

OCR (B) Physics GCSE

Topic 5.3 - How can radioactive materials
be used to provide energy?

(physics only)

Flashcards

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What is a nuclear fuel?



What is a nuclear fuel?

A radioactive material that releases energy during changes in the nucleus.



What is nuclear fission?



What is nuclear fission?

The splitting of a large and unstable nucleus.



How does fission occur?



How does fission occur?

When a nucleus absorbs a neutron.



What is produced by fission?



What is produced by fission?

2 smaller nuclei, 2-3 neutrons and gamma rays (energy).



Explain how a fission chain reaction occurs



Explain how a fission chain reaction occurs

When a nucleus absorbs a neutron and decays, it produces neutrons which can cause other nuclei to decay.



Give 2 examples of nuclear fuel for fission



Give 2 examples of nuclear fuel for fission

- Uranium
- Plutonium



What other form of energy is released by fission?



What other form of energy is released by fission?

Kinetic energy; the daughter nuclei move away with kinetic energy.



What is fusion?



What is fusion?

When two small nuclei fuse to form a heavier nucleus and release energy.



How do the masses of the reactants and products compare in fusion?



How do the masses of the reactants and products compare in fusion?

The sum of the masses of the two nuclei which react is more than the mass of the heavier nucleus that is formed.

(total mass decreases)



Why does mass decrease in nuclear fusion?



Why does mass decrease in nuclear fusion?

Some mass is converted into energy, released as radiation.



Give an example of where fusion occurs



Give an example of where fusion occurs

In stars (e.g. the sun)



Why is fusion currently not a viable energy source?



Why is fusion currently not a viable energy source?

There is no design yet which accomplishes positive net energy; so far, fusion always uses more energy than it gives out.



Give an example of a nuclear fusion reaction



Give an example of a nuclear fusion reaction

Two hydrogen nuclei fusing to form a new helium nucleus.

