**Molar Mass, Intermolecular Forces, & Boiling Point – Oh My!**

**Purpose:** Determine the relationship between molar mass, intermolecular forces, & boiling points.

**Directions:**

1. Complete the chart by finding the molar mass of each compound
2. Create a graph to view the relationship between molar mass and boiling point. Label the type of intermolecular forces that exist in the compound(s).
3. Answer the questions that follow.

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| --- | --- | --- | --- | --- |
| **Compound** | **Chemical Formula** | **Strongest IMF** | **Molar Mass (g/mol)** | **Boiling Point (°C)** |
| Ethane | C2H6 | London Dispersion |  | -89 |
| Propane | C3H8 | London Dispersion |  | -42 |
| Butane | C4H10 | London Dispersion |  | -1 |
| Formaldehyde | CH2O | Dipole-dipole |  | -21 |
| Ethanal | C2H4O | Dipole-dipole |  | 21 |
| Propanal | C3H6O | Dipole-dipole |  | 49 |
| Methanol | CH3OH | Hydrogen Bonding |  | 65 |
| Ethanol | C2H5OH | Hydrogen Bonding |  | 79 |
| Propanol | C3H7OH | Hydrogen Bonding |  | 97 |
| Lithium Chloride | LiCl | Ionic Bonding |  | 1382 |
| Sodium Chloride | NaCl | Ionic Bonding |  | 1414 |
| Potassium Chloride | KCl | Ionic Bonding |  | 1420 |

**Questions:**

1. Based on your graph, how does a compound’s molar mass affect its boiling point?
2. Explain why the molar mass has this effect on boiling point.
3. Based on your graph, how does a compound’s strongest IMF affect its boiling point?
4. Explain why the strongest IMF has this effect on boiling point.