

Chemistry 20: Intermolecular Forces Worksheet

1. Each of the following statements describes an intermolecular force. For each of the statements, indicate if it describes London Forces (LF) , Dipole Forces (DD) or Hydrogen Bonding (HB)

_____ occurs in all molecules

_____ is the strongest force

_____ occurs in polar molecules

_____ occur when a temporary dipole occurs

_____ strength depends on the number of electrons in the molecule

_____ occurs in molecules where hydrogen is present

_____ is affected by the shape of the molecule

2. Identify the intermolecular forces present in each molecule. Draw the structural diagram and determine the VSEPR shape for each.

PBr_3	H_2CO_3	I_2
HF	NH_2Cl	ICl
CH_4	CF_4	CH_2F_2

3. For each of the following pairs of compounds, identify which one would have the higher boiling point, giving a reason for your answer.

a. CH_4 or SiH_4

b. CHCl_3 or CCl_4

c. CH_4 or C_2H_6

d. MgO or CO

4. Explain why the boiling point of Cl_2 is -35°C and the boiling point of C_4H_{10} is -0.50°C even though both molecules contain the same number of molecules.

5. Kr and HBr have the same number of electrons. Explain why the boiling point of HBr is higher than that of Kr .

6. Identify the intermolecular forces present in each of the following molecules.

a. H_2O

d. PCl_3

b. CBr_4

e. CH_3OH

c. NaCl

f. K(s)

7. Rank the following from strongest to weakest

1. Covalent bond
2. Dipole dipole force
3. Hydrogen bond
4. Ionic bond
5. London forces

Weakest _____, _____, _____, _____, _____ Strongest