Chapter 9: Solids and Fluids

ICE WATER STEAM

Add heat

Add heat

Chapter 9: Solids and Fluids

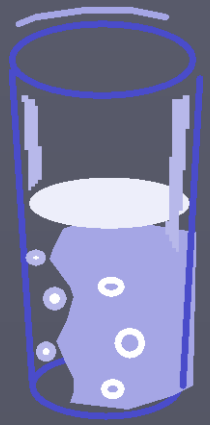
- 9.1. States of Matter
- 9.3. Density and Pressure
- 9.4. Variation of Pressure with Depth
- 9.5. Pressure Measurements

States of matter: Phase Transitions

ICE

Add heat

WATER



Add heat

STEAM

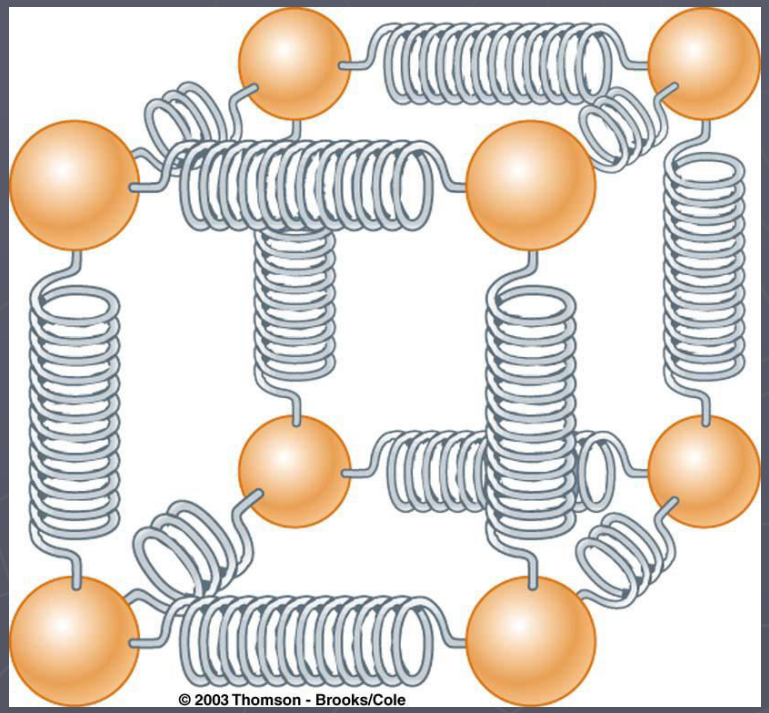
These are three states of matter (plasma is another one)

States of Matter

- Solid
- Liquid
- Gas
- Plasma

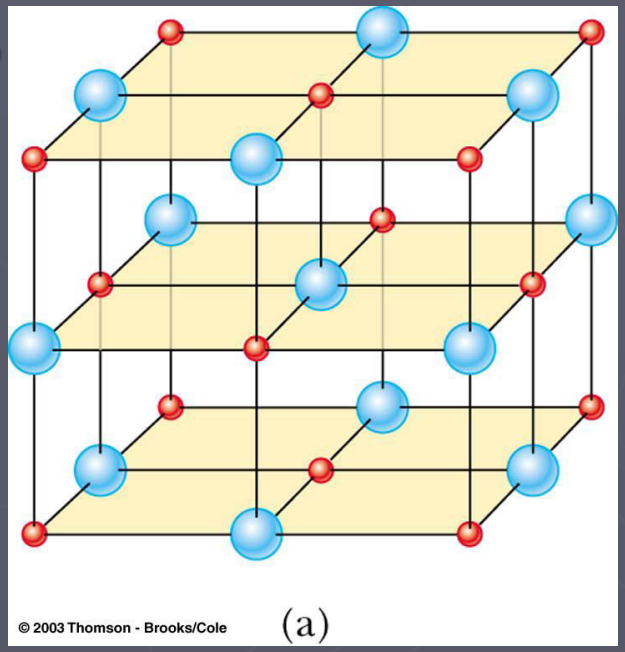
States of Matter

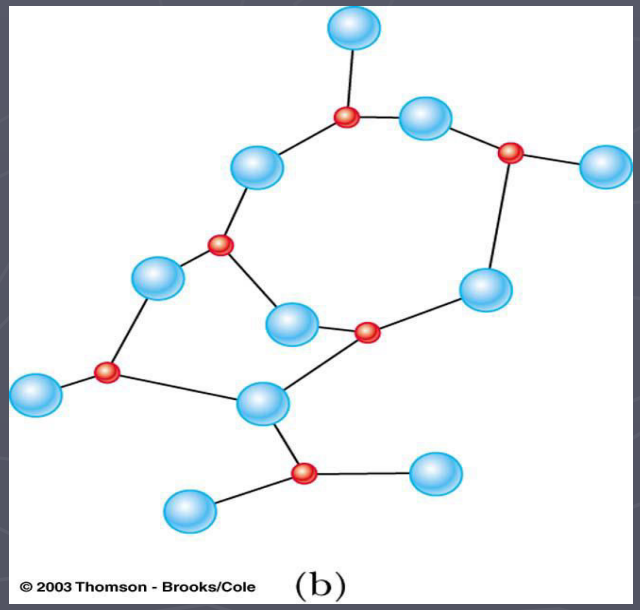
- Solid
  - Has definite volume
  - Has definite shape
  - Molecules are held in specific location by electrical forces and vibrate about equilibrium positions
  - Can be modeled as springs connecting molecules
- Liquid
- Gas
- Plasma



States of Matter

- Solid
  - Crystalline solid
    - Atoms have an ordered structure
    - Example is salt (red spheres are Na^+ ions, blue spheres represent Cl^- ions)
  - Amorphous Solid
    - Atoms are arranged randomly
    - Examples include glass
- Liquid
- Gas
- Plasma





States of Matter

- Solid
- Liquid
  - Has a definite volume
  - No definite shape
  - Exist at a higher temperature than solids
  - The molecules "wander" through the liquid in a random fashion
    - ✓ The intermolecular forces are not strong enough to keep the molecules in a fixed position
- Gas
- Plasma