

Syllabus Info: *(Please read entire syllabus located on UB Learns)***Lecture UB Learns:**

- **Lecture Material**
 - **Announcements:** made at start of lecture
 - **Recording:** Posted in Class Recording link
 - **Skeleton Outlines:** to help take notes, if you wish
 - **Answers to Additional Problems:** extra problems are located at end of each outline
 - **Additional Videos:** YouTube videos I have found pertaining to the more difficult material
- Please bring to **EVERY** class
 - Outlines (*UB Learns*)
 - Calculator
 - **Periodic table & Equation pg** (*UB Learns*)

Mastering chemistry:

- **Technical Issues:** Contact **Mastering Chemistry**
 - *Pop-up Blocker disabled? OR Flash player updated?*
- 6 attempts at each submit button
- **Hints:** Some questions have them
 - If answer correctly, earns extra pts, but if answer incorrectly, can lose points,
 - But if help you answer overall question then you usually earn more points than you would lose if you didn't answer the question
 - No points lost if look at them
 - **HIGHLY** recommend using when available
- **Suggestions:** Each assignment ~1-3 hrs
 - Work the problems pertaining to material learned in that day's lecture
 - If can't answer in 10 minutes or 3-4 tries?
 - Move on and seek help

Getting Help

- Go to **Instructor** office hrs: **Starts 8/28/17**
 - See pg 1 of syllabus: **First 2 weeks of classes ALL Dr. Gulde's office hrs are in NSC325**
- Go to NSC110 for TA help: **Starts Mon. 9/11/17**
 - 1st come, 1st serve basis



Chapter 13: Properties of Solutions



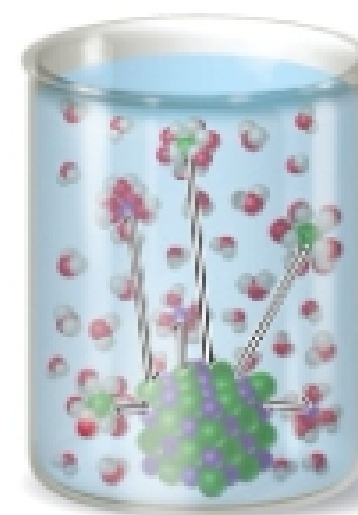
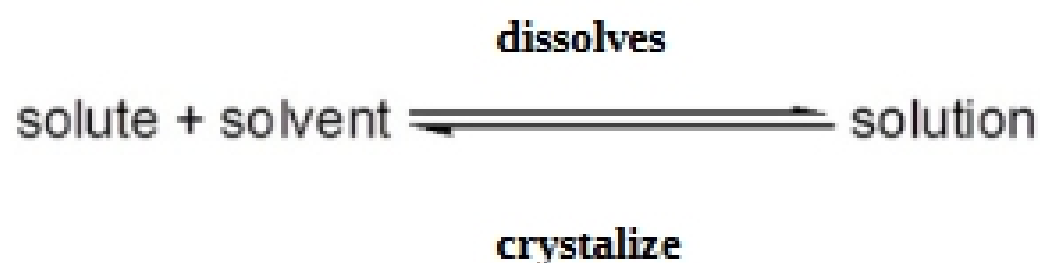
Solutions

- **Solutions** – are **homogeneous (uniform)** mixtures
 - **Solute** – usually present in **smaller** amounts, **it's dissolving**
 - **Solvent** – usually present in **larger** amounts, **causes dissolving**
 - We are familiar w/ **water** but doesn't have to be

TABLE 13.1 Examples of Solutions			
State of Solution	State of Solvent	State of Solute	Example
Gas	Gas	Gas	Air
Liquid	Liquid	Gas	Oxygen in water
Liquid	Liquid	Liquid	Alcohol in water
Liquid	Liquid	Solid	Salt in water
Solid	Solid	Gas	Hydrogen in palladium
Solid	Solid	Liquid	Mercury in silver
Solid	Solid	Solid	Silver in gold

Solution Equilibrium

- **Dissolution (dissolves)** – solute breaks apart (into ions or molecules)
- **Crystallize** - when **dissolved** solute comes **out** of soln
(forms a **solid**)
- **Solution Equilibrium** – when the **rates** of these processes are **equal**



Types of Solutions

1. **Saturated solutions** – contains **max** amount of *solute* for a solvent, at a specific temp
 - Sugar: 25°C = **211g**/100g H₂O
 - 50 °C = **260g**/100g H₂O
 - If add more solute it **won't** dissolve
- **Solubility** – amount of **solute** needed to form a **saturated** solution
2. **Unsaturated solutions** – contains **less** than max amount of *solute*, at a specific temp
 - If add more solute it **will** dissolve, until reach **saturation**
3. **Supersaturated solutions** – contains **more** than the max amount of *solute*, at a specific temp
 - **To make:** heat saturated solution, add **solute** then **cool** to *original* temp
 - **Not stable**
 - If add more *solute*, excess **crystallizes**, until **saturation** reached (Alum exp. From CHE101)

