

CHEM 111- #2 Atomic Structure and the Periodic Table – Key 2003

- Three particles make up the atom: protons, neutrons, and electrons
 - Protons have a +1 charge, neutrons have 0 charge, and electrons have a -1 charge.
 - Protons and neutrons have about the same mass and are ~1000 times greater than electrons.
 - Protons and neutrons are in the nucleus. Electrons are in the electron cloud.

Also: Most of the mass of the atom is due to the nucleus. Most of the volume is due to the electrons.
- Z = the number of protons.
 A = the sum of the protons and neutrons in the nucleus.
- Atoms are electrically neutral. Ions have charge because they have gained or lost electrons.
- Isotopes of the same element have the same number of protons and electrons, but they have different numbers of neutrons. Since chemical properties are based on the electrons, the chemical properties of isotopes should be very similar.
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Name	Symbol	Type (metal, nonmetal, semi-metal)	# of protons	Group
aluminum	Al	metal	13	3A
iodine	I	nonmetal	53	7A
strontium	Sr	metal	38	2A
arsenic	As	semi-metal	33	5A
tungsten	W	metal	74	6B
manganese	Mn	metal	25	7B
carbon	C	nonmetal	6	4A