

POGIL: Periodic Table Trends

(Adapted from Rush Henrietta CSD)

Why:

The Periodic Table is one of the greatest inventions in the history of man. It allows scientists to predict physical and chemical properties of the elements. Dimitri Mendeleev (a Russian scientist) and Robert Mosley (a British chemist) put together this table in the late 1800's based on properties of the elements known at the time. The trends in these properties as you go across periods and down groups is the subject of this Chem POGIL.

Periodic Table of the Elements

Legend:

- 1. alkali metals
- 2. alkaline earth metals
- 3. transition metals
- 4. metalloids
- 5. nonmetals
- 6. noble gases
- 7. lanthanides
- 8. actinides

The table shows elements from Hydrogen (H) to Oganesson (Og). The lanthanide and actinide series are shown below the main table.

Success Criteria:

- Understand the meaning of *atomic radius, reactivity, electronegativity, ionization energy*
- Recognize trends in atomic radius, reactivity, ionization energy and electronegativity as you go across periods and down groups.

Resources:

Reference Table S, Periodic Table, Unit 3 (Chapter 6) Notes, & Chapter 6 in textbook

Prerequisites:

Answer the following questions using the resources above.

- What happens to the number of valence electrons as you go down a group on the periodic table?
- What happens to the number of valence electrons as you go from left to right across a period?
- What happens to the number of energy levels as you go down a group on the periodic table?
- What happens to the number of energy levels as you go from left to right across a period?
- Draw a Lewis structure for a Cl atom.
- Draw a Bohr diagram for the Cl atom. (Draw above!)
- In this lab we will be talking about atomic radius.
 - Look up the atomic radius of Cl on Table S: _____
 - Why is it possible to show the atomic radius using a Bohr diagram but not by using a Lewis structure?
 - On your Bohr diagram draw an arrow to represent the radius of the Cl atom.
- Define *periodic*:
- Define *trend*:

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