Californium *Cf*

General Information

Discovery

Californium was discovered by S.G. Thompson, K. Street, A. Ghiorso and G.T.Seaborg in 1950 in California, USA.

Appearance

Californium is a radioactive, silvery metal.

Source

Californium did not exist in weighable amounts until ten years after its discovery. The usual method of preparation, producing milligram amounts only, is by neutron bombardment of plutonium.

Uses

Californium is a very strong neutron emitter. It is therefore used as a portable neutron source for the discovery of metals such as gold and silver. One isotope, ^{252} Cf, is used in cancer therapy.

Biological Role

Californium has no known biological role. It is toxic due to its radioactivity.

General Information

Californium is attacked by oxygen, steam and acids, but not by alkalis.

Physical Information

Atomic Number	98
Relative Atomic Mass (^{12}C=12.000)	251 (radioactive)
Melting Point/K	Not available
Boiling Point/K	Not available
Density/kg m^{-3}	Not available
Ground State Electron Configuration	$[Rn]5f^{10}7s^{2}$
Electron Affinity (M-M^{-})/kJ mol^{-1}	Not available

Key Isotopes

Nuclide	^{249}Cf	^{251}Cf	^{252}Cf
Atomic mass	249.07		
Natural abundance	0%	0%	0%
Half-life	360 yrs	900 yrs	2.65 yrs

Ionisation Energies/kJ mol^{-1}

M - M^{+}	608
M^{+} - M^{2+}	
M^{2+} - M^{3+}	
M^{3+} - M^{4+}	
M^{4+} - M^{5+}	
M^{5+} - M^{6+}	
M^{6+} - M^{7+}	
M^{7+} - M^{8+}	
M^{8+} - M^{9+}	
M^{9+} - M^{10+}	

Other Information

Enthalpy of Fusion/kJ mol^{-1}	Not available
Enthalpy of Vaporisation/kJ mol^{-1}	Not available

Oxidation States

Main	Cf^{III}
Others	Cf^{II}, Cf^{IV}

Covalent Bonds/kJ mol^{-1}

Not applicable