

Calculations for “ALPHA FUSION ELECTRICAL ENERGY VALVE”

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The purpose of this paper is to provide a brief explanation of the calculations of nuclear energies in the patent entitled “ALPHA FUSION ELECTRICAL ENERGY VALVE” by Bruce Perreault. The device claims to get at least some of its energy from the specified nuclear reactions. The alpha fusion reaction uses the energy of naturally decaying isotopes of alpha emitting material to provide the energy for nuclear fusion. Below in equation 1, is a reaction cited as an alpha fusion reaction that is important for the energy generation process in the patent.

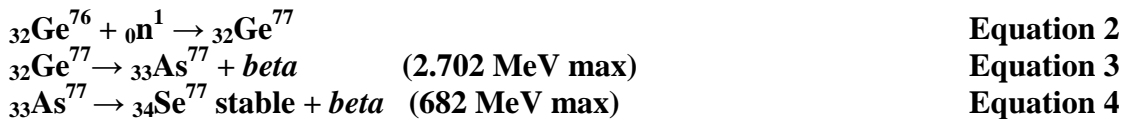


To calculate the lowest possible threshold for this reaction to occur, we will do a mass-energy balance calculation for this equation, using the famous relation between mass and energy, $E = M C^2$. For simplicity we will use the units of MeV for both masses and energies, where 1 atomic mass unit (amu) = 931.494 MeV.

$$\begin{aligned} & 66994.9813 \text{ MeV (Ge}^{72}\text{)} + 3728.40068 \text{ MeV (He}^4\text{)} \\ & - \{70718.2914 \text{ MeV (Se}^{75}\text{)} + 939.564464 \text{ MeV (n)}\} \end{aligned}$$

= 6.06 MeV

This equation has more mass on the right hand side, so this reaction is endothermic and requires 6.06 MeV as a minimum to make this reaction possible. Later in the paper, it will be shown that there are alpha emitters that are capable of supplying much more energy than this, and thus allowing this reaction to happen. The produced neutron is then used in a second reaction to produce several mega-electron Volts of energy in beta emissions.



These equations show that a single neutron absorption liberates an enormous amount of energy in the form of beta decay. Since part of the energy is taken away in the form of a neutrino, this is only the maximum possible energy available for this decay mode. The average energy per decay will be lower, but it is still a large amount of energy. This type beta of radiation is also easily converted directly to electrical current, and is also not very penetrating radiation, so it is easily shielded, for personal safety.

