



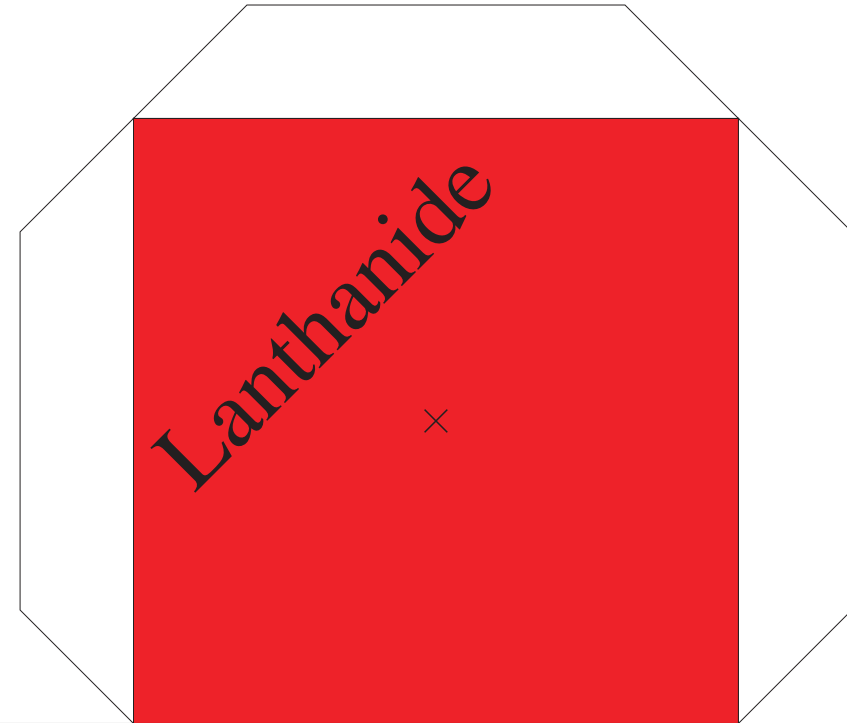
Lanthanum

Lanthanum **La**⁵⁷
 138,91
 1,1
 [Xe] 5d¹6s¹

Lanthanum

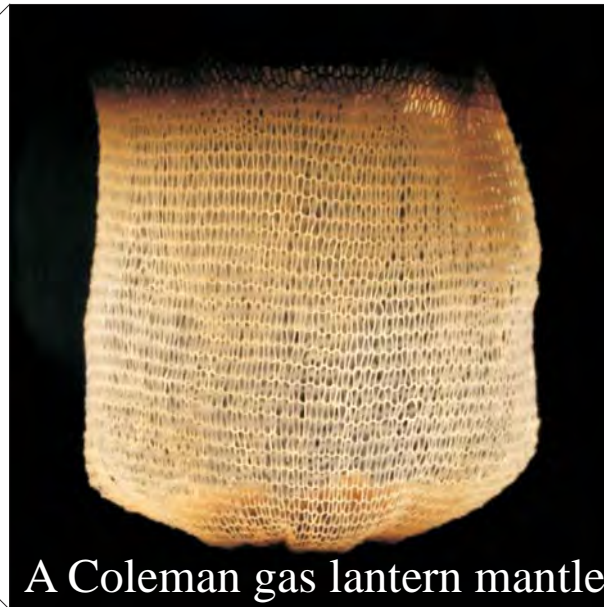
derives from the Greek
"lanthanein" meaning to lie
(hidden).

Lanthanide



Solid
Silvery white,
metallic.

Uses: gas lantern
mantles, camera and
telescope lenses and
hybrid car batteries.



A Coleman gas lantern mantle



Cerium

Cerium

Ce⁵⁸

140,12

1,1

[Xe] 4f²⁶s²

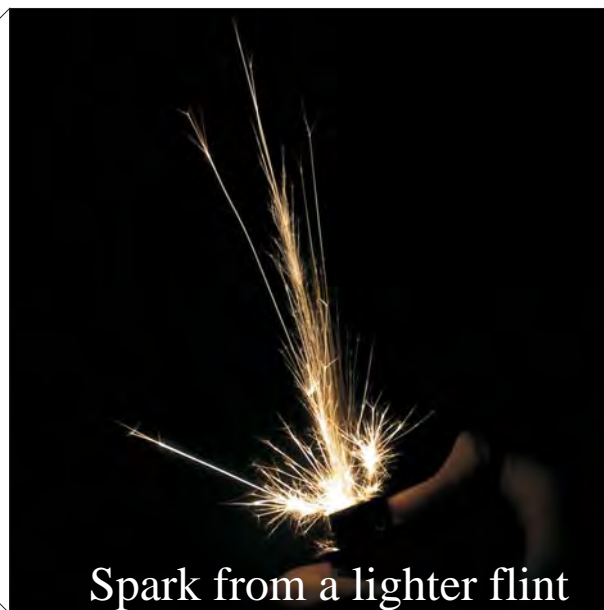
Cerium

is named after the dwarf planet Ceres; ceres is derived from the Latin word meaning "to grow".

