

Transmutation of the Elements

Although the conversion of one element to another is the basis of natural radioactive decay, it is also possible to convert one element to another artificially. The conversion of one element to another is the process of transmutation. Between 1921 and 1924, Patrick Blackett conducted experiments in which he converted a stable isotope of nitrogen to a stable isotope of [oxygen](#). By bombarding ^{14}N with α particles he created ^{17}O . Transmutation may also be accomplished by bombardment with neutrons.



Historically, part of Alchemy was the study of methods of creating gold from base metals, such lead. Where the Alchemists failed in this quest, we can now succeed. Thus, bombardment of platinum-198 with a neutron creates an unstable isotope of platinum that undergoes beta decay to gold-199. Unfortunately, while we may succeed in making gold, the platinum we make it from is actually worth more than the gold making this particular transmutation economically non-viable!



[Transmutation of the Elements](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by Hans Lohninger, Andrew R. Barron, Steven B. Krivit, & Steven B. Krivit.