A gamma rays report biology essay

Have you ever know that Gamma-ray bursts can release more energy in 10 seconds than the Sun will emit the same amount of energy in its entire 10 billion-year lifetime? Have you ever believed that a Gamma-ray is actually the most energetic and most active photon in the electromagnetic spectrum? As a matter of fact, scientists believe that a gamma-ray burst will occur once every few million years in the Milky Way, but has it ever came to your mind that a gamma ray burst is the MOST powerful known explosion in the galaxy? http://www. astrocappella. com/images/GRBposter. jpg

Well, Gamma-rays are extremely high frequency waves that have very small wavelengths and carry the largest amount of energy in the entire electromagnetic spectrum. In fact, these waves are produced by radioactive atoms as well as nuclear explosions. Because Gamma-rays pass through almost any material and are very difficult to stop, one may need a large concentration of lead or concrete in order to block them out and reduce their damage. In fact, Gamma-rays also have the ability to cause serious damage when engaged by living cells due to their extremely high energy substance. http://web. princeton. edu/sites/ehs/osradtraining/radiationproperties/rad1. gif

How Gamma-Rays are produced?

Gamma rays are obviously part of the electromagnetic spectrum, and are photons, or in other words, packets of energy. The term photon itself means visible light particle, however, photons inside gamma rays are called gamma photons. These photons inside the gamma rays have over a million times more energy than visible light. Gamma rays originate or actually come from the nucleus of an atom, and as a result, are produced when an atom is

radioactive and contains too much energy in the nucleus (the center of an atom). Also, when the atom is very active it emits a beta particle, which is an extremely high speed electron or proton that is emitted when an atom is radioactive. However, when the atom emits a beta particle it still contains too much energy, so it emits a gamma photon, or in other words, gamma radiation. C: Documents and SettingsRamzaMy DocumentsMy Picturesgamma. gif

Properties:

Gamma rays are very high energy ionizing radiations that are part of the electromagnetic spectrum. Gamma photons have absolutely no mass and no electric charges; they are neutral and have 100% pure electromagnetic energy. In fact, Gamma Radiation is a type of energy that has a very high frequency, and therefore, consists of extremely short wavelengths. Actually, Gamma Rays can travel at the speed of light due to their high energy levels; they can cover thousands of meters before consuming all their energy. Consequently, gamma photons can pass almost any type of material that includes human tissue. For instance, lead is used as a shield to slow down or stop gamma photons.

Uses

Gamma rays, which are basically electromagnetic radiations discharged by radioactive or atomic decay, are used in many purposes, from killing cancerous cells to measuring soil density. Even though Gamma rays contain some cancer-causing properties, they are somehow used to treat some types of cancer. As a matter of fact, in the procedure called gamma-knife surgery, different beams of gamma rays are actually directed on the growth (the

cancerous cells) in order to kill them. Well, first of all, Gamma rays are used for many treatment purposes, mainly for killing tumors, cancer cells and other malignant cells in the human body. In fact, a tracer, which is in other words, a radioactive substance, is put inside the human body, and its path (trace) inside the body is then followed. A special gamma camera uses those rays to build up a picture, and this picture gives the doctor an excellent and complete vision of what he is treating and dealing with. The patient gets a very small dose of the radiation and, therefore, does not suffer greatly. Secondly, Gamma Rays are used in sterilizing medical equipment by actually killing the bacteria. They are also used to kill bacteria, microbes and insects in foodstuffs, mainly meat and vegetables, basically to maintain freshness. Furthermore, gamma rays are used to gauge thickness of metals in steel mills, measure and control flow in liquids in industrial processes, as well as provide very interesting images of the universe. Finally, Gamma rays have also disclosed huge information about the structure of the atomic nucleus, as they actually interact with substance by different separated elementary processes. C: Documents and SettingsRamzaMy DocumentsMy Picturesradiotherapy. jpg

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As a matter of fact, Gamma radiation is the most penetrative type of energy known; gamma rays can get past even some of the densest and thickest materials, making them both a great benefit as well as a hazard. Because the photons that cover up gamma radiation are so energetic, their effect on human health is indeed extremely deep. Effects of gamma rays are well-known to everybody from treatment of nuclear fallout. In fact, close contact

with radioactive materials of a significant size causes damage to skin tissue and deaths are also very likely. Normally, burns occur more or less directly, while nausea, fatigue and vomiting take hours to become visible after the exposure. Unfortunately, the burn is very painful and deep. Hair loss and bleeding may take up to months to start heeling and actually return to normal again. In fact, Gamma rays are generally recognized to be the most physically major grate by which ionization radiation causes cancer as well as heredity disease. http://www. animatedsoftware. com/environm/no_nukes/tenw/page568. gif

In conclusion, Gamma-rays have the shortest wavelengths, highest frequencies, and, as a result, are the most powerful and energetic form of light in the universe. As mentioned above, it has the most energy of any other wave in the electromagnetic spectrum. Gamma rays are used to kill cancerous cells, which actually assures the fact that gamma rays are an advantage to medicine, but, at the same time could be very harmful indeed. Actually, Gamma radiation is the most penetrative type of energy known currently; it can get past even some of the densest substances, making them both a great benefit as well as a hazard. C: Documents and SettingsRamzaMy DocumentsMy PicturesPicture%204_43. png

Quotes about Gamma Rays

In general, the objects in the universe that are very high-energy objects, or the processes that are high-energy processes, will radiate more in the short wavelength range towards the gamma rays or the x-rays.

Claude Nicollier

The first stage had been all over before the doctors even knew they were dealing with a new sickness; it was the direct reaction to the bombardment of the body, at the moment when the bomb went off, by neutrons, beta particles, and gamma rays.

John Hersey

Gamma was a logical progression after doing the Open Fire record.

Ronnie Montrose

I turned my attention for a while to gamma ray astronomy and soon began the first in a continous series of experiments at the Savannah River site to study the properties of the neutrino.

Frederick Reines

In this case, the particle formed has correspondingly less energy, whereas the product nucleus passes into the ground state with emission of the quantity of energy saved as gamma radiation.

Walther Bothe

Our border patrol does a great job under these very dangerous conditions. They use very sophisticated equipment, including gamma rays, to detect drugs and illegal immigrants as they enter the U. S.

Timothy Murphy

Read more: http://www. brainyquote. com/quotes/keywords/gamma. html#ixzz1EdKeRyfQ

Citation

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