Naming Acids

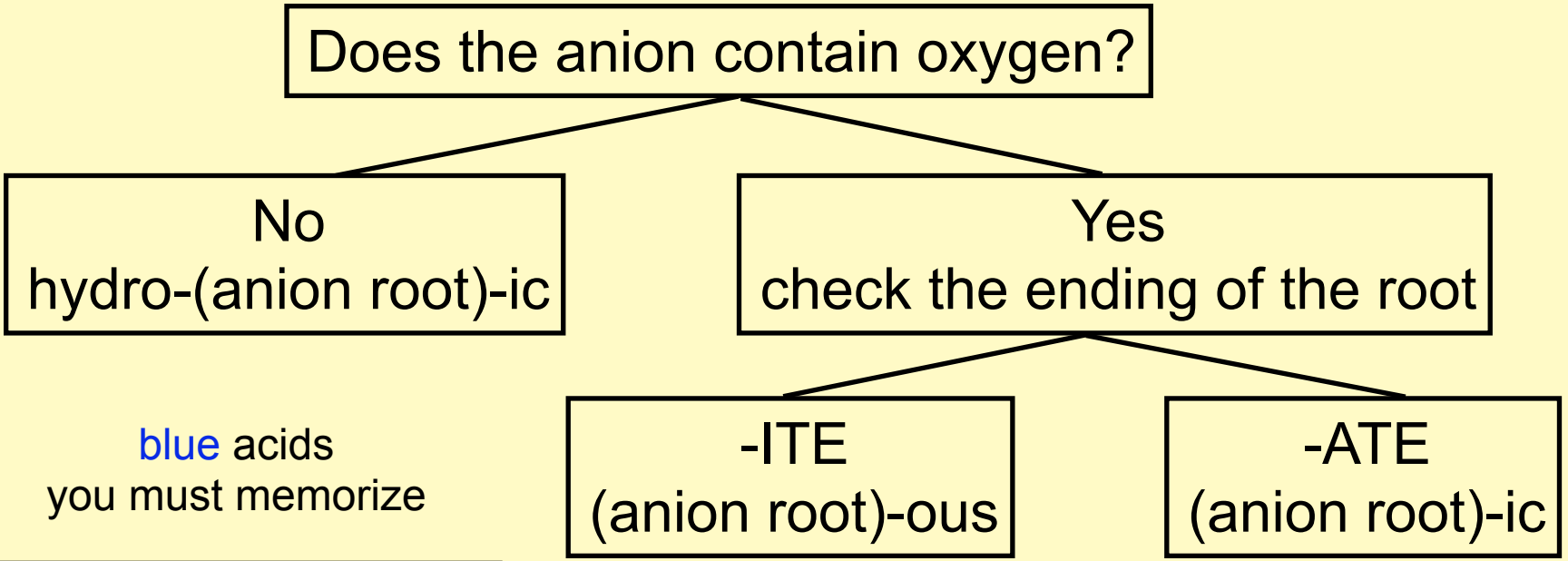
and a Brief Review of other nomenclature issues

Memorize six

or

Learn how to name them.

Systematic Method - Naming Acids



blue acids
you must memorize

HF	hydrofluoric
HCl	hydrochloric
HBr	hydrobromic
HI	hydroiodic
H_2S	hydrosulfuric
HCN	hydrocyanic

nitrous	HNO_2	HNO_3	nitric
sulfurous	H_2SO_3	H_2SO_4	sulfuric
phosphorous	H_3PO_3	H_3PO_4	phosphoric
		H_2CO_3	carbonic
		$HC_2H_3O_2$	acetic

green acids
you must memorize

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Types of Bonding

- Elements can be classified as metal or nonmetal.
- These two categories gives rise to three types of bonding:
  - ✓Ionic: metal & nonmetal
  - ✓Molecular: nonmetal & nonmetal
  - ✓Metallic: metal & metal Electron Sea Model
    - ✳Valence electrons are uniformly distributed around the remaining cations of each atom.
    - ✳Electrons are loose and able to move.

