

## Promethium muriaticum Natural History

Atomic Weight: 145

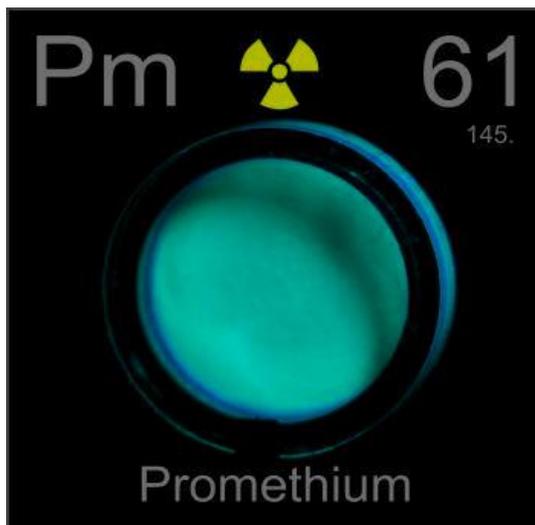
Density: 7.26 g·cm<sup>-3</sup>

Melting point: 1042 C, 1908 F

Boiling Point: 3000 C, 5432 F

### Discovery

**Promethium**, originally **prometheum**, is a chemical element with the symbol **Pm** and atomic number 61. All of its isotopes are radioactive; it is one of only two such elements that are followed in the periodic table by elements with stable forms, a distinction shared with technetium. Chemically, promethium is a lanthanide, which forms salts when combined with other elements. Promethium shows only one stable oxidation state of +3.



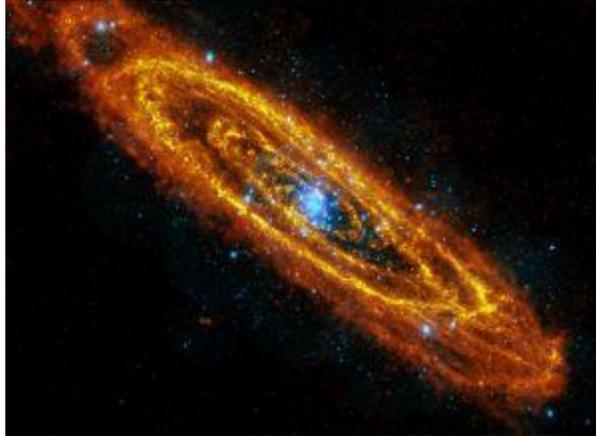
In 1902, [Bohuslav Brauner](#) suggested there was an element with properties intermediate between those of the known elements [neodymium](#) (60) and [samarium](#) (62); this was confirmed in 1914 by [Henry Moseley](#) who, having measured the atomic numbers of all the elements then known, found there was no element with atomic number 61. In 1926, an Italian and an American group claimed to have isolated a sample of element 61; both "discoveries" were soon proven to be false. In 1938, during a nuclear experiment conducted at Ohio State University, a few radioactive nuclides were produced that certainly were not radioisotopes of neodymium or samarium, but there was a lack of chemical proof that element 61 was produced, and the discovery was not generally recognized. Promethium was first produced and characterized at [Oak Ridge National Laboratory](#) in 1945 by the separation and analysis of the fission products of uranium fuel irradiated in a graphite reactor. The discoverers proposed the name "prometheum" (the spelling was subsequently changed), derived from [Prometheus](#), the Titan in Greek mythology who stole fire from Mount Olympus and brought it down to humans, to symbolize "both the daring and the possible misuse of mankind's intellect." However, a sample of the metal was made only in 1963.

Since natural promethium is exceedingly scarce, the element is typically synthesized by bombarding enriched uranium with thermal neutrons to produce promethium-147. Slats of Promethium have a green-yellow color, the air surrounding Promethium is pale blue-green. There is a strange star HR465 in the Andromeda galaxy that contains a lot of Promethium. [1]

Promethium has been identified in the spectrum of star HR 465 in the Andromeda galaxy.

## Uses

Most promethium is used only for research purposes, except for promethium-147, which can be found outside laboratories. This isotope does not emit gamma rays, and its radiation has a relatively small penetration depth in matter and a relatively long half-life.



