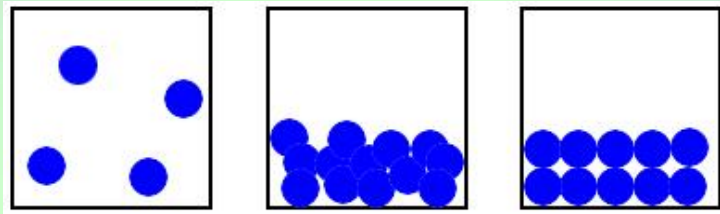


States of Matter



Gas

- Particles very far apart
- No intermolecular forces
- High average kinetic energy
- Elastic collisions between particles
- Fills and takes shape of container

Liquids

- Particles close together
- Weak intermolecular forces
- Medium average kinetic energy
- Elastic collisions between particles
 - (sticky, flow)
- Takes shape but may not fill container

3/4/2007

States of Matter

3

Solids

- Particles very close together
 - Vibrate in place
- Strong intermolecular forces
- Low average kinetic energy
- No collisions between particles
 - Vibrate in place
- Maintain own shape

3/4/2007

States of Matter

4

Some Definitions

- Melting Point
- Freezing Point
- Boiling Point
- Evaporation
- Condensation
- Sublimation
- Deposition
- Solid to liquid transition
- Liquid to solid transition
 - Vapor pressure solid=vapor pressure liquid
- Liquid to gas transition
 - Vapor pressure liquid=atmospheric pressure
- Liquid to gas transition
- Gas to liquid transition
- Solid to gas transition
- Gas to solid transition

3/4/2007

States of Matter

5

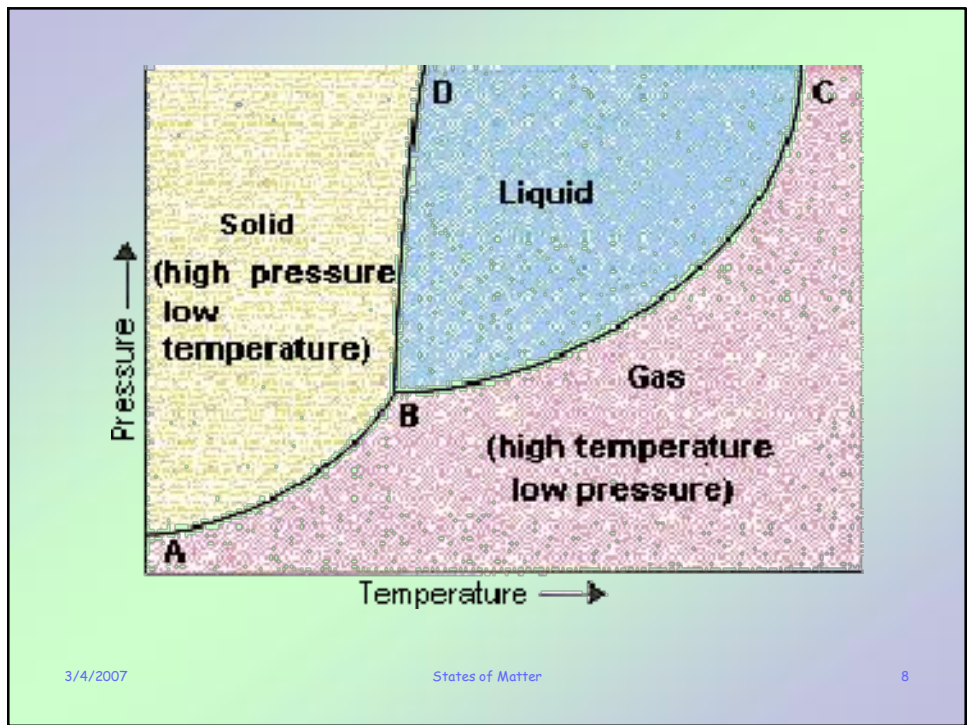
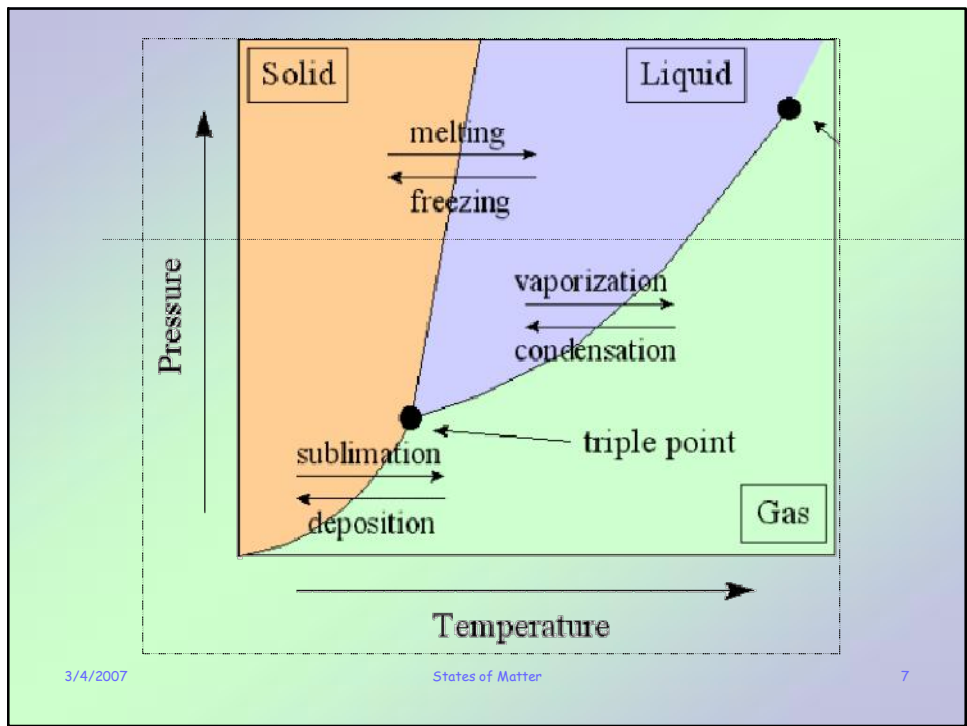
Phase Diagrams

