

Gadolinium

Gadobenic acid.

Is a chemical element with symbol Gd and atomic number 64. It is a silvery-white, malleable and ductile rare-earth metal. It is found in nature only in combined (salt) form. Gadolinium was first detected spectroscopically in 1880 by de Marignac who separated its oxide and is credited with its discovery. It is named for gadolinite, one of the minerals in which it was found, in turn named for chemist Johan Gadolin. The metal was isolated by Paul Emile Lecoq de Boisbaudran in 1886.

Gadolinium metal possesses unusual metallurgic properties, to the extent that as little as 1% gadolinium can significantly improve the workability and resistance to high temperature oxidation of iron, chromium, and related alloys. Gadolinium as a metal or salt has exceptionally high absorption of neutrons and therefore is used for shielding in neutron radiography and in nuclear reactors. Like most rare earths, gadolinium forms trivalent ions which have fluorescent properties. Gadolinium(III) salts have therefore been used as green phosphors in various applications.

The gadolinium(III) ion occurring in water-soluble salts is quite toxic to mammals. However, chelated gadolinium(III) compounds are far less toxic because they carry gadolinium(III) through the kidneys and out of the body before the free ion can be released into tissue. Because of its paramagnetic properties, solutions of chelated organic gadolinium complexes are used as intravenously administered gadolinium-based MRI contrast agents in medical magnetic resonance imaging. However, in a small minority of patients with renal failure, at least four such agents have been associated with development of the rare nodular inflammatory disease nephrogenic systemic fibrosis. This is thought to be due to the gadolinium ion itself, since gadolinium(III) carrier molecules associated with the disease differ.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

<https://neurosurgerywiki.com/wiki/doku.php?id=gadolinium>

Last update: **2024/06/07 02:53**

