

GENERAL CHEMISTRY

STANDARD 5.4

5.4: Distinguish between ionic and molecular properties

DEFINITIONS

- **Crystalline Structure:** Structure formed by ionic compounds characterized by a regular, repeating arrangement of ions in a solid
 - Very rigid
- **Intermolecular Force:** Forces of attraction or repulsion between neighboring particles, which can be atoms, molecules, or ions
 - Intermolecular forces drive the structure of molecular (covalent) compounds
 - MUCH weaker than electrostatic attraction (ionic bonds)
 - Structure of molecular compounds is far less rigid than ionic compounds

PROPERTIES OF IONIC COMPOUNDS

- Excellent insulators of electricity
 - Because the electrons are locked in place in the crystal structure
 - When ionic compounds are melted (molten state) they do conduct electricity as the electrons are freed from the rigid crystal structure
- Very brittle
 - Due to the crystal structure
 - Structure tends to want to shear off, breaking parts of the crystal structure off

PROPERTIES OF MOLECULAR COMPOUNDS

- Excellent insulators of electricity
 - They strongly resist the movement of electrons
- Very RARELY are brittle