Atomic Structure and Properties

AP Chemistry · Vocabulary in context

Word	Example
moles /məʊlz/	Two **moles** of water have a mass of 36 g. 2 36 g
Avogadro's number /ˌævəˈgædrəʊz ˈnʌmbə/	**Avogadro's number** is 6.02×10^{23}. 6.02×10^{23}
molar mass /ˈməʊlə mæs/	The **molar mass** of water is 18 g/mol. 18 g/mol
atomic mass unit /əˈtɒmɪk mæs ˈjuːnɪt/	One **atomic mass unit** is about the mass of one proton. 1 1
mass spectrometer /mæs spekˈtrɒmɪtə/	A **mass spectrometer** measures the mass of atoms.
mass spectrum /mæs ˈspektrəm/	A **mass spectrum** shows the masses of the isotopes in a sample.
isotope /ˈaɪsətəʊp/	Carbon-14 is an **isotope** of carbon. Carbon-14
relative abundance /ˈrelətɪv əˈbʌndəns/	The tallest peak shows the isotope with the highest **relative abundance**.
percent composition /pəˈsent ˌkɒmpəˈzɪʃn/	The **percent composition** of water is about 11% hydrogen by mass. 11%
empirical formula /emˈpɪrɪkl ˈfɔːmjʊlə/	The **empirical formula** of glucose is CH2O. CH2O
molecular formula /məˈlekjʊlə ˈfɔːmjʊlə/	The **molecular formula** of glucose is C6H12O6. C6H12O6

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law of definite proportions	The **law of definite proportions** says a compound always has the same ratio of elements.
formula unit	NaCl is one **formula unit** of sodium chloride. NaCl
mixture /ˈmɪkstʃə/	Air is a **mixture** of gases.
purity /ˈpjʊərɪti/	A sharp melting point shows high **purity**.
nucleus /ˈnjuːklɪəs/	The **nucleus** is at the centre of an atom.
electron configuration /ɪˈlektrɒn kənˌfɪgjəˈreɪʃn/	The **electron configuration** of sodium is $1s^2\ 2s^2\ 2p^6\ 3s^1$. $1s^2\ 2s^2\ 2p^6\ 3s^1$
valence electrons /ˈveɪləns ɪˈlektrɒnz/	**Valence electrons** are in the outer shell and take part in bonding.
Coulomb's law /ˈkuːlɒmz lɔː/	**Coulomb's law** gives the force between two charges.
shielding /ˈʃiːldɪŋ/	Inner electrons give **shielding**: they block some of the pull of the nucleus.
core electrons	**Core electrons** are the inner electrons.
effective nuclear charge	A higher **effective nuclear charge** pulls the outer electrons closer.
Photoelectron spectroscopy /ˌfəʊtəʊɪˈlektrɒn spekˈtrɒskəpi/	**Photoelectron spectroscopy** measures how much energy removes each electron.
Atomic radius /əˈtɒmɪk ˈreɪdɪəs/	**Atomic radius** gets smaller across a period.

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Word	Example
Ionization energy /ˌaɪənaɪˈzeɪʃn ˈenədʒi/	**Ionization energy** is the energy needed to remove an electron.
Electronegativity /ɪˌlektrəʊŋgəˈtɪvɪti/	**Electronegativity** is how strongly an atom pulls shared electrons.
electron affinity /ɪˈlektrɒn əˈfɪnɪti/	Chlorine has a negative first **electron affinity**: energy is released.
ionic radius /aɪˈɒnɪk ˈreɪdɪəs/	The Na+ ion has a smaller **ionic radius** than the sodium atom. Na+
isoelectronic /ˌaɪsəʊlɪkˈtrɒnɪk/	Na^+ and Ne are **isoelectronic**: they have the same number of electrons. Na^+ Ne
cations /ˈkætaɪənz/	Metals form **cations** by losing electrons.
anions /ˈænaɪənz/	Non-metals form **anions** by gaining electrons.
ionic compound /aɪˈɒnɪk ˈkɒmpaʊnd/	Sodium chloride is an **ionic compound**.

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