

**Chapter Summary: States of Matter: Liquids and Solids**  
**Intermolecular Forces and the Physical Properties of Liquids and Solids**

**Intermolecular Forces**

- Van der Waals Forces
- Hydrogen Bonds
- Dispersion Force
- Ion – dipole interactions
- Dipole-Dipole Force

**Intermolecular Forces and Liquid Properties**

- Surface Tension
- Cohesion
- Viscosity
- Adhesion

**Liquid Phase Changes**

- Heat of Vaporization: quantity of heat absorbed to vaporize a given amount of liquid at constant temperature.
- Vapor Pressure: pressure exerted by the vapor of a liquid at a particular temperature. It increases with temperature.

**Structure of Solids**

- Covalent: amorphous, allotropes
- Ionic: crystalline, lattice, lattice energy, unit cell

**Solid Phase Changes**

- Phase Changes: – fusion, freezing, vaporization, condensation, sublimation, deposition
- Boiling Point: temperature at which vapor pressure of a liquid is equal to atmospheric pressure.
- Critical Point: temperature and pressure at which a liquid and vapor coexist in equilibrium as physically distinct phases.
- Critical temperature is the highest temperature at which a gas can be condensed into a liquid by increasing the pressure of the gas.
- Melting Point or Freezing Point: temperature at which solid and liquid phases are in equilibrium.
- Supercooling
- Supercritical Fluid: the fluid that exists at and above critical point.
- Enthalpy of Fusion: quantity of heat required to melt a given amount of solid.
- Phase Diagram: a graphical representation of the states of matter with respect to changes in temperature and pressure.
- Triple Point: the temperature and pressure at which solid, liquid and vapor coexist.

**Key Words:**

melting, freezing, vaporization, condensation, sublimation, deposition	vapor pressure, critical point, triple point, supercritical fluid,	phase diagram
Dispersion forces, hydrogen bond	Surface tension, viscosity	Amorphous, crystalline