

Chemistry Activity: Graphing Periodic Trends

Introduction:

The Periodic Table is arranged according to the Periodic Law. The Periodic Law states that when elements are arranged in order of increasing atomic number, their physical and chemical properties show a periodic pattern. We will discover these patterns by examining the changes in properties of elements on the Periodic Table. In this activity we will be examining atomic radius, first ionization energy, and electronegativity.

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References:

Use the following information about the group 1 elements and the elements of the third period to complete this activity.

Group 1 Elements

| Symbol | Atomic Radius (picometers) | First Ionization Energy kilojoules/mole (kJ/mol) | Electronegativity (4 point scale) |
|--------|----------------------------|--|-----------------------------------|
| H | 31 | 1312 | 2.1 |
| Li | 128 | 520 | 1.0 |
| Na | 166 | 496 | 0.9 |
| K | 203 | 410 | 0.8 |
| Rb | 220 | 403 | 0.8 |
| Cs | 244 | 376 | 0.7 |

Period 3 Elements

| Symbol | Atomic Radius (picometers) | First Ionization Energy kilojoules/mole (kJ/mol) | Electronegativity (4 point scale) |
|--------|----------------------------|--|-----------------------------------|
| Na | 166 | 496 | 0.9 |
| Mg | 141 | 738 | 1.2 |
| Al | 121 | 578 | 1.5 |
| Si | 111 | 787 | 1.8 |
| P | 107 | 1012 | 2.1 |
| S | 105 | 1000 | 2.5 |
| Cl | 102 | 1251 | 3.0 |
| Ar | 106 | 1521 | --- |