

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?

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

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 ($< 90^\circ$)
- A few particles were deflected by large angles ($> 90^\circ$)

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?

What is an isotope?

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?

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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.