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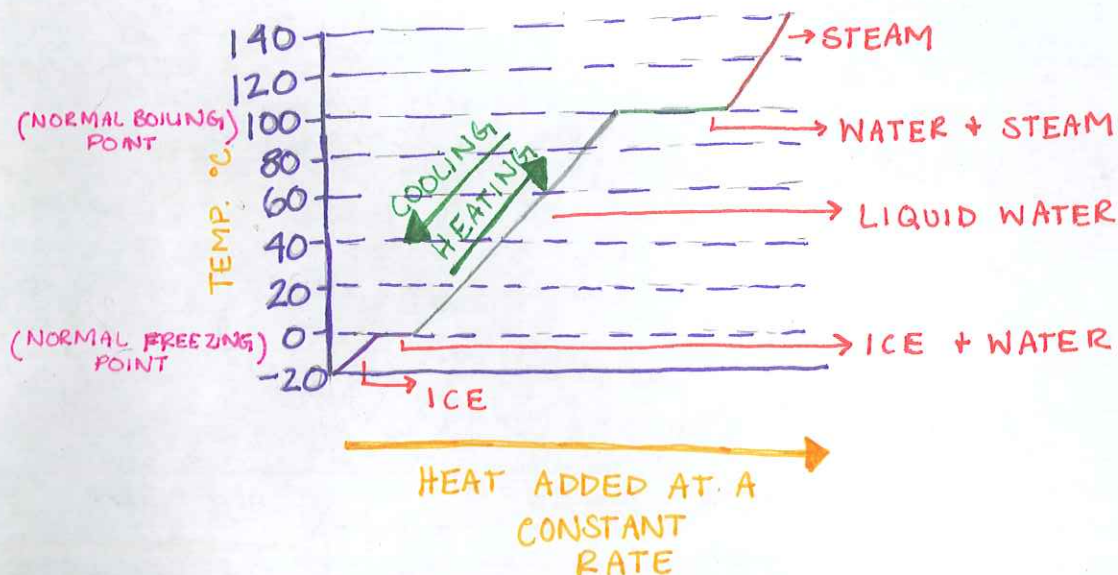
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H. Chemistry

Ch. 13.1-13.5 Lecture Guide

➤ 13.1: Water and Its Phase Changes

○ Heating and Cooling Curve



○ Why does ice float?

- AS WATER FREEZES, IT EXPANDS + HAS MORE VOLUME, BUT MASS STAYS THE SAME. $D = \frac{M}{V}$, SO DENSITY DECREASES.

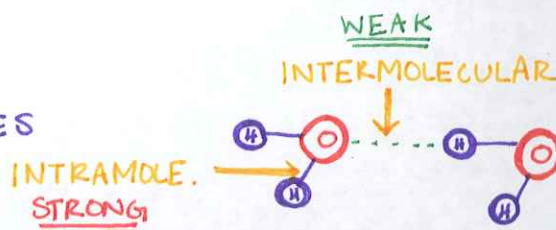
➤ 13.2: Energy Requirements for the Changes in State

○ Intermolecular Forces

- FORCES AMONG MOLECULES

○ Intramolecular Forces

- FORCES THAT HOLD ATOMS OF A MOLECULE TOGETHER



○ Molar Heat of Fusion

- ENERGY REQUIRED TO MELT 1 MOL OF A SUBSTANCE

○ Molar Heat of Vaporization

- ENERGY REQUIRED TO CHANGE ONE MOL OF A LIQUID TO A VAPOR

> 13.3: Intermolecular Forces

- Dipole-Dipole Attraction

STRONG MOLECULES WITH DIPOLE MOMENTS CAN ATTRACT EACH OTHER BY LINING UP SO THAT THE POSITIVE + NEGATIVE ENDS ARE CLOSE TO EACH OTHER.

- Hydrogen Bonding

STRONGER PARTICULAR TYPE OF DIPOLE BOND; V. STRONG; OCCURS BETWEEN HYDROGEN ATOMS OF ONE MOLECULE + V. ELECTRONEGATIVE ATOMS (O, F, N) OF ANOTHER MOLECULE

- London Dispersion Forces

WEAKER FORCES THAT EXIST AMONG NOBLE GAS ATOMS + NON-POLAR MOLECULES THAT HOLD THE ATOMS OR MOLECULES CLOSE TOGETHER IN CONDENSED STATES

> 13.4: Evaporation and Vapor Pressure

- Vaporization/Evaporation

UPON HEATING, INTRAMOLECULAR FORCES OF LIQUID ARE OVERCOME + MOLECULES ESCAPE THE SURFACE AS GAS

- Condensation

WHEN VAPOR MOLECULES MOVE CLOSER TOGETHER, THEY CONDENSE INTO A LIQUID

- Vapor Pressure

THE PRESSURE OF A VAPOR PRESENT AT EQUILIBRIUM WITH ITS LIQUID

> 13.5: The Solid State: Types of Solids

- Crystalline Solids

SOLID WITH A REGULAR ARRANGEMENT OF ITS COMPONENTS

- Ionic Solids

- MADE UP ON IONS
EX) Na^+ + Cl^-

- Molecular Solids

- MADE UP OF TWO OR MORE NONMETALS
EX) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$

- Atomic Solids

- ATOMS OF ONE ELEMENT COVALENTLY BONDED
EX) COPPER WIRE