

Actinium Encyclopedia Article

Actinium

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Contents

Actinium Encyclopedia Article.....	1
Contents.....	2
Actinium.....	3

Actinium

Actinium (chemical symbol: Ac) has an atomic number of 89, making it the first member of the second family of rare earth-like elements known as the actinides. All elements in this family, including actinium, are radioactive.

The element occurs as a silver-white metal with a melting point of 1051°C and a boiling point estimated at 3200°C. Its chemical properties are similar to those of the lanthanides, especially lanthanum, which is above it in the periodic table.

Credit for the discovery of actinium is shared between two chemists who independently found the element. The earlier discovery was made by the French chemist André Debierne (1874-1949) in 1899. Debierne found that actinium was precipitated out with other rare earth elements when pitchblende, an ore of uranium, was treated with ammonium hydroxide. He named the element after the Greek words *aktis* or *aktinos*, for "beam" or "ray." The element was rediscovered in 1902 by the German chemist Friedrich O. Giesel (1852-1927).

Eleven radioactive isotopes of the element have been discovered, the most stable of which has a mass of 227. The radiation produced by actinium is very intense, 150 times more powerful than that of radium.

Actinium is commercially available, but has relatively few uses. One isotope, actinium-225, is sometimes used as a tracer in scientific research. The element can also be used for the production of neutrons.