Lanthanide

Lanthanide

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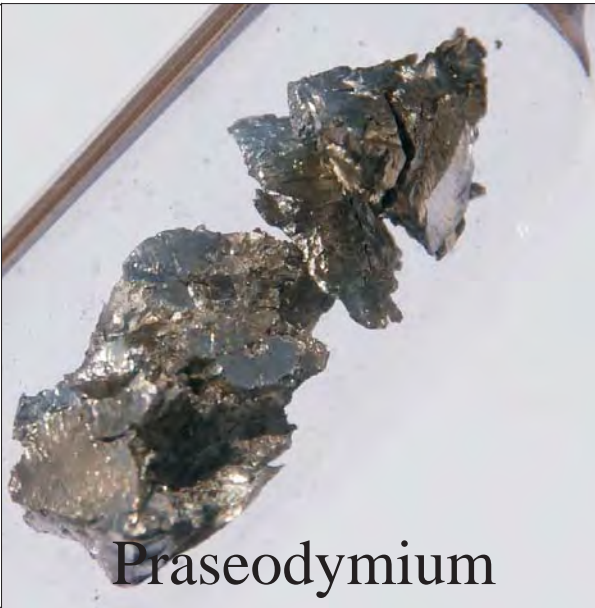


Spark from a lighter flint

Solid

Soft, silvery, ductile metal.

Uses: self cleaning ovens, lighter flints, to polish optical components, in incandescent gas mantles.



Praseodymium

Praseodymium

Pr⁵⁹

140,91

1,1

[Xe] 4f³6s²

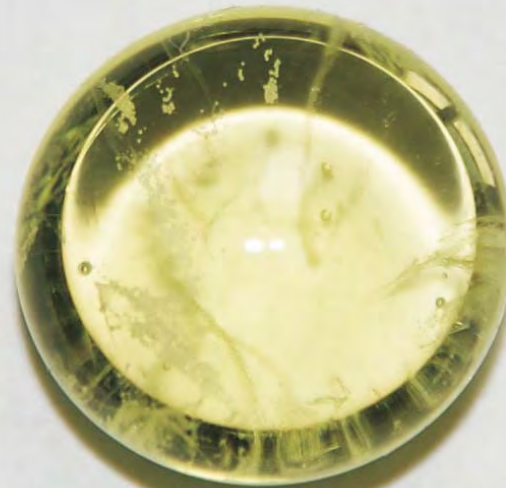
Praseodymium

is named after the Greek
“prasios didymos”, meaning
“green twin”.

Lanthanide

Lanthanide

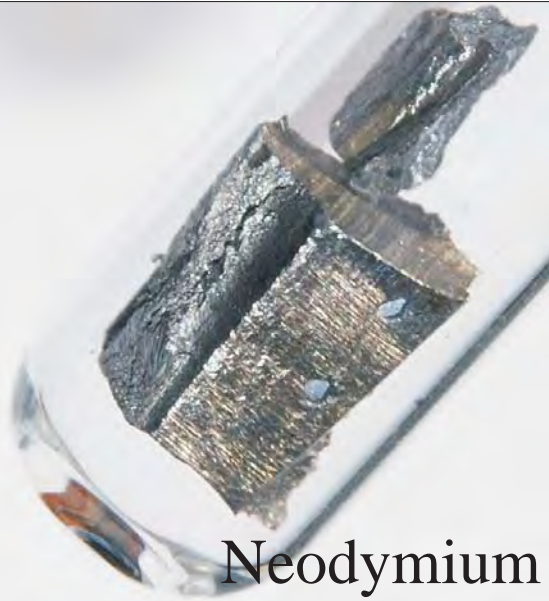
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Praseodymium-colored glass

Solid

Soft, silvery, ductile and malleable metal. Gives glass and enamels a yellow colour; used in alloys for aircraft engines.



Neodymium

Neodymium

Nd⁶⁰

144,24

1,1

[Xe] 4f⁴6s²

Neodymium

is derived from the Greek
“neos didymos”, meaning
“new twin”.

Lanthanide

Lanthanide

×



Neodymium magnet

Solid

Soft, silvery metal.

Used in powerful magnets; to colour glass in shades from violet to wine-red.

Pitchblende
contains
trace amounts
of promethium

Promethium

is named named after
"Prometheus", a Greek god.

