

Question:

Can we get an example for conversion of mass to energy, as we get an equation of that by formula $E=mc^2$?

Answer:

The formula $E = mc^2$ shows that matter and energy are interrelated, matter can be converted into energy and energy can be converted into mass.

$$E = mc^2$$

Where:

E is Energy in Joules (J)

m is mass in kilograms (kg)

c is the speed of light in meters per second ($m * s^{-1}$) which is $3.0 * 10^8 m * s^{-1}$

$$c^2 = (3.0 * 10^8)^2 = 9 * 10^{16}$$

Example:

Simplest example of mass to energy conversion is fission of Uranium-238

The results are more useful in nuclear reactions, during the fission of 1kg of Uranium-235 about $6.7 * 10^{10} J$ of energy is released. Using the equation $m = E/c^2$ we get

$$m = \frac{6.7 * 10^{10}}{9 * 10^{16}} = 7.4 * 10^{-7} kg = 0.74mg$$

A loss of mass of about 0.000074%, small but definitely measurable.