3 Comments

Could at least some of this waste be used for electricity generation?

REPLY

Joro 05

4 Comments

499 DAYS AGO | 11/17/2009

**nuclear waste**

Depend on kind of nuclear waste. If you asking abaut depleted nuclear fuel, yes, it is possible but would be expensive. Enrichment process is needed.
Secondary activated wastes - like gloves, tools, clothes and etc. (used by NPP workers)is inpossible to use as fuel.

REPLY

Omi

5 Comments

499 DAYS AGO | 11/17/2009

**Re: nuclear waste**

Actually even enriched nuclear fuel would be useless for this technology. To see why, we must consider the actual obtainable power:

Whenever a radioactive atom decays and emits radiation, we have a chance (30% for tritium, quoted from the article) to change that into electrical charge. So an element like tritium, with a low half-life, decays quite quickly, producing a reasonable amount of power. Uranium however, has a half-life measured in billions of years. The amount of electrical power produced per unit time is therefore extremely low.

Mind you, if you wanted a battery to produce attowatts (10^-18 W) for a billion years, nuclear waste might come in handy. ;)

REPLY

TheFamous

5 Comments

20 DAYS AGO | 03/11/2011

**Re: nuclear waste**

i agree but at the same time woutent shorting it to a year for publick use be more biabul it would contain less readio ative icatopes and brack dowen i do know that they have develuped a process to compleatley couse readoative deacay they could use this to power plasmacation witck is used to cous decay and
recuralate the system witch would solve all or the readio ative wast if we re use this decay

VIDEO

**Engineered Organisms for Making Cheap Sugar**


**App Turns Your Phone Into a 3-D Scanner**

**Printing Striped Batteries**

**A Search Engine for the Human Body**

**Shell Partner Makes Cheap Biofuels**

but at the same time readio ative decay is allso dangrous

REPLY

MORE

ms

190 Comments

499 DAYS AGO | 11/17/2009

**tritium safety**

While the decay products of tritium are safe, tritium itself is toxic. As an isotope of hydrogen, it can be incorporated into the body chemically, where its decay can produce damaging radiation. Presumably no tritium leaks or tunnels out of these batteries?

REPLY

Tanj

2 Comments

498 DAYS AGO | 11/18/2009

**Re: tritium safety**

Tritium is chemically hydrogen, and thus easily and strongly bound to various kinds of surface including many metals. You could remove it if you try, but the passive safety within the multilayer foil sandwich should be good.

REPLY

ms

190 Comments

499 DAYS AGO | 11/17/2009

**conversion efficiency**

"silicon carbide ... can convert 30 percent of the beta particles that hit it into an electrical current"
I assume you mean that 30% of the incident beta particle energy is captured as electrical energy? Your phrasing might suggest that each incident beta particle, i.e. electron, on average produces .3 x 1.6 x 10^-19 amp-seconds of current.

REPLY



Omi

5 Comments

499 DAYS AGO | 11/17/2009

**Re: conversion efficiency**

I think what the author meant is that the conversion of captured beta particles is 30%, ie that all of the free electrons are absorbed in the silicon carbide layer, and 30% of those adsorption events create a unit of charge. The analogy useful here is solar cells - virtually all of the incident radiation (light in this case)

is absorbed, but only some fraction of this radiation is converted to electricity.

REPLY

498 DAYS AGO | 11/18/2009

**Re: conversion efficiency**

Tanj

2 Comments

It is more likely that all electrons reaching the SiC are absorbed, but only 30% are travelling in the right direction to get there. The tritium decays in all directions plus there will be some electric potential difference to deflect electrons not travelling "up" enough. The beta decay (according to Alpha) has an 18.6 kV potential so the charge difference across the gap should be quite large if they want to maximize efficiency. A tiny trickle of current at high voltage. But that voltage will turn electrons away if they are on shallow trajectories.

REPLY

20 DAYS AGO | 03/11/2011

**Re: conversion efficiency**

TheFamous

5 Comments

i know at one point they were exparatamenting with salt cooled nuckler genaratior but the salt wore dowen the pices and coused a magor dazaster coudent the put the layer that broke in a persherized cover ant this world fix the ware dowen problem as it is recycled throw sodim un like watter dosent lose heat as fast
they mete even be able to spin a turbine with liquid led sence it dosent tack readio ativity

REPLY

20 DAYS AGO | 03/11/2011