

Name: _____

Date: _____

Unit 2.1, 2.3 and 2.4

Types of Chemical Bonds, Structure of Ionic Solids, Structure of Metals & Alloys

- Which compound from each set is covalent? Explain.
 - CO or LiF _____
 - ZnS or SO₂ _____
 - BF₃ or Fe₂O₃ _____
- Which bond from each set is most covalent? Explain.
 - Cl – Cl or Al – F _____
 - N – O or C – O _____
 - Ca – O or N – O _____
- Which bond from each set is most ionic? Explain.
 - Al – O or Na – O _____
 - K – Cl or Zn – Cl _____
 - Fr – F or B – F _____
- Are ionic solids malleable? Justify your answer. Create a visual representation (sketch) to assist with your justification.
- Create a visual representation of a metallic solid that can be used to explain the electron sea model of metallic bonding. Use that representation to help you explain the factors that make metals good conductors of heat and electricity.

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6. A 1.0 mole pure sample of molten tin is dissolved in a 5.0 mole pure sample of molten copper. The solution is set aside to cool and solidifies. The atomic radius of tin is 140 pm and that of copper is 128 pm.
- Identify the type of alloy that is formed. Justify your answer.

 - Identify the solvent in this solution. Justify your answer.
7. The macroscopic properties of a pure sample of an unknown solid were examined in order to determine the type of bonding between particles. The solid is very hard. When it is broken, the fragments form similar three dimensional shapes. When dissolved in water the resulting solution conducts electricity. Make a prediction about the type of bonding in this compound. Justify your answer.
8. The macroscopic properties of a pure sample of an unknown solid were examined in order to determine the type of bonding within the particles. The solid is soft and can be cut with a knife. It starts melting at 35°C. It does not dissolve in water - instead it floats on the surface. Make a prediction about the type of bonding in this compound. Justify your answer.
9. The macroscopic properties of a pure sample of an unknown solid was examined in order to determine the type of bonding between the particles. When hit with a hammer, it dents. When cleaned with steel wool it becomes very shiny. The solid conducts electricity but does not dissolve in water. Make a prediction about the type of bonding in this compound. Justify your answer.