Irene Joliot-Curie

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IRENE JOLIOT-CURIE

Nuclear Radiation

Radioactivity

Alpha

Gamma

Beta

Interesting Facts:

Nuclear Sources of Radiation:

Radiation in Everyday Life:

1. Interested in radiation and its effects on living organisms.
2. Conducted experiments on the effects of radiation on seeds and plants.
3. Contributed to the development of the atomic bomb during World War II.

Radioactivity is the emission of particles from the unstable nuclei of certain elements. The main types of particles emitted are alpha, beta, and gamma rays.

Nuclear decay occurs when the radioactive nucleus is disintegrated and the resulting stable nucleus is formed.

Alpha particles are identical to the nucleus of a helium atom, which consists of two protons and two neutrons, however unlike an atom of helium it does not contain electrons, making it a positive particle. These particles are emitted from the nucleus of the parent (original) atom and are repelled by electromagnetic forces. The emission of this positively charged particle changes the original atom into a different element, sometimes causing this atom to be a radioactive isotope of an element or a stable form of the element.

Beta emission can occur from the transformation of the nucleus into a proton, electron, and an antineutrino. A neutrino is a subatomic particle that is much smaller than any other known particle.

Gamma rays are electromagnetic waves that are produced when the nucleus of an atom changes from one stable state to another.

Natural Sources of Radiation:

Cosmic rays, solar wind, and other natural phenomena are all sources of radiation.

Radiation in Everyday Life:

The natural sources stated above.

Sunlight (infrared rays)

Medical imaging tests and treatments (using radiation)

Microwave ovens

Electrons (mobile phones and wireless internet)

If a 100 lb. is subject to prolonged exposure of radiation, the likelihood of cancer increases as the length of exposure and the amount of radiation being used is in the correct amounts.

Harmful or useful?

Boron. Too much or prolonged exposure to radiation can cause mutations within cells, which can lead to cancer or other serious diseases. Involving radiation is the most damaging form of radiation, however it can be used in medical imaging such as X-rays, and in medical therapeutic treatment that is used to treat cancer, as long as the length of exposure and the amount of radiation being used is in the correct amounts.

Interesting Facts:

As Irene Joliot-Curie and Frédéric Joliot were in their process of studying the transmutation of elements they were able to identify the nucleus and the nucleus, they were unable to continue the significance of their results, which was disproved later by Enrico Fermi who was awarded the Nobel Prize for his discovery of the neutron.

By: Erik J. Klein

Irene Joliot-Curie

Born 12 September 1897, Irene Joliot-Curie became one of the four women to be awarded the Nobel prize in Chemistry in 1935. In collaboration with her husband Frédéric Joliot, for recognition of their synthesis of new radioactive elements, her mother being dissuaded by the school system available to children in Paris decided to teach her daughter with the help of Jean Baptiste Perrin (Nobel prize winner in physics), and the physicist Paul Langevin. After being home-schooled, she attended school at College Sévigné and received a degree in mathematics and physics at the Sorbonne. Irene Joliot-Curie started her scientific career as a research assistant in the Radium Institute in Paris, a program that was started by her mother. At the age of 20, she received her Doctor of Science degree for her research of radon, an element that was discovered by her mother and father.

The work that Irene and Frédéric produced was summarized in their paper, "Artificial production of radioactive elements.

Chemical proofs of transmutation of elements", which was written in 1934. Irene Joliot-Curie was the daughter of the two-time Nobel prize winning Marie Curie, who was awarded the Nobel Prize in Chemistry and in Physics. Ironically, Irene Joliot-Curie passed away at the age of 59 on 17th March 1956, due to leukemia that was caused by the exposure of radioactive elements over her years of research.

Radiation is the emission of particles from the unstable nuclei of certain elements. It is caused by the collision of alpha and beta particles.