

Bangladesh University of Engineering and Technology

Department of Chemistry

CHEM113: Chemistry

For Students of CSE

Course Teacher: **Professor Dr. Md. Mominul Islam** (Guest Faculty)

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CHEM113 : Chemistry

Total Credit Hours: 3 ; L1/T2

Course Content

Quantum concept in atomic structure, VSEPR; molecular geometry, Quantum concept in bonding; VBT and MOT, Frontier MOT and electronic transition, Silicon chemistry, Properties of solutions, Colloid and Nano-chemistry, **Phase rule and phase diagram; Energy and chemistry, Electrochemistry; electrolytic conduction, corrosion, devices for energy storage, Chemistry of biodegradable and conductive polymer; LED, LCD/touch screen,** Chemistry of proteins, nucleic acids (DNA, RNA), carbohydrates and lipids; Introduction to computational chemistry; Design of new molecules, materials and drug.

Evaluation Process

A. Class assessment

- Quizzes – 4 (Average of best 3 quizzes)
- Attendance and Participation

B. Final exam

Mark distribution

Class test	– 20%
Attendance and Participation	– 10%
Final Exam	– 70%

Schedule

Lecture	Activities/Topic	Remarks
Lecture 1	Introduction + Phase rule and phase diagram	Start (12 April 2025)
Lecture 2	Phase rule and phase diagram	-
Lecture 3	Phase rule and phase diagram	-
Lecture 4	Energy and chemistry	Quiz-1
Lecture 5	Energy and chemistry	-
Lecture 6	Electrochemistry + Electrolytic conduction	-
Lecture 7	Electrochemistry + Electrolytic conduction	Quiz-2
Midterm Break		
Lecture 8	Corrosion	-
Lecture 9	Devices for energy storage	-
Lecture 10	Devices for energy storage	Quiz-3
Lecture 11	Chemistry of biodegradable polymer	-
Lecture 12	Chemistry of conductive polymer	-
Lecture 13	LED, LCD/touch screen	Quiz-4
Lecture 14	Overview	End (expected July)

Phase Rule and Phase Diagram

Outlines

Phase equilibria

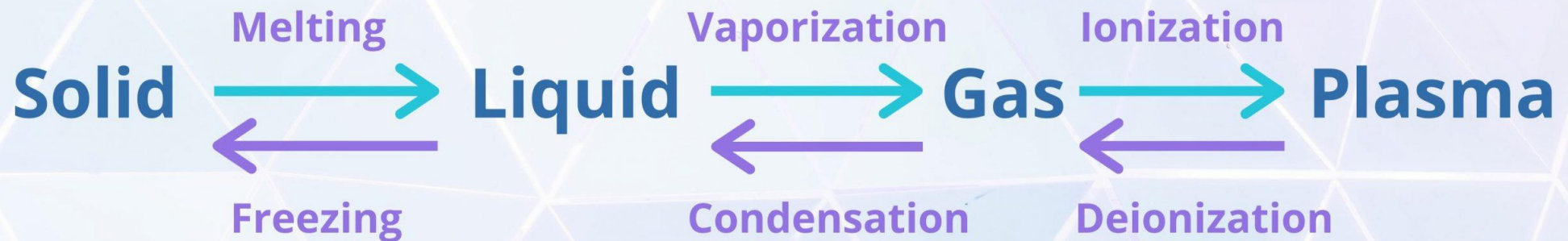
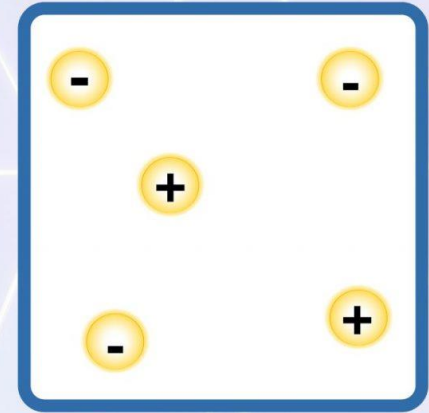
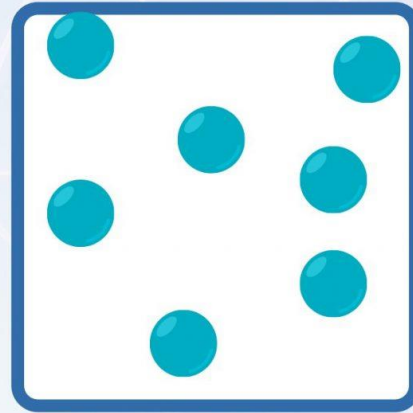
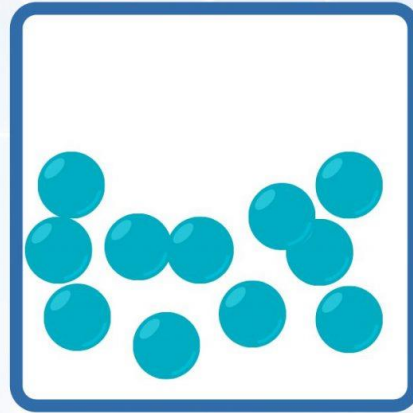
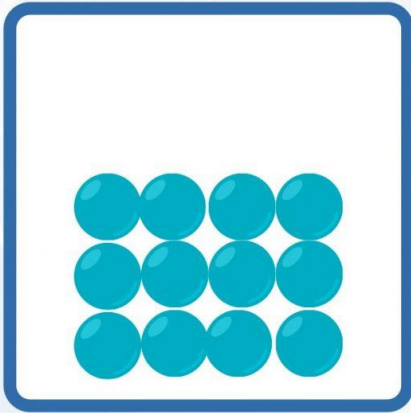
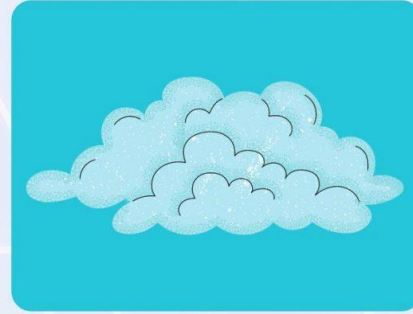
Phase rule