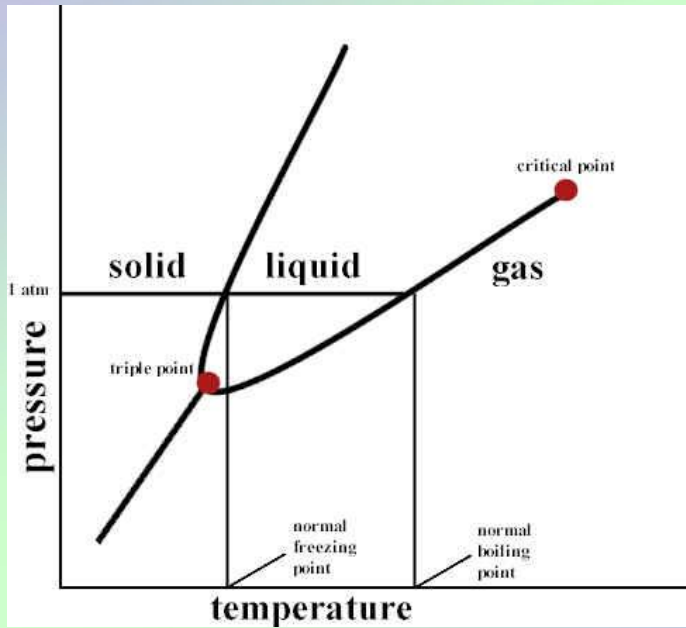
Phase Transitions

3/4/2007

States of Matter

6

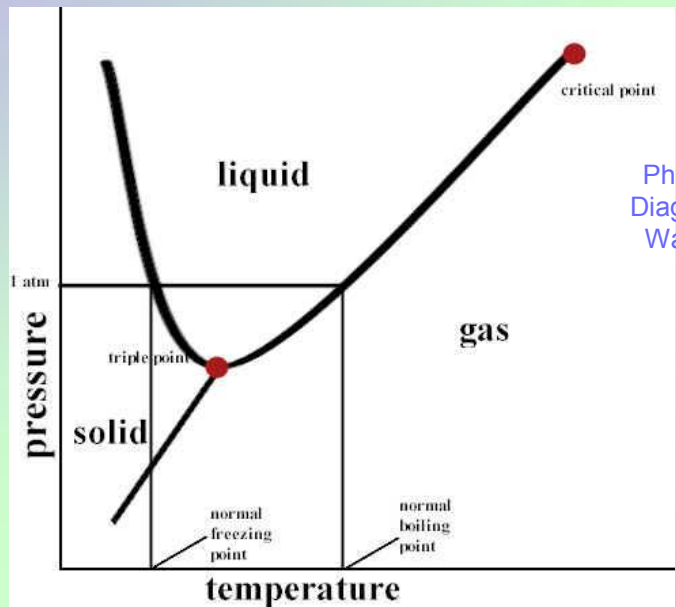




3/4/2007

States of Matter

9



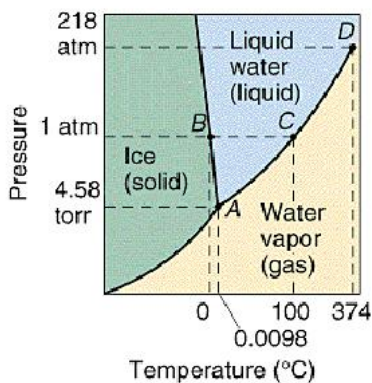
Phase Diagram
Water

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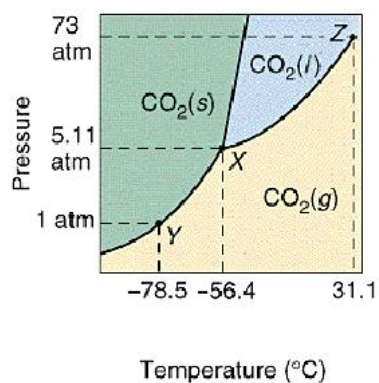
States of Matter