Lanthanide

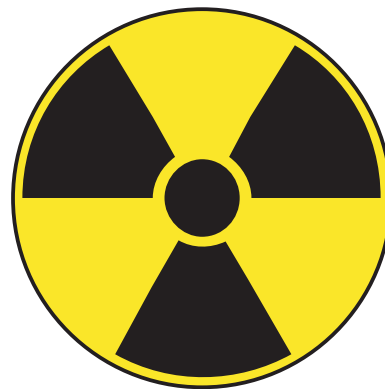
Promethium

Pm^{61}

146,92

1,1

[Xe] $4f^5 6s^2$



^{145}Pm (most stable) decays
with a half-life 17,7 years.

Lanthanide

×

Solid

All promethium iso-
topes are radio-
active; promethium
salts luminesce with
a greenish or pale
blue glow. Was used
in luminous paint.



Samarskite

Samrium

Sm⁶²

150,36

1,1

[Xe] 4f⁶6s²

Samarium

is named after the mineral "Samarskite", which was named after "Colonel Vasili Samarsky-Bykhovets", a Russian mine official.

Lanthanide

Lanthanide

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The discoverer of samarium:
Paul Émile Lecoq de Boisbaudran.

Solid

Hard silvery metal. Samarium-cobalt magnets are used in small motors, headphones. Used in infra-red absorbing glass.

Europium



Europium

Eu⁶³

151,96

1,0

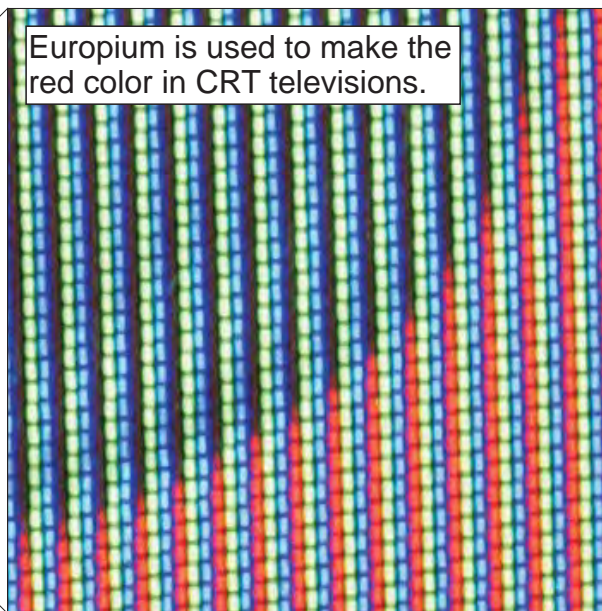
[Xe] 4f⁷6s²

Europium

is named after Europe.

Lanthanide

Europium is used to make the red color in CRT televisions.



Lanthanide

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Solid

Fairly hard silvery metal.

Used in colour TV tubes, mercury and energy saving lamps; Isotopes are good neutron absorbers.



Gadolinium

Gadolinium Gd^{64}
157,25
1,1
[Xe] $4f^7 5d^1 6s^2$

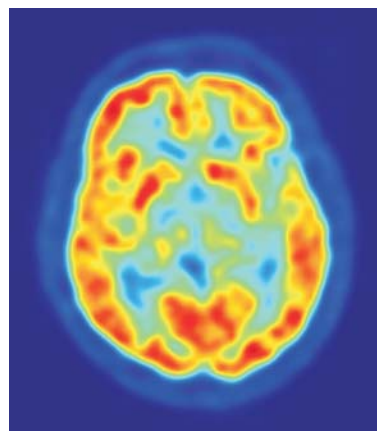
Gadolinium

is named after Johan Gadolin,
a Finnish chemist.

Lanthanide

Lanthanide

Gadolinium-153 is used in
positron emission tomography (PET).



PET scan of the human brain.

Solid

Silvery-white metal,
ductile & malleable.
Used to make green
phosphors for colour
TV; to diagnose
osteoporosis;
in MRI-, PET scans.



Terbium

Terbium

Tb⁶⁵

158,93

1,1

[Xe] 4f⁹6s²

Terbium

is named after "Ytterby", the village in Sweden.

Lanthanide

Lanthanide

×

Terbium sulfate fluoresces green under ultraviolet light.



Terbium sulfate, Tb₂(SO₄)₃

Solid

Silvery-white metal, ductile & malleable.

Used in iPods, fiber optics, TVs and wind turbines.



Dysprosium

Dysprosium

Dy⁶⁶

162,50

1,1

[Xe] 4f¹⁰6s²

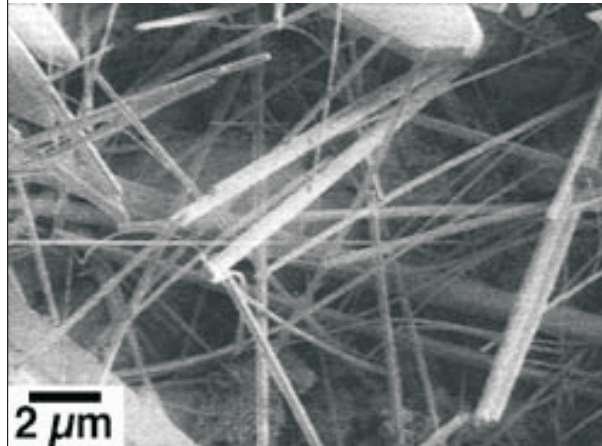
Dysprosium

is derived from the Greek
“dysprositos”, meaning “hard
to get at”.