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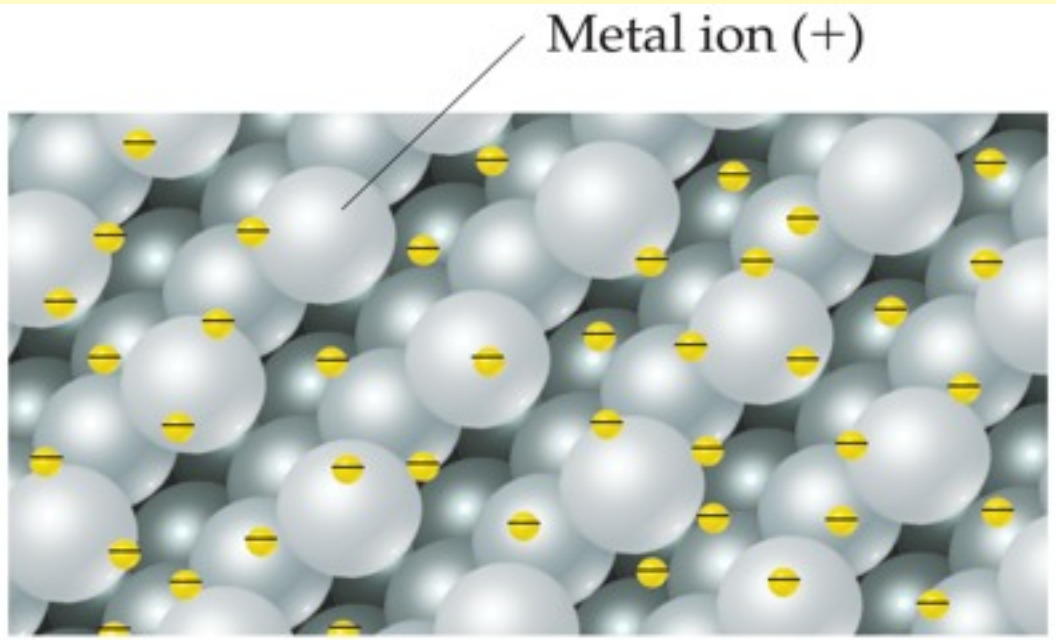
Bonding between Metal Atoms
Sea of Electrons Model

- The small yellow spheres represent the valence electrons that move freely about.
- The large white spheres represent the remainder of the atom, a positive ion made of the inner core electrons + nucleus.



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Ionic vs Molecular

Metal + Nonmetal	Nonmetal + Nonmetal
Particles called formula units	Particles called molecules
Electrons transferred	Electrons are shared
Metals lose e- and become a + ion (cation)	No ions are formed
Nonmetal gain e- and become a - ion (anion)	No ions are formed
Formula is always written in lowest whole number ratio	Formula may not always be in lowest whole number ratio
Some metals require roman # to indicate charge	No Roman Numerals
No prefixes unless part of the polyatomic name	Prefixes are used to indicate the number of atoms in formula

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Ionic Compounds

- Cation (+) ion (usually metals) listed first
  - ✓metals retain the same name
  - ✓Ammonium: the + polyatomic ion
- Anion (-) ion listed second
  - ✓Nonmetal (some polyatomic contain metals)
- Binary compounds (only two different elements) end in -ide
- Polyatomic compounds end in -ite or -ate
  - ✓A few exceptions end in -ide
  - ✓Most of the table should be memorized
- Certain metals require Roman # to indicate their charge.

