

## I. Introduction

## II. Background

## A. Energy

## B. Matter

## 1. Elements

## a. Chemical (atomic) symbols

## III. Atom

## A. Protons, Neutrons, &amp; Electrons

## 1. Atomic Number (Z)

## B. Isotopes

## IV. Electrons

## A. Electron orbitals (shells)

## B. Orbital capacities

## V. Bonds

## A. Bond Background

## 1. Ion

## a. cation

## b. anion

## B. Ionic bond

## C. Covalent Bond

## VI. Polar &amp; Nonpolar

## A. Nonpolar covalent bonds

## B. Polar covalent bonds

## 1. Electronegativity

## C. Consequences

## 1. Solubilities

## a. solute

## b. solvent

## D. Hydrogen Bonds

## VII. Chemical Reactions

## 1. Reactant

## 2. Product

## A. Types of reactions

## 1. Synthesis reaction

## a. Anabolism

## 2. Decomposition reaction

## a. Catabolism

## 3. Exchange reaction

## B. Metabolism