Announcements – Lecture XIV – Thursday, Oct 24th

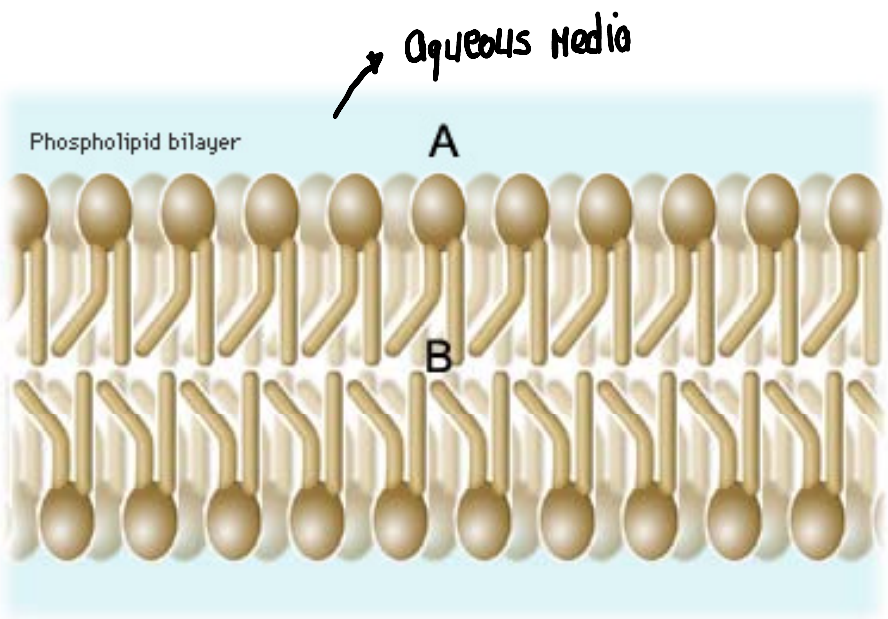
1. **Lab 4 – Saturday, November 2nd, 1:00-4:00 pm – ISB 155/160 A-E**
   Lab Owl III – Deadline – Saturday, November 2nd, 11:59 pm

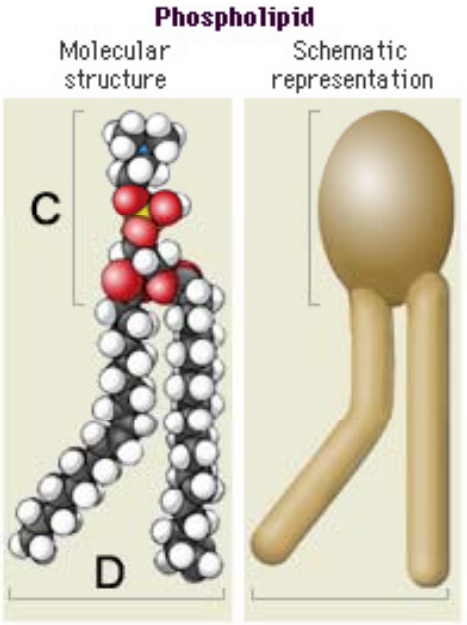
2. **Exam II – Tuesday, November 5th – In Class – 12:45-2:15 pm**
   Sunday, November 3rd – Review , 3:00-5:00pm – ISB 135

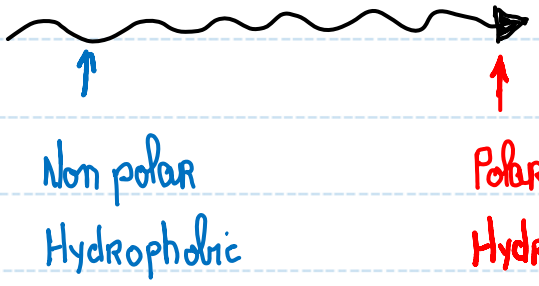
3. 

