Dysprosium Encyclopedia Article

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Dysprosium

Dysprosium is a rare earth metal element which is designated by the atomic symbol Dy. Its atomic number is 66 and its atomic weight is 162.50. It melts at 2,571.8°F (1,411°C) and boils at 4,641.8°F (2,561°C). The element has a bright silver luster. It is soft enough to be cut with a knife and reacts readily with oxygen in moist air. The pure element can be obtained by reacting dysprosium fluoride (DyF_3) with calcium.

The name *dysprosium* comes from the Greek word *dysprositos*, meaning "hard to get at." Like the other rare earth elements, dysprosium is not so much rare in the earth's crust (its abundance is 4.5 to 7.5 parts per million) as it is difficult to separate from the other elements with which it occurs, hence its name.

Dysprosium was discovered by Paul Émile Lecoq de Boisbaudran in 1886. Boisbaudran was patiently separating the mineral known as ytterite into its component parts, discovering three of the rare earth elements-- gallium, samarium, and dysprosium-- along the way. Boisbaudran discovered dysprosium as he was analyzing the portion of ytterite known as holmia. He found that holmia was a complex mixture of the compounds of terbium, holmium, erbium, and a new element, dysprosium. So closely related are the rare earth elements chemically that good separations of the pure metals were not obtained until about 1950.

Dysprosium has relatively few uses. Because of its high affinity for neutrons, it is sometimes used in control rods in nuclear reactors. The metal "soaks up" neutrons the way a sponge soaks up water. Along with other rare earth elements, dysprosium is also used in the manufacture of some types of lasers.