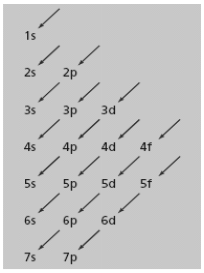
Electron Configurations

Electron Configuration

- **Electron configuration** – the _____ of electrons in an atom

Aufbau Principle

- Each electron must occupy the _____ energy level first



Pauli Exclusion Principle

- In order for 2 electrons to share an orbital, they must have _____ spins
- In chemistry we designate spins with _____ .

Hund's Rule

- A single electron with the _____ spin must occupy each equal energy orbital before additional electrons will pair up with _____ spins
- You must fill before you pair

Arrow Diagrams

- Before we begin writing arrow diagrams there are a few things you need to know
- s – can hold a max of ____ electrons
- p – can hold a max of ____ electrons
- d – can hold a max of ____ electrons
- f – can hold a max of ____ electrons

Arrow Diagrams

- Also
- s – has ____ orbital
- p – has ____ orbitals
- d – has ____ orbitals
- f – has ____ orbitals

Arrow Diagrams

- Write the arrow diagram for sodium

Arrow Diagrams

- Draw the arrow diagram for Br

Electron Configurations

- Writing electron configurations is just a shorter way to write an arrow diagram
- You start with 1s and continue the configuration until you get the correct number of electrons

Electron Configurations

- Write the full electron configuration for K

Electron Configurations

- Write the full electron configuration for Kr

- Write the full electron configuration for P

Noble Gas Configurations

- Noble Gas configuration is just a short hand way to write an electron configuration
- Steps
  1. Find the element
  2. Find the _____ gas before that element and place it in [brackets]
  3. Move one spot
  4. Start the configuration from there and keep going until you get to your element

Reading the periodic table

- **s block** – the first 2 columns of the periodic table (starts with 1s)
- **p block** – Groups 3A-8A, six columns (starts with 2p)
- **d block** – the center portion of the periodic table consisting of 10 columns (starts with 3d)
- **f block** – the two bottom rows of the periodic table consisting of 14 columns (starts with 4 f)

Noble Gas Configurations

- Write the noble gas configuration for Na

Noble Gas Configurations

- Write the noble gas configuration for Br
- Write the noble gas configuration for Mn

Final Entry Configuration

- Final entry configuration – the last thing in an electron configuration
- It's like a road map to the element
- Can Identify the element

Final Entry Configuration

- What is the final entry configuration for Zr?
- What is the final entry configuration for Cl?
- What is the final entry configuration for Na?

Final Entry Configuration

- What element has the final entry configuration of $4p^3$?
- What element has the final entry configuration of $4d^1$?

Exceptions!!!

- Exceptions are only in the d sublevel and only when you have a _____
- It is more stable to have a half filled d shell than a partially filled d shell
- The configuration would be _____
- The same goes if you have _____
- It would be more stable to have _____

Exceptions!!!

- What is the electron configuration for Cr?
- What is the electron configuration for Cu?
- when forming positive ions, d block elements loose their s electrons before their d electrons

Definitions

- _____ – species that are attracted by a magnet created when unpaired electrons are present in an atom
- _____– species that are slightly repelled by magnets. Present when all electrons are paired
- _____– species that have the same electron configurations