^{+3}/ La)
Discovered by	Carl Mosander in 1839



Lanthanum

Lanthanum is a soft, malleable, ductile, silver-white metal. Lanthanum is naturally found in sediments.: it oxidizes rapidly in air and it reacts with water to form the hydroxide. The 1:1 salt lanthanum phosphate (LaPO4) has an extremely low solubility in water, Similarly, lanthanum carbonate (La2(CO3)3) also has a very low water solubility, 1.02 x 10-7 mol/L, calculated from the Ksp of 4 x 10-34 mol5/L5 at 25°C and I = 0 mol/dm3 reported by Martell & Smith (1974).

Lanthanium in the environment / Applications

Lanthanum is used in equipment such as colour televisions, fluorescent lamps, energy-saving lamps and glasses. La_2O_2 is used to make special optical glasses (infrared adsorbing glass, camera and telescope lenses). If added in small amounts it improves the malleability and resistence of steel. Lanthanum is used as the core material in carbon arc electrodes. Lanthanum salts are included in the zeolite catalysts used in petroleum refining because thay stabilize the zeolite at high temperatures. Lanthanum is used in large quantities in nickel metal hydride rechargeable batteries.

Environmental effects of lanthanum

Once lanthanum enters the environment, it binds with carbonate and phosphates. If bound to phosphate, it will form an insoluble mineral called Rhabdophane and remain inert under environmental conditions.