Lanthanide

Lanthanide

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Dysprosium ceramic fibers

Solid
Metallic silver
lustre.

Used in iPods, laser
materials, CD disks,
wind turbines and
hybrid vehicles.



Holmium

Holmium

Ho⁶⁷

164,93
1,1
[Xe] 4f¹¹6s²

Holmium

is from the Latin "Holmia",
meaning Stockholm.

Lanthanide

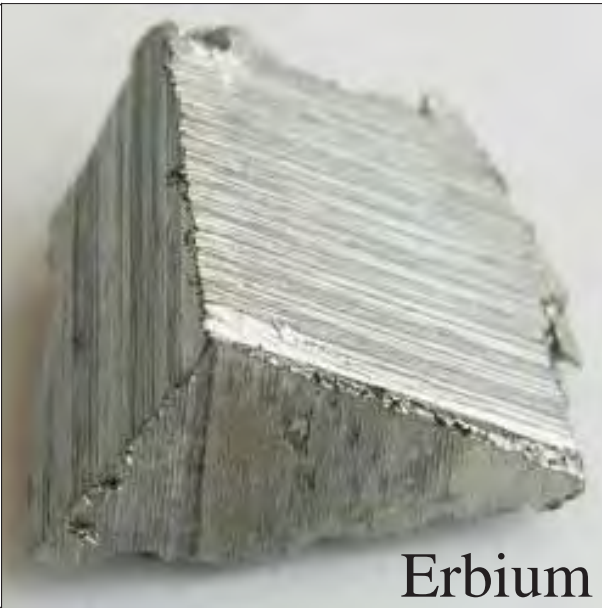
Lanthanide

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Optical calibration standard:
solution of 4% holmium oxide
in 10% perchloric acid.

Solid
silverywhite, metallic, soft & malleable.
Used in microwave
equipment, in lasers,
as yellow or red
colouring for glass.



Erbium

Erbium

Er⁶⁸

167,26

1,1

[Xe] 4f¹²6s²

Erbium

is named after "Ytterby", the village in Sweden.

Lanthanide

Lanthanide

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Monazite sand,
the source of many rare earth metals.

Solid

Silvery-white metal.

Used in fiber optics,
Tvs, pink coloring in
glass and to make
artificial gemstones.

Thulium



Thulium

Tm⁶⁹

168,93

1,1

[Xe] 4f¹³6s²

Lanthanide
×

Thulium

is from the Greek: "Thule", a mythical country in the far north, perhaps Scandinavia.

Lanthanide



Monazite, Ce(PO₄),
from Madagascar

Solid

Silvery-grey metal,
easily workable, but
very rare.

Used in portable X-
ray devices.



Ytterbium

Ytterbium

Yb⁷⁰

173,04

1,1

[Xe] 4f¹⁴6s²

Ytterbium

is named after "Ytterby", the village in Sweden.

Lanthanide

Lanthanide

×



Mobile X-Ray machine

Image from:
http://www.diytrade.com/china/4/products/5679995/Mobile_X-Ray_Machine_50ma.html

Solid

Soft, silvery metal.

Used in dentistry, stainless steel, lasers and portable X-ray machines.



Lutetium

Lutetium

Lu⁷¹

174,97

1,1

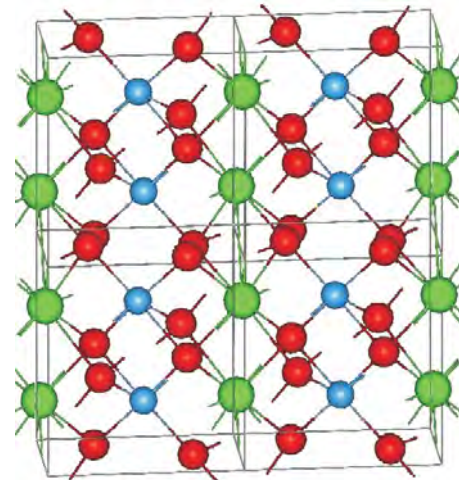
[Xe] 4f¹⁴5d¹6s²

Lutetium

is named after the Latin
"Lutetia", the city of Paris.

Lanthanide

Lanthanide



Structure of LuTaO₄,
with atoms: O(red), Ta(blue) and Lu(green).

Solid

Silvery white metal;
very rare.

Used as a catalyst in
petroleum refineries,
in experimental
nuclear medicine.