What is an isotope?

Max Sepulveda

29th September 2019

Abstract

This paper presents my research on the subject of isotopes. Isotopes that have the same number of protons and electrons, but a different number of neutrons.

1 Isotopes are...

...atoms that have the same number of protons and electrons, but a different number of neutrons. Changing the number of neutrons in an atom does not change the element. Atoms of elements with different numbers of neutrons are called "isotopes" of that element.
Since neutrons have no electrical charge, changing the number of neutrons does not affect the chemistry of the element. It does, however, change the mass of the element. Isotopes are identified by their mass, which is the total number of protons and neutrons.

- Isotopes are samples of an element with different numbers of neutrons in their atoms.
- The number of protons for different isotopes of an element does not change.
- Not all isotopes are radioactive. Stable isotopes either never decay or else decay very slowly. Radioactive isotopes undergo decay.
- When an isotope decays, the starting material is the parent isotope. The resulting material is the daughter isotope.

2 Examples of isotopes

Carbon 12 and Carbon 14 are both isotopes of carbon, one with 6 neutrons and one with 8 neutrons (both with 6 protons). Carbon-12 is a stable isotope, while carbon-14 is a radioactive isotope (radioisotope).

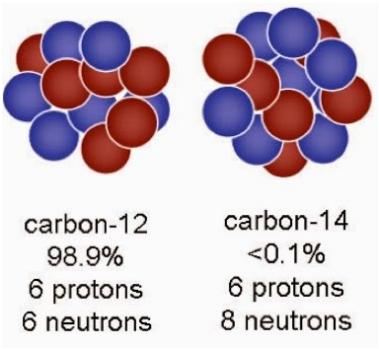

Figure 1: Carbon-12 and Carbon-14 isotopes.

References

[1] Isotopes Definition and Examples in Chemistry https://www.thoughtco.com/definition-of-isotopes-and-examples-604541

[2] Chemistry for Kids Isotopes https://www.ducksters.com/science/chemistry/isotopes.php