

# EUROPIUM

Atomic Number **63**

Chemical Symbol **Eu**

Group **IIIB—Rare Earth Element (Lanthanides)**

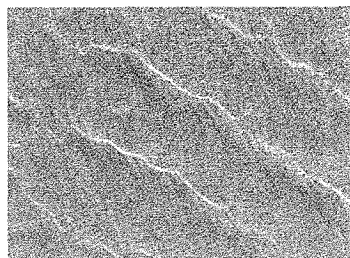
IA																	VIIIA				
H																	He				
Li	Be															B	C	N	O	F	Ne
Na	Mg	IIIB	IVB	VB	VIB	VIIIB	VIII			IB	IIB	Al	Si	P	S	Cl	Ar				
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr				
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe				
Cs	Ba	*La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn				
Fr	Ra	†Ac	Rf	Db	Sg	Bh	Hs	Mt	Uun	Uuu	Uub										
		* Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu																			
		† Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr																			



Europium is one of the rarest of the rare earth elements. In 1901, the French chemist Eugène-Anatole Demarcay finally isolated an impurity in a samarium-gadolinium sample he was studying and identified the impurity as a new element. He named his new element for the continent of Europe. It took many more years before the pure metal was isolated.

As with most of the rare earth elements, the principal ores containing europium are monazite and bastnasite. Monazite contains all of the rare earths as well as thorium and calcium. Monazite is found in river sands in India and Brazil and in beach sand in Florida. Substantial deposits of bastnasite are also found in Southern California. Like most of the other rare earth elements, europium is separated from its ores by an ion-exchange process. Some europium is also recovered from the fission fragments produced in nuclear reactors.

Pure europium metal is a fairly soft, silvery-white metal. It is quite ductile and is one of the most reactive of the rare earth metals. It oxidizes fairly rapidly in air and reacts with water to produce hydrogen. It will ignite spontaneously in air at temperatures above 150°C.



*The mineral monazite, found in Florida beach sand, contains traces of all of the rare earth elements—including europium.*

Europium oxide is fairly widely used as an additive to improve the efficiency of the red phosphor in color television tubes and computer monitors. It is also used to improve the energy efficiency of fluorescent lamps.