Cerium Encyclopedia Article

Cerium

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Cerium

Cerium is the fourth element in Row 6 of the **periodic table**. It belongs to the family known as the lanthanides, named after the first member of that series, **lanthanum** (atomic number 47). The members of this family are also known as the **rare earth elements**. The name arose originally not because of their scarcity in the Earth's crust, but because of the difficulty of separating the lanthanide elements from each other. Cerium's **atomic number** is 58, its atomic **mass** is 140.12, and its chemical symbol is Ce.

Properties

Cerium is an iron-gray metal with a melting point of 1,463°F (795°C), and a **boiling point** of 5,895°F (3,257°C). Its **density** is 6.78 grams per cubic centimeter. It is ductile and malleable and exists in four different allotropic forms.

Cerium is a relatively active metal. It can be set on fire simply by scratching the surface with a knife. It also reacts slowly with cold **water**, rapidly with hot water, and with most acids.

Occurrence and Extraction

Cerium is thought to rank about 26th in abundance among elements found in the Earth's crust with an estimated abundance of 40-66 parts per million. It occurs most commonly in the minerals known as cerite, monazite, and bastnasite.

Discovery and Naming

Cerium was discovered in 1839 by the Swedish chemist Carl Gustav Mosander. Mosander was studying a new rock that had been found outside the town of Bastnas, Sweden, a rock from which six other elements were also to be discovered eventually. Mosander suggested the name of cerium for the element in honor of the asteroid Ceres that had been discovered in 1801.

Uses

Cerium and its compounds have a great variety of uses, many of them in the field of **glass** and **ceramics**. Cerium and its compounds are added to these materials to add **color** (yellow), remove unwanted color, make glass sensitive to certain forms of radiation, add special optical qualities to glass, and strengthen certain kinds of dental materials. Cerium is also used in the manufacture of **lasers** and phosphors used in cathode ray tubes.