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Chemistry (Quickstudy: Academic)

Quick Study ACADEMIC **CHEMISTRY**

PERIODIC TABLE OF THE ELEMENTS

ATOMIC STRUCTURE
Atomic Number, Z , is the number of protons in the nucleus for neutral atoms. $Z = +n$ of electrons. The atom's charge is Z multiplied by the positive charge of a proton. Mass Number, A , is the sum of the number of protons in the nucleus (always a positive integer) and the number of neutrons in the nucleus (always a positive integer). The atomic mass of an element is the weighted average of the masses of its isotopes.

ATOMIC QUANTUM NUMBERS AND ORBITALS
The principal quantum number, n , is the number of shells. The angular momentum quantum number, l , is the number of subshells. The magnetic quantum number, m_l , is the number of orbitals in a subshell. The spin quantum number, m_s , is the number of electrons in an orbital.

NUCLEAR CHEMISTRY
Nuclear reactions alter the nucleus particles (proton or neutron) without changing the number of electrons. Energy is released in some cases. Radioactive decay is the spontaneous emission of particles from an unstable nucleus. Types of processes: Alpha decay, Beta decay, Gamma decay, Positron emission, Electron capture.

MANY-ELECTRON ATOMS
Orbitals and quantum numbers are used to describe all atoms. The Aufbau Principle states that electrons fill orbitals in order of increasing energy. The filling of orbitals is guided by the Aufbau Principle.

Chemical configuration: Noble gas shorthand
Each element has a unique set of quantum numbers. The orbitals are built up by two electrons, one with spin up and one with spin down, in the order of increasing energy.

Electron configuration: Hund's rule
Electrons fill p , d , and f orbitals in a manner that maximizes the number of unpaired electrons (half-filled orbitals).

Ionization potential (IP): Energy required to remove electrons from an atom or ion. First IP: Removal of first valence electron. Electronegativity: Tendency of an atom to attract electrons in a chemical bond. It is a relative property.

ATOMIC WEIGHTS
The atomic weight of an element is the weighted average of the masses of its isotopes.

MOLECULAR WEIGHT
The molecular weight of a compound is the sum of the atomic weights of all the atoms in the molecule.

PERCENTAGE COMPOSITION
The percentage composition of a compound is the percentage of each element in the compound.

EMPIRICAL FORMULA
The empirical formula of a compound is the simplest whole number ratio of atoms in the compound.

MOLECULAR FORMULA
The molecular formula of a compound is the actual number of atoms in the molecule.

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Synopsis

Best-selling quick reference to chemistry. Chemistry essentials for students just beginning in chemistry or as an excellent reference throughout higher-level courses. 4-page laminated guide includes: • atomic structure • nuclear chemistry • atomic quantum numbers/orbitals • electronic atoms • types of matter/reactions • physical processes • nomenclature/stoichiometry • chemical interactions/bonding models • gases/thermodynamics/theories • and much more...

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Customer Reviews

These are great summaries to accompany coursework and to complement a book. By no means these are a replacement for either of those. But it's an excellent learning tool, like a "cheat sheet".

Great overview of Chemistry and the basics as well as the common topics. Well-organized and put together. And since it folds, you can easily store it in a folder, binder, or backpack. Great for a quick reference!

This helped me out a lot in my high school chemistry class. It is laid out very well and has all of the information I needed throughout the year. Chemistry wasn't easy for me but this investment definitely helped me better understand what I was doing!

Great reference. All the information I need in one place.

It has a lot of helpful formulas and it shows how to determine electron configurations. Very happy with the guide.

This was exactly what was needed for the college course. Exactly as described in the ad. Thanks so much. Me

Lots of good information, helpful for all those little things that you need to memorize. I bought it for my wife and she loves it.

This is what you need to prepare for a test, or if you are tutor like me, to help your students.

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