   iClicker:
   Choose any letter: A-E

3.11 Consequence of Molecular Polarity

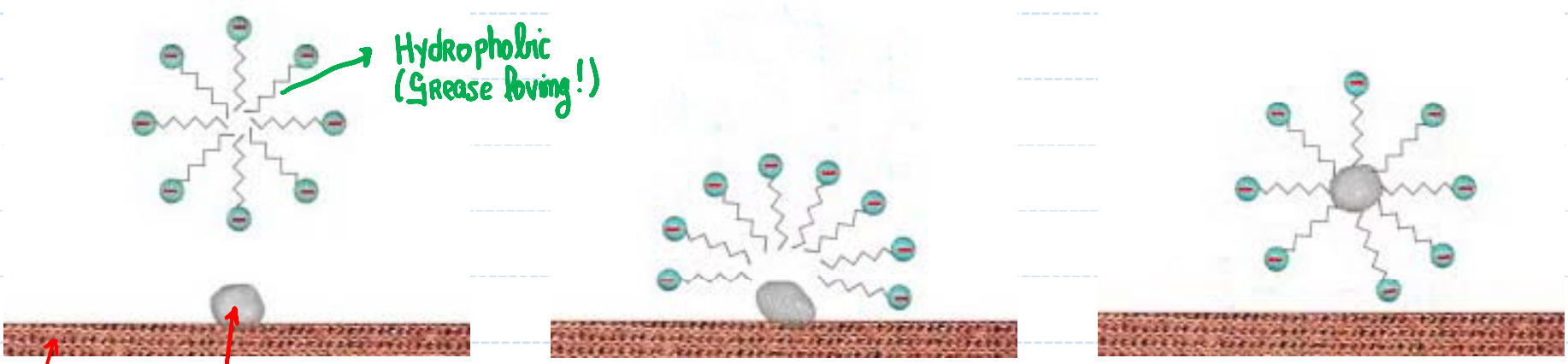






3.11 Consequence of Molecular Polarity

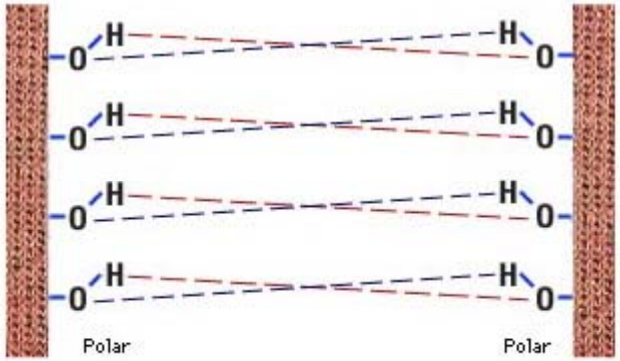
Detergents



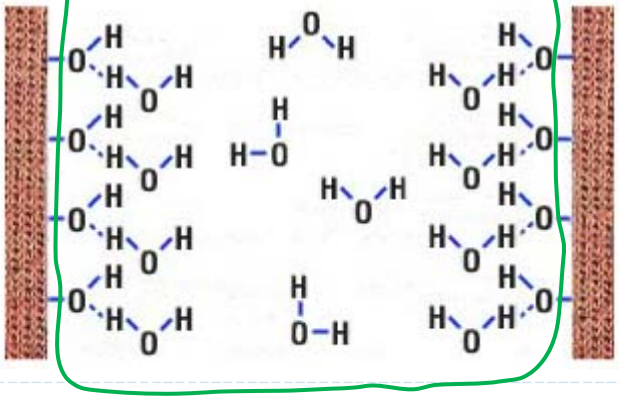
? How might the reverse of this process be of use in Medicine ??

3.11 Consequence of Molecular Polarity

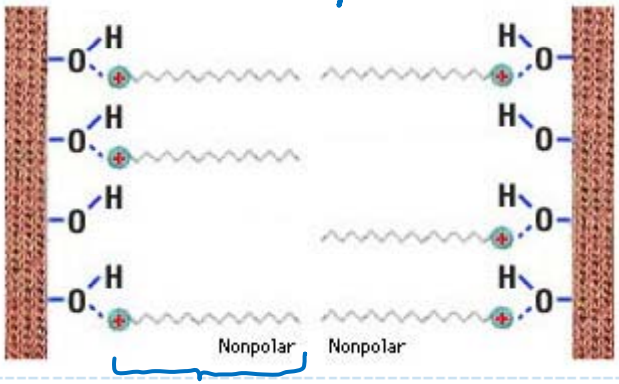
Static cling!



Hydrophilic

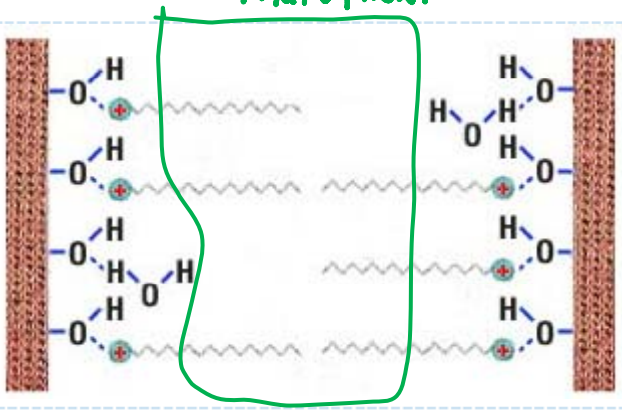


Oh So Soft!