Promethium is used in pacemakers. Some signal lights use a [luminous paint](#), containing a [phosphor](#) that absorbs the beta radiation emitted by promethium-147 and emits light. This is used in situations when dependable operation is needed. In [atomic batteries](#), the beta particles emitted by promethium-147 are converted into electric current by sandwiching a small Pm source between two semiconductor plates. These batteries have a useful lifetime of about five years. Promethium is also used to measure the thickness of materials by evaluating the amount of radiation from a promethium source that passes through the sample. It has possible future uses in portable X-ray sources, and as auxiliary heat or power sources for space probes and satellites [1]

## Scholten

According to Jan Scholten's book "The Secret Lanthanides" he says:

Promethium can be seen as a contradiction in itself. The Lanthanide aspect is completely individual, whereas the Stage 7 aspect is of working together. This kind of duality can also be seen in Technetium, which was also originally non-existent on earth.

Analysis

### Helping with independence

They want to help other people to be free and independent. They help them to be strong, someone who is in control of themselves. They help other people to take their life into their own hands, to be something special, not ordinary.

### Cooperation in autonomy

They like to work together with people who are also autonomous. They feel autonomy is indispensable for real cooperation. They know that dependence only leads to obedience instead of cooperation.

### Learning to be free

They can even seek many different situations to try themselves out and to expand their independence.

### Teaching the inner world: Humanity

The combination of cooperation and autonomy is very human. Man is given freedom but he doesn't have to be alone in that. Cooperation can even add to freedom and independence. Humanity has created culture, art and sciences through cooperation and freedom, the freedom to think and go where the mind leads us. Dictatorship has always been the biggest enemy of cultural flowering.

They want to teach others to be independent. Because of this they also want to master their inner world. They can become therapists or teachers, helping others to become independent.

Fire or light is symbolic for seeing and insight. Prometheus was helping mankind by bringing them light.

### Sankaran

According to Sankaran, Promethium in Column 7 is representative of:

- The structure is adequate in normal conditions but it needs support in tough conditions. One doesn't need to prove anymore. There is a need of refining, improving, reinforcing, bolstering and fine-tuning

### References.

[1] Wikipedia

[2] "Secret Lanthanides", Jan Scholten. 2005, Stichting Alonnissons.

### **The Myth of Prometheus**

(The myth clearly varies based on the source. Of general agreement seems to be the desire of Prometheus to help man in opposition to the powers that be and of his punishment as a result of this. Below is one version)



The Prometheus myth first appeared in the late 8th-century BC [Greek](#) epic poet [Hesiod's Theogony](#) (lines 507–616). He was a son of the [Titan Iapetus](#) by [Clymene](#), one of

the [Oceanids](#). He was brother to [Menoetius](#), [Atlas](#), and [Epimetheus](#). In the Theogony, Hesiod introduces Prometheus as a lowly challenger to [Zeus](#)'s omniscience and omnipotence.<sup>[6]</sup>

In the trick at Mecone, a sacrificial meal marking the "settling of accounts" between mortals and immortals, Prometheus played a trick against Zeus (545–557). He placed two sacrificial offerings before the Olympian: a selection of beef hidden inside an ox's stomach (nourishment hidden inside a displeasing exterior), and the bull's bones wrapped completely in "glistening fat" (something inedible hidden inside a pleasing exterior). Zeus chose the latter, setting a precedent for future sacrifices.<sup>[7]</sup>

Henceforth, humans would keep that meat for themselves and burn the bones wrapped in fat as an offering to the gods. This angered Zeus, who hid fire from humans in retribution. In this version of the myth, the use of fire was already known to humans, but withdrawn by Zeus. Prometheus, however, stole back fire in a giant fennel-stalk and restored it to mankind. This further enraged Zeus, who sent [Pandora](#), the first woman, to live with men.<sup>[9]</sup>

Pandora was fashioned by [Hephaestus](#) out of clay and brought to life by the four winds, with all the goddesses of Olympus assembled to adorn her. "From her is the race of women and female kind," Hesiod writes; "of her is the deadly race and tribe of women who live amongst mortal men to their great trouble, no [helpmeets](#) in hateful poverty, but only in wealth."<sup>[10]</sup>

Prometheus, in eternal punishment, is chained to a rock in the [Caucasus](#), [Kazbek](#) Mountain, where his liver is eaten daily by an eagle,<sup>[11]</sup> only to be [regenerated](#) by night, due to his immortality. Years later, the Greek hero [Heracles](#) ([Hercules](#)) slays the eagle and frees Prometheus from his chains.