Component

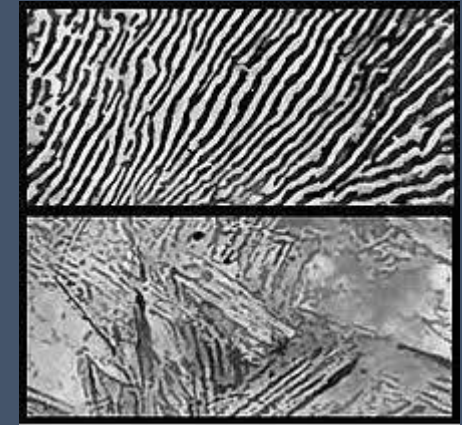
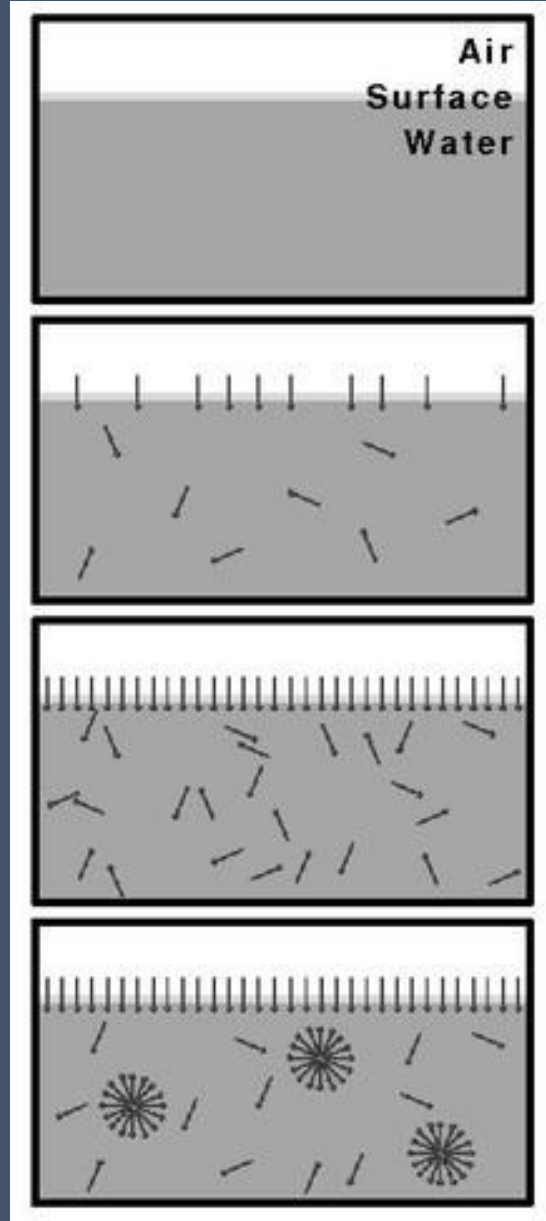
Degree of freedom

Phase diagrams

States of Matter



Commonly observed states of substances



Pressure
Temperature
Composition