



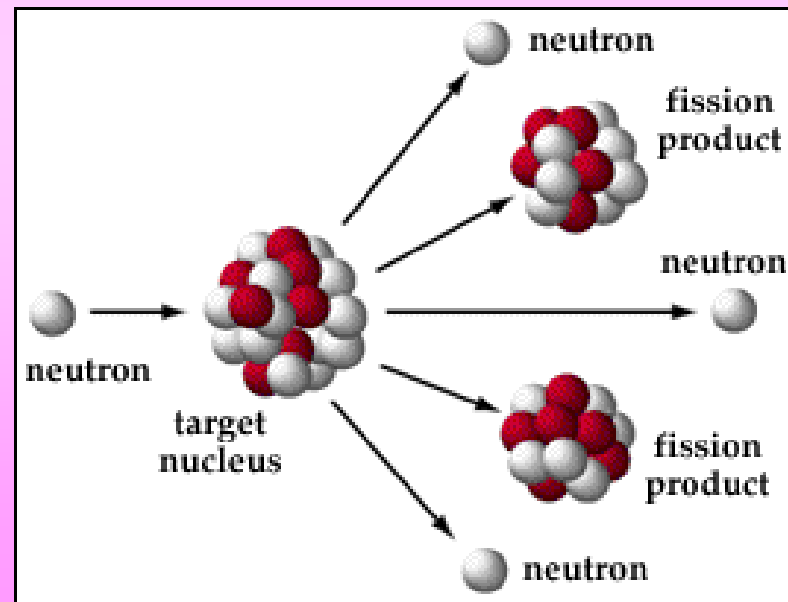
Notes

Fission and Fusion

Write down pink slides!

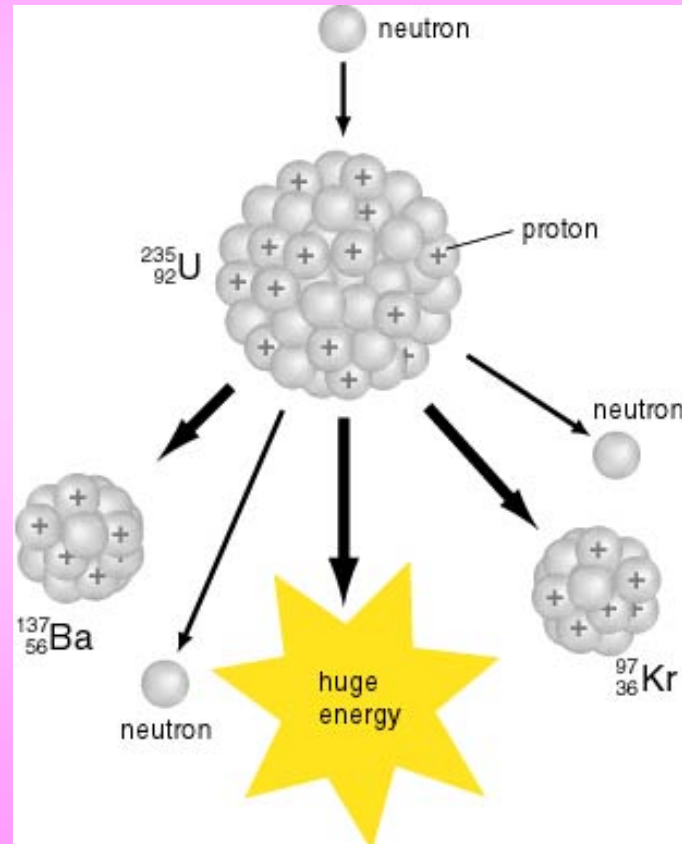
Fission

- The process used to release nuclear energy by **splitting nuclei** (into smaller pieces)



What nuclei can split during nuclear fission?