10

Phase diagram for water and carbon dioxide



(a)



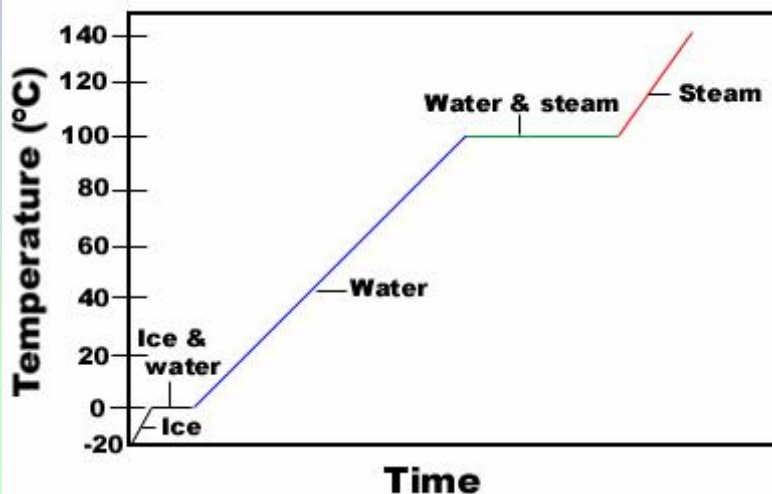
(b)

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States of Matter

11

Heating curve for water

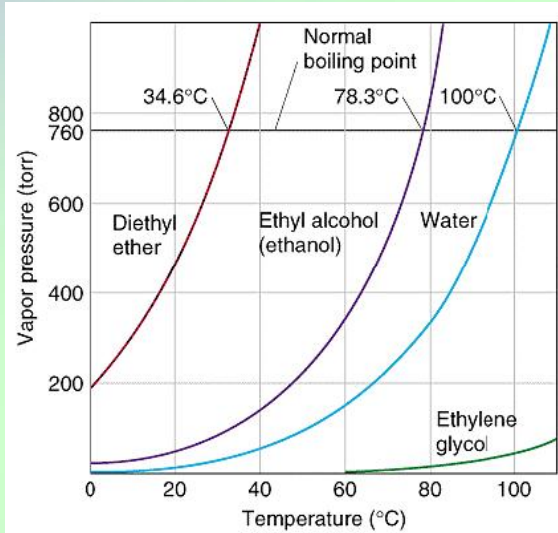


3/4/2007

States of Matter

12

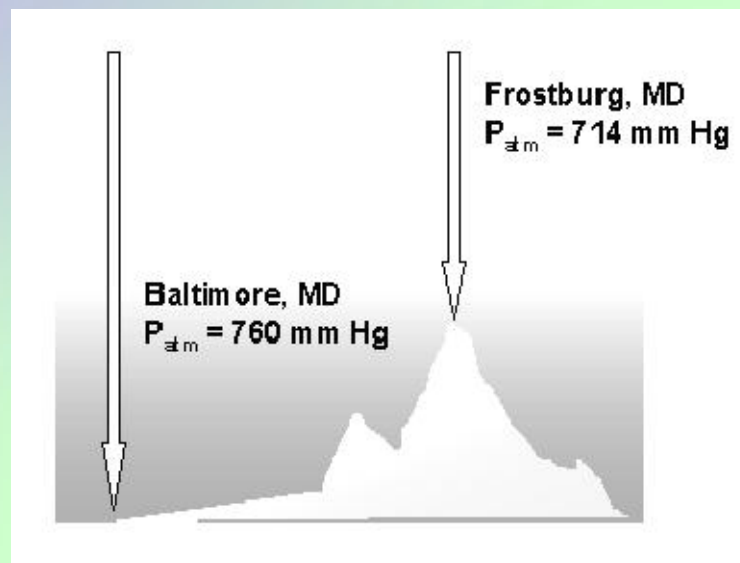
Vapor Pressure



3/4/2007

States of Matter

13



3/4/2007

States of Matter

14

- <http://www.chem.neu.edu/Courses/1131Tom/Lecture24/sld014.htm>