Atomic structure

A-Level Chemistry · Vocabulary in context

Word	Example
atom /'ætəm/	An **atom** has a nucleus and electrons.
nucleus /'nju:kliəs/	The **nucleus** is at the centre of an atom.
proton /'prəʊtɒn/	A **proton** has a positive charge.
neutron /'nju:trɒn/	A **neutron** has no charge.
electron /ɪ'lektrɒn/	An **electron** has a negative charge.
shell /ʃel/	The first **shell** of an atom holds two electrons.
relative charge /'relətɪv tʃɑ:dʒ/	An electron has a **relative charge** of −1. −1
relative mass /'relətɪv mæs/	A proton and a neutron both have a **relative mass** of 1. 1
neutral /'nju:trəl/	A **neutral** atom has the same number of protons and electrons.
proton number /'prəʊtɒn 'nʌmbə/	Carbon has a **proton number** of 6. 6
atomic number /ə'tɒmɪk 'nʌmbə/	Carbon has an **atomic number** of 6. 6
nucleon number /'nju:klɪən 'nʌmbə/	The **nucleon number** counts protons and neutrons.
mass number /mæs 'nʌmbə/	Carbon-12 has a **mass number** of 12. Carbon-12 12
nucleon /'nju:klɪən/	A proton or a neutron is a **nucleon**.

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ion /'aɪɒn/	An **ion** is an atom that has gained or lost electrons.
electric field /ɪ'lektrɪk fi:ld/	A charged ball has an **electric field** around it.
deflection /dɪ'flekʃn/	The needle shows a large **deflection**.
atomic radius /ə'tɒmɪk 'reɪdɪəs/	Sodium has a larger **atomic radius** than chlorine.
ionic radius /aɪ'ɒnɪk 'reɪdɪəs/	The Na+ ion has a smaller **ionic radius** than the sodium atom. Na+
period /'pɪərɪəd/	The **period** of the wave is 0.02 s. 0.02 s
nuclear charge /'nju:klɪə tʃɑ:dʒ/	Chlorine has a larger **nuclear charge** than sodium.
shielding /'ʃi:ldɪŋ/	Inner electrons give **shielding**: they block some of the pull of the nucleus.
group /gru:p/	Sodium and potassium are in the same **group**.
cation /'kætaɪən/	Sodium loses one electron to form a **cation**.
anion /'ænaɪən/	Chlorine gains one electron to form an **anion**.
repulsion /rɪ'pʌlʃn/	Two negative charges push apart: this is **repulsion**.
isotope /'aɪsətəʊp/	Carbon-14 is an **isotope** of carbon. Carbon-14
chemical properties /'kemɪkl 'prɒpətiz/	Burning is one of the **chemical properties** of wood.

Word	Example
physical properties /ˈfɪzɪkl ˈprɒpətiz/	Colour and melting point are **physical properties**.
density /ˈdensɪti/	Iron has a higher **density** than wood, so it sinks in water.
principal quantum number /ˈprɪnsɪpl ˈkwɒntəm ˈnʌmbə/	The **principal quantum number** n = 2 means the second shell. n = 2
sub-shell /sʌb ʃel/	The second shell has an s **sub-shell** and a p sub-shell. s p
orbital /ˈɔːbɪtl/	Each **orbital** holds at most two electrons.
electronic configuration /ɪlekˈtrɒnɪk kənˌfɪgjəˈreɪʃn/	The **electronic configuration** of sodium is 1s2 2s2 2p6 3s1. 1s2 2s2 2p6 3s1
ground state /graʊnd steɪt/	The **ground state** is the lowest energy level.
noble gas /ˈnəʊbl gæs/	Neon is a **noble gas**: it hardly reacts.
spin /spɪn/	Two electrons in one orbital have opposite **spin**.
sphere /sfɪə/	An s orbital is shaped like a **sphere**. s
free radical /friː ˈrædɪkl/	A chlorine atom with one unpaired electron is a **free radical**.
unpaired electrons /ʌnˈpeəd ɪˈlektrɒnz/	Oxygen has two **unpaired electrons**.
first ionisation energy /fɜːst ˌaɪənaɪˈzeɪʃn ˈenədʒi/	Sodium has a lower **first ionisation energy** than magnesium.

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Word	Example
successive ionisation energies /səkˈsesɪv ˌaɪənaɪˈzeɪʃn ˈenədʒiz/	The **successive ionisation energies** of magnesium jump after the second electron.
spin-pair repulsion /spɪn peə rɪˈpʌlʃn/	**Spin-pair repulsion** makes the paired electron in oxygen easier to remove.