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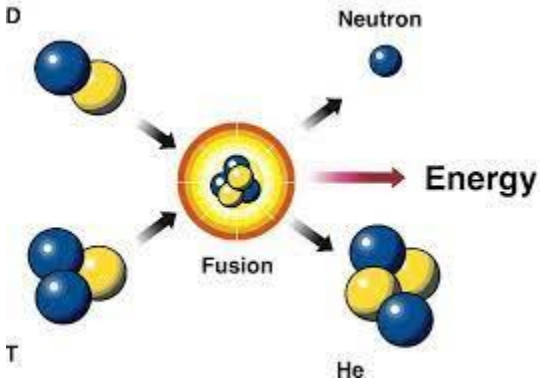
Strong Nuclear Fusion Reaction Theory:

Abstract: In this theory I will explain how the two smaller nuclei of lighter elements in the nuclear fusion reaction fuse and become a more stable single heavier nucleus and how energy releases.

Keywords: Nucleus, nucleons, binding energy, energy, charge, subatomic particles.

Introduction: In this theory I will explain why nuclear fusion reaction produces more energy than nuclear fission reaction because this helps to revolutionize nuclear physics and also I will explain how the two smaller nuclei fuse and release energy. Before to explain you why the nuclear fusion reaction produces more energy than nuclear fission reaction just take a glance of nuclear fusion reaction by keen observation of figure as shown below.

Figure: Nuclear Fusion Reaction of Deuterium and tritium into helium.



I will explain nuclear fusion reaction in deep according to the figure as shown above.

Explanation: Deuterium and tritium fuse and form single heavier nucleus helium because the helium nucleus is more stable. In fact any nuclear reaction it may be nuclear fusion reaction or nuclear fission reaction achieves or tries to achieve to become more stable element or it wants to become more stable nucleus. But in case of nuclear fission reaction the heavier nucleus splits into two smaller nuclei because when you bombard a neutron the number of neutrino subatomic particles increases in number and the nucleus loses stability and the binding energy breaks because the mass of neutron particles in the nucleus increases than the mass of charged particles. Due to this the nucleus becomes half neutral or somewhat neutral and the binding energy breaks and energy releases according to the neutrality percentage of the atom and the nucleus splits into two smaller nuclei because the nucleus is somewhat neutral in percentage and not fully neutralized and it releases two extra neutrons because it will form into two smaller nuclei, without losing two extra neutrons it will not form or convert into two smaller nuclei because when you bombard a neutron the nucleus will be somewhat neutralized and due to this bombardment the binding energy loses or breaks in the reaction and due to this loss of binding energy the atom again gains stability by removing two extra neutrons and it again gains the binding energy by removing two extra neutrons and after gaining the binding energy by removing two extra neutrons the nucleus splits into two smaller nuclei. The nucleus achieves biased or charged character of two smaller nuclei. However in case of nuclear fusion reaction the nucleus not splits instead fuse because the number of protons and the number of neutrons become equal in number after fusion and it achieves stability by removing an extra neutron. (see the figure).

1. Why the nuclear fusion reaction produces more energy?

Explanation: The nuclear fusion reaction produces more energy than nuclear fission reaction because when you fuse two smaller nuclei, it forms a single heavier nucleus and the nucleus consists of equal number of protons and neutrons (see the figure) and there is no variation in the number of protons and neutrons, in fact there is no higher number of neutrons than protons in the heavier nucleus because more binding energy loses in the nuclear fusion reaction and more neutrons will be lost automatically in the reaction because if the neutrons are not lost there will be no stability in the heavier nucleus which forms after you fuse. Hence to get stable it loses more neutrons and due to this losing of neutrons the two nuclei after fusing becomes more neutral in percentage and this more neutrality releases higher energy. There is no more number of neutrons than protons. In fact less binding energy exists in the heavier nucleus which forms after when you fuse two smaller nuclei. However in the case of nuclear fission reaction less binding energy loses in the reaction and more binding energy exists in the two smaller nuclei when you bombard a neutron with the nucleus of heavier element. This binding energy which has lost least in quantity in nuclear fission reaction certainly releases least energy. According to the loss of binding energy in the reaction the energy releases. The total binding energy in the

reaction remains constant, however conversion of binding energy into heat energy takes place. This conversion of binding energy releases specific heat energy. During nuclear fission reaction or nuclear fusion reaction manifesting of binding energy takes place and the binding energy which has lost in the reaction converts into heat energy.

References:

1. Einstein's mass energy relation 1905.

2. Rutherford showed with his famous experiment in 1934 the fusion of deuterium into helium, and observed that “an enormous effect was produced” during the process.

3. Henri Becquerel in 1896 found nuclear binding energy.