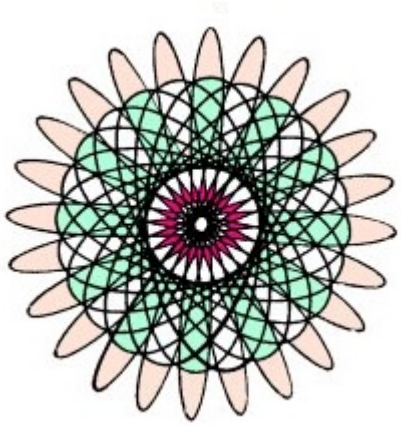

10.5 End-of-Chapter Material

ADDITIONAL EXERCISES

1. All other things being equal, rank the intermolecular forces in order of increasing strength.

2. Which subatomic particles (protons, neutrons, electrons) are most responsible for intermolecular forces? Explain your answer.

3. Can a molecule experience more than one intermolecular force at the same time? Why or why not?

4. Of the properties boiling point, structure of the solid phase, and molar mass, which are influenced by hydrogen bonding? Explain your answer.

5. How many grams of solid water can be melted with 1.55 kJ of energy?

6. How many grams of Hg can be vaporized using 29,330 J of energy?

7. Another way to minimize freezer burn is to wrap food tightly before freezing. Why would this minimize freezer burn?

8. The ΔH_{sub} of naphthalene ($C_{10}H_8$) is 72.6 kJ/mol. What energy is needed to sublime 100.0 g of $C_{10}H_8$?

9. Which do you think would have a higher surface tension—liquid neon or liquid krypton? Explain your answer.

10. Under what condition would a liquid not show either capillary rise or capillary depression?

ANSWERS

1. dispersion forces < dipole-dipole interactions < hydrogen bonding < ionic bonding

3. Yes, but one intermolecular force usually dominates.

5. 4.64 g

7. Water in the vapor phase has no space to evaporate into.

9. liquid krypton because it would have stronger dispersion forces