Hesiod revisits the story of Prometheus in the [Works and Days](#) (lines 42–105). Here, the poet expands upon Zeus's reaction to the theft of fire. Not only does Zeus withhold fire from men, but "the means of life," as well (42). Had Prometheus not provoked Zeus's wrath (44–47), "you would easily do work enough in a day to supply you for a full year even without working; soon would you put away your rudder over the smoke, and the fields worked by ox and sturdy mule would run to waste." Hesiod also expands upon the Theogony's story of the first woman, now explicitly called Pandora ("all gifts"). After Prometheus' theft of fire, Zeus sent Pandora in retaliation. Despite Prometheus' warning, Epimetheus accepted this "gift" from the gods. Pandora carried a jar with her, from which were released (91–92) "evils, harsh pain and troublesome diseases which give men death". Pandora shut the lid of the jar too late to contain all the evil plights that escaped, but foresight remained in the jar, giving mankind hope.

Angelo Casanova, Professor of Greek Literature at the University of Florence, finds in Prometheus a reflection of an ancient, pre-Hesiodic [trickster](#)-figure, who served to account for the mixture of good and bad in human life, and whose fashioning of men from clay was an Eastern motif familiar in [Enuma Elish](#); as an opponent of Zeus he was an analogue of the [Titans](#), and like them was punished. As an advocate for humanity he gains semi-divine status at Athens, where the episode in Theogony in which he is liberated is interpreted by Casanova as a post-Hesiodic interpolation.

Aeschylus

[Prometheus Bound](#), perhaps the most famous treatment of the myth to be found among the [Greek tragedies](#), is traditionally attributed to the 5th-century BC Greek tragedian [Aeschylus](#). At the center of the drama are the results of Prometheus' theft of fire and his current punishment by [Zeus](#); the playwright's dependence on the Hesiodic source material is clear, though [Prometheus Bound](#) also includes a number of changes to the received tradition.

Before his theft of fire, Prometheus played a decisive role in the [Titanomachy](#), securing victory for Zeus and the other Olympians. Zeus's torture of Prometheus thus becomes a particularly harsh betrayal. The scope and character of Prometheus' transgressions against Zeus are also widened. In addition to giving humankind fire, Prometheus claims to have taught them the arts of civilization, such as writing, mathematics, agriculture, medicine, and science. The Titan's greatest benefaction for humankind seems to have been saving them from complete destruction. In an apparent twist on the myth of the so-called Five [Ages of Man](#) found in Hesiod's *Works and Days* (wherein Cronus and, later, Zeus created and destroyed five successive races of mortal men), Prometheus asserts that Zeus had wanted to obliterate the human race, but that he somehow stopped him.

Moreover, Aeschylus anachronistically and artificially injects [Io](#), another victim of Zeus's violence and ancestor of Heracles, into Prometheus' story. Finally, just as Aeschylus gave Prometheus a key role in bringing Zeus to power, he also attributed to him secret knowledge that could lead to Zeus's downfall: Prometheus had been told by his mother Gaia of a potential marriage that would produce a son who would overthrow Zeus. Fragmentary evidence indicates that Heracles, as in Hesiod, frees the Titan in the trilogy's second play, [Prometheus Unbound](#). It is apparently not until Prometheus reveals this secret of Zeus's potential downfall that the two reconcile in the final play, [Prometheus the Fire-Bringer](#) or *Prometheus Pyrphoros*, a lost tragedy by Aeschylus.

*Prometheus Bound* also includes two mythic innovations of omission. The first is the absence of [Pandora](#)'s story in connection with Prometheus' own. Instead, Aeschylus includes this one oblique allusion to Pandora and her jar that contained Hope (252): "[Prometheus] caused blind hopes to live in the hearts of men." Second, Aeschylus makes no mention of the sacrifice-trick played against Zeus in the *Theogony*.<sup>[19]</sup>

These innovations reflect the play's thematic reversal of the Hesiodic myth. In Hesiod, the story of Prometheus (and, by extension, of Pandora) serves to reinforce the theodicy of Zeus: he is a wise and just ruler of the universe, while Prometheus is to blame for humanity's unenviable existence. In *Prometheus Bound*, this dynamic is transposed: Prometheus becomes the benefactor of humanity, while every character in the drama (except for [Hermes](#), a virtual stand-in for Zeus) decries the Olympian as a cruel, vicious tyrant.

