CIE Physics GCSE

Topic 5.1 - The Nuclear Atom

Flashcards

Describe the structure of a nucleus.

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The nucleus is positively charged and is made of protons (positive) and neutrons (neutral).

What are the relative charges of protons, electrons and neutrons?

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Protons: +1

Electrons: -1

Neutrons: 0

What are the relative masses of protons, electrons and neutrons?

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Protons: 1

Electrons: 0 (0.0005)

Neutrons: 1

Describe Rutherford's experiment (supplement)

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- Alpha particles (charge +2) were fired at a thin sheet of gold foil
- Most particles went straight through
- Some particles were deflected by small angles (< 90º)
- A few particles were deflected by large angles (> 90º)

What are the conclusions of Rutherford's experiment? (supplement)

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- Most of an atom is empty space
- The nucleus has a positive charge
- Most of the mass is concentrated in the nucleus

Describe Rutherford's atomic model

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There is a positive nucleus at the centre of an atom, with negative electrons existing in a "cloud"/region around the nucleus.

(1913)

What is an isotope?

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Atoms that are the same element with the same number of protons. However they have a different number of neutrons so therefore different masses.

What do all atoms of the same element share?

What do all atoms of the same element share?

The same number of protons (atomic number).

What is nuclear fission? (supplement)

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When a large and unstable nucleus splits to form two smaller nuclei, neutrons and energy.

What is nuclear fusion? (supplement)

What is fusion? (supplement)

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

What does Z represent?

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The atomic (proton) number; the number of protons in the nucleus of an atom.

What does A represent?

What does A represent?

The nucleon number; the numbers of protons and neutrons in the nucleus of an atom.

This is also known as the atom's mass.