






# Praseodymium.

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## Praseodymium

atomic number	59	140.908	atomic weight
symbol	Pr		acid-base properties of higher-valence oxides
electron configuration	[Xe]4f <sup>3</sup> 6s <sup>2</sup>		crystal structure
name	praseodymium		physical state at 20 °C (68 °F)

	Rare-earth elements and lanthanoid elements		Solid
	Hexagonal		Weakly basic

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Properties: Praseodymium is a soft, silvery, malleable and ductile, valued for its magnetic(paramagnetic), electrical, chemical, and optical properties.

The name praseodymium comes from the Greek word prasinos meaning "green", and didymos "twin".

Uses Used as alloying agents to form high strength metals to be used in aircraft engines.

- It's fluoride forms the core of carbon arc\_lights, which are used in the motion picture industry for studio lighting and projector lights.

- It is used to make certain types of welder's and glass blower's goggles.

- Silicate crystals doped with praseodymium ions have been used to slow a light pulse down to a few hundred meters per second.



## History:

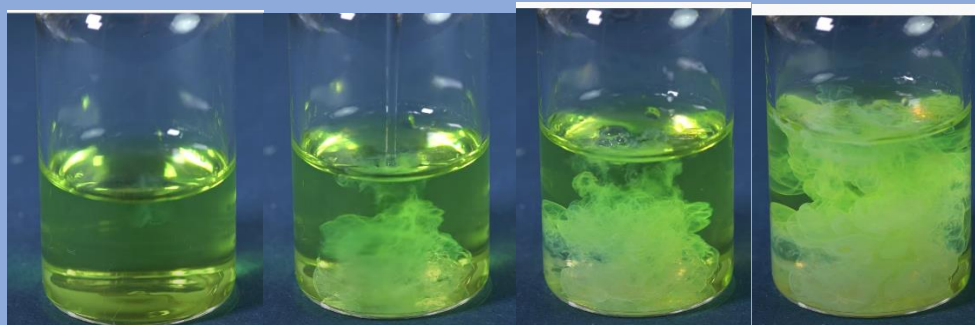
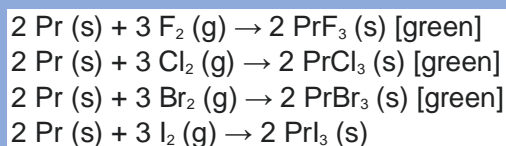
In 1751, the Swedish mineralogist Axel Fredrik Cronstedt discovered a heavy mineral from the mine at **Bastnäs**, later named **cerite**. Thirty years later, the fifteen-year-old **Vilhelm Hisinger**, from the family owning the mine, sent a sample of it to **Carl Scheele**, who did not find any new elements within. In 1803, after Hisinger had become an ironmaster, he returned to the mineral with **Jöns Jacob Berzelius** and isolated a new oxide, which they named *ceria* after the **dwarf planet Ceres**, which had been discovered two years earlier. Between 1839 and 1843, ceria was shown to be a mixture of oxides by the Swedish surgeon and chemist **Carl Gustaf Mosander**. He partially decomposed a sample of **cerium nitrate** by roasting it in air and then treating the resulting oxide with dilute nitric acid. The metals that formed these oxides were thus named *lanthanum* and *didymium*. While lanthanum turned out to be a pure element, didymium was not and turned out to be only a mixture of all the stable early lanthanides from praseodymium. The heavy pair of **samarium** and europium were only removed in 1879 by **Paul-Émile Lecoq de Boisbaudran** and it was not until 1885 that **Carl Auer von Welsbach** separated didymium into praseodymium and neodymium.

Participation in reactions:

Praseodymium is an electropositive element and reacts slowly with cold water and quite quickly with hot water to form praseodymium(III) hydroxide:



Praseodymium metal reacts with all the halogens to form trihalides:



Sodium hydroxide on reaction with praseodymium chloride gives greenish precipitate.