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Binary Molecular Compounds

- Prefixes (they should be memorized) used to indicate the number of atoms of each element.
  - ✓mono, di, tri, tetra, penta, hexa, hepta, octo, nono, deca, (11), dodeca
- Less electronegative element usually listed first
- Second element listed ends in -ide
- For most compounds with more than two elements we will use their common names, not the IUPAC naming system except for some simple organic compounds

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Descriptive Symbolism

- Single atom
- Two atoms stuck together, diatomic molecule
- Two atoms not stuck together
- A single ion with a 1- charge, having gained 1e-
- An atom showing its atomic number
- A nuclide, a particular isotope showing its mass number
- A nuclide with its mass number

F

F_2

2F

F-1

$_{9}F$

^{21}F

Fluorine-19

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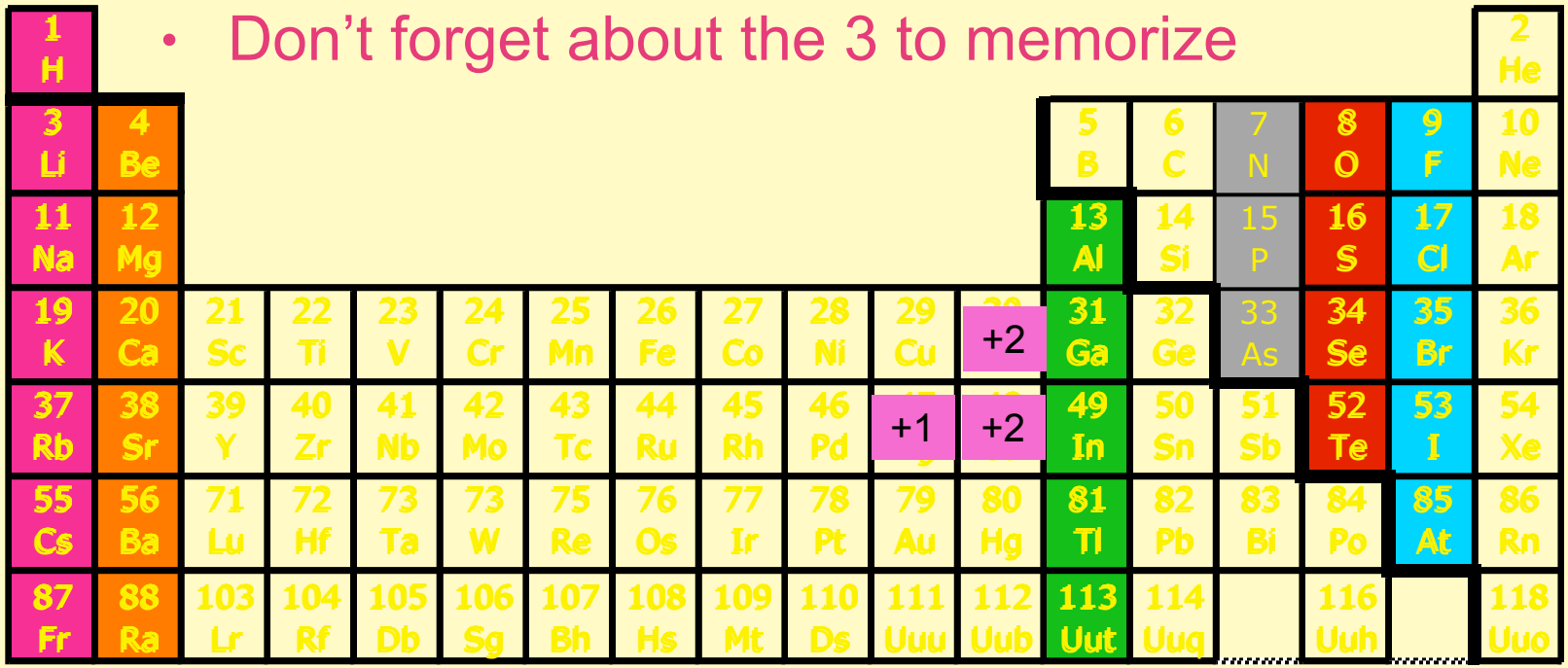
Using the Chart to Predict Charges

- Group 1: Alkali Metals - lose 1 e- = +1
- Group 2: Alkaline Earth Metals - lose 2 e- = +2
- Group 3 (metals): Aluminum Group - lose 3 e- = +3
- Group 7: Halogens - gain 1 e- = -1
- Group 6: Chalcogens - gain 2 e- = -2
- Group 5: Nitrogen group - gain 3 e- = -3
  - Don't forget about the 3 to memorize



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