

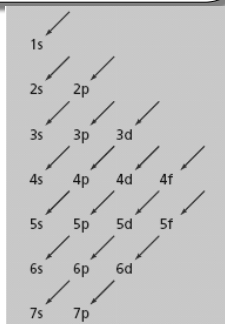
Electron Configurations

Electron Configuration

- _____ – the arrangement 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 _____.
- Therefore, if 2 electrons enter an orbital, they must enter _____

Hund's Rule

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

Arrow Diagrams

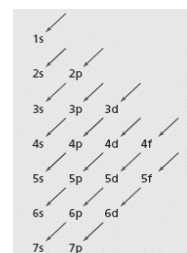
- Before we begin writing arrow diagrams there are a few things you need to know
- s – can hold a max of _____ electrons
- p – can hold a max of _____ electrons
- d – can hold a max of _____ electrons
- f – can hold a max of _____ electrons

Arrow Diagrams

- s – has _____ orbital
- p – has _____ orbitals
- d – has _____ orbitals
- f – has _____ orbitals

Arrow Diagrams

- Lastly, you need to know the sequence of orbitals. I will NOT give you this on a test!



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

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 _____ before that element (Group 8A) 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

- _____ – the first 2 columns of the periodic table (starts with 1s)
- _____ – Groups 3A-8A, six columns (starts with 2p)
- _____ – the center portion of the periodic table consisting of 10 columns (starts with 3d)
- _____ – 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 _____ 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 Si?

Final Entry Configuration

- What is the final entry configuration for Ag?
- 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 $4d^1$?

Periodic Trends

- Periodic Trends are trends that occur _____ the periodic table and _____ the periodic table

Atomic Radius

- **Atomic Radius** – _____ of the atom

A periodic table of elements with arrows indicating trends for Atomic Radius. One arrow points from the top-left (Hydrogen) towards the bottom-right (Francium), indicating that atomic radius increases in this direction. Another arrow points from the right side (Noble gases) towards the left side (Alkali metals), indicating that atomic radius increases from right to left.

Ionization Energy

- **Ionization energy** – the ability to _____ 1 electron

A periodic table of elements with arrows indicating trends for Ionization Energy. One arrow points from the bottom-left (Francium) towards the top-right (Helium), indicating that ionization energy increases in this direction. Another arrow points from the left side (Alkali metals) towards the right side (Noble gases), indicating that ionization energy increases from left to right.

Electro negativity

- **Electro negativity** – the ability of an atom to _____ another atom

A standard periodic table of elements with a color gradient indicating trends in electro negativity. The color is lightest (yellow) in the top-left corner (fluorine) and becomes darker (purple) towards the bottom-right corner (francium), showing that electro negativity increases in this direction.

Metallic Character

- **Metallic character** – how much like a metal the element is

A standard periodic table of elements with a color gradient indicating trends in metallic character. The color is darkest (purple) in the bottom-left corner (francium) and becomes lighter (yellow) towards the top-right corner (fluorine), showing that metallic character increases in this direction.

Ionic Radius

- When you talk about ionic radius, you are comparing an _____ and its _____
- When an atom has a _____ charge, you have _____ electrons
- Which makes it _____
- For example, which will be larger:
- Cl or Cl⁻¹

Ionic Radius

- When an atom has a _____ charge, you have _____ electrons
- Which makes it _____
- For example, which will be larger:
- Na or Na⁺¹