chei_matter_classifications.sdr
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Matter

- Anything that has mass and volume.
- Exists in three physical states: solid, liquid, gas.

Mixtures

- Two or more elements or compounds in variable proportions.
- Components retain their properties.

Heterogeneous Mixtures

- Visible parts.
- Differing regional composition.

Homogeneous Mixtures (solutions)

- No visible parts.
- Same composition throughout.

Physical Separation Methods

Filtration, Extraction
Distillation, Crystallization
Chromatography

Pure Substances

- Fixed composition throughout.

Elements

- Composed of one type of atom.
- Simplest type of matter that retains characteristic properties.
- Classified as metal, metalloid or nonmetal.
- Atomic mass is average of isotope masses weighted by abundance.

Compounds

- Two or more elements combined in fixed fraction by mass.
- Properties differ from component elements.
- Molecular mass is sum of atomic masses.

Chemical Reactions

Atoms

- Protons p^+ and neutrons n^0 in central nucleus.

number of p^+ = atomic number

- Electrons e^- in surrounding space.

number of p^+ = number of e^-

Ionic Compounds

- Solids composed of positive and negative ions.
- Ions arise from e^- transfer from metal to nonmetal.

Covalent Compounds

- Atoms (usually nonmetals) bonded by shared e^- pairs.

After Silberberg. Chemistry. 1996. Fig 2.20