- Only large nuclei like U or plutonium can split apart during nuclear fission.
- Occurs in nuclear power plants

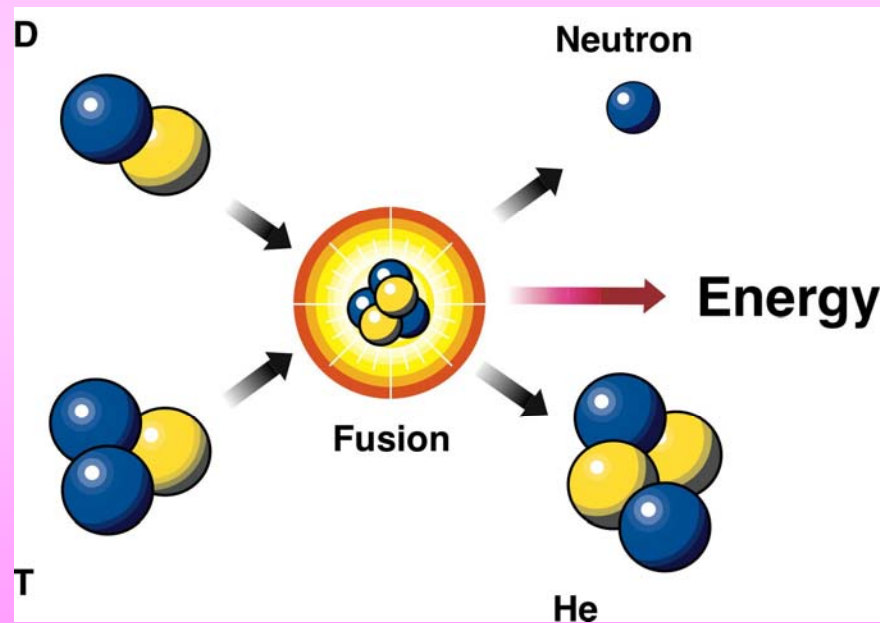


Chain Reaction

- Free neutrons produced by fission can hit other nuclei emitting more neutrons repeating the reaction over and over.
- A series of fission reactions is called a **chain reaction**.
- Can only be slowed by using materials that will absorb the neutrons.
- [Nuclear Fission Animated \(Chain Reaction\)](#)
- [Nuclear Reactor - Understanding how it works | Physics Elearnin](#)

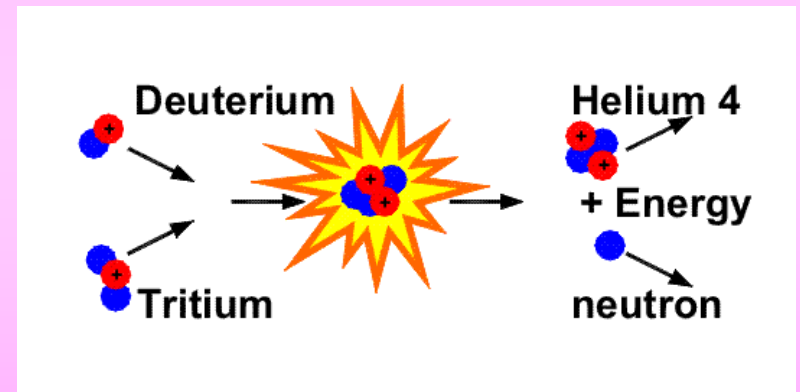
Fusion

- Two small, light nuclei **combine** to form one larger, heavier nucleus.



What nuclei can join during nuclear fusion?

- Only small nuclei like H are able to combine
- On the sun:
Two hydrogen atoms combine under extreme heat and pressure to form a helium atom. ($\text{H-2} + \text{H-2} \rightarrow \text{He-4}$)



Fusion

- Why can't we use the fusion reaction in nuclear power plants?
 - needs lots of energy
 - need to overcome electrical forces
 - difficult to control
 - never been produced in a nuclear power plant

Fusion

- Why would we want to use the fusion reaction in a nuclear power plant?
 1. Hydrogen is the most common element in the universe.
 2. Could meet energy demands for millions of years

Summary Videos

- [Fission vs. Fusion - Instant Egghead #5](#)
- [Nuclear fission and nuclear fusion - what exactly happens in these processes?](#)
- [Nuclear Power's Promise and Peril](#)