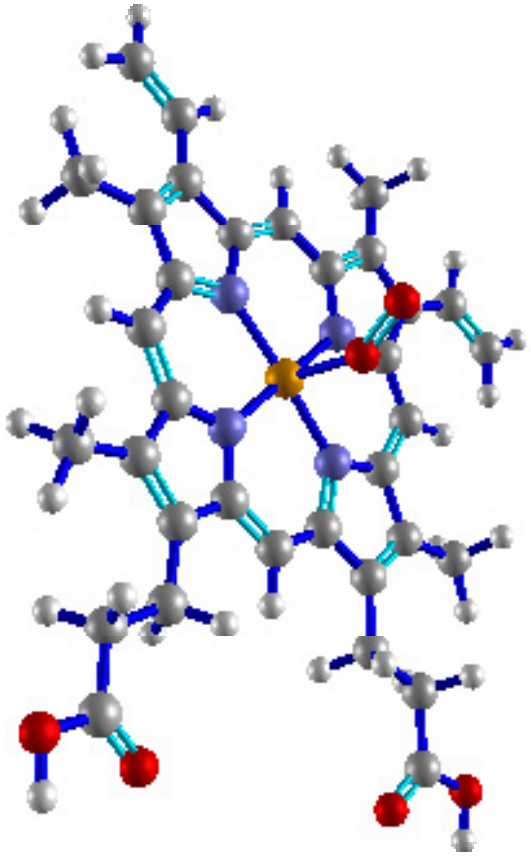


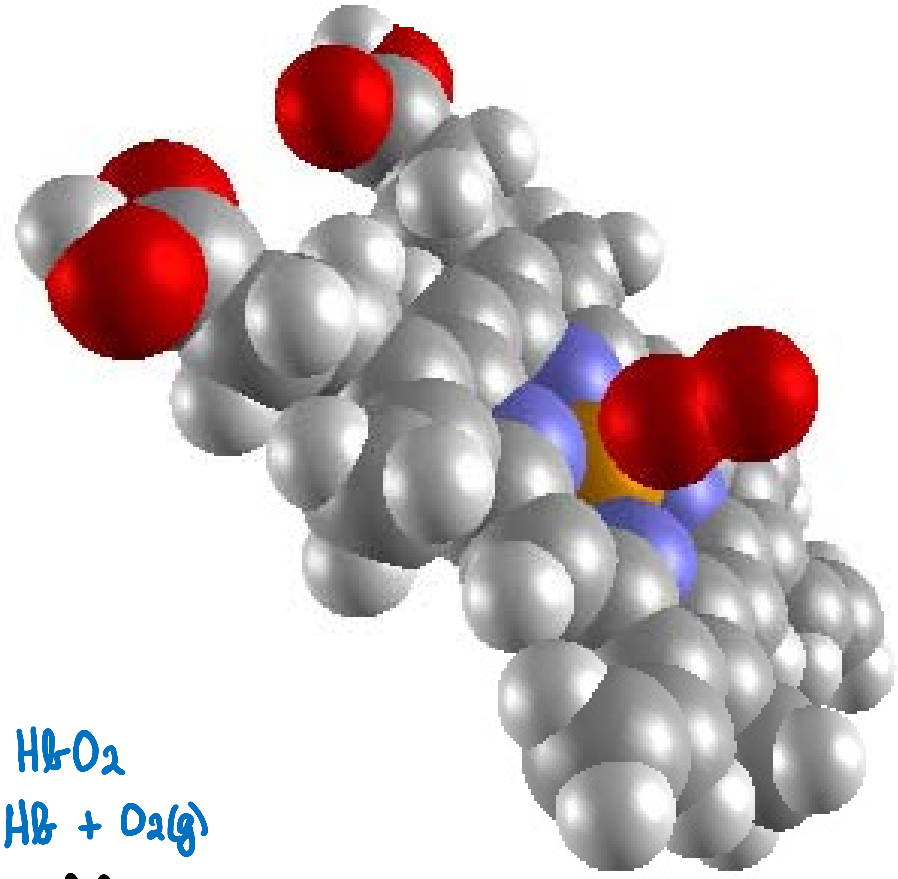
fabric softner

Hydrophobic



7.5 What Does It Mean to Say That a Reaction Has Reached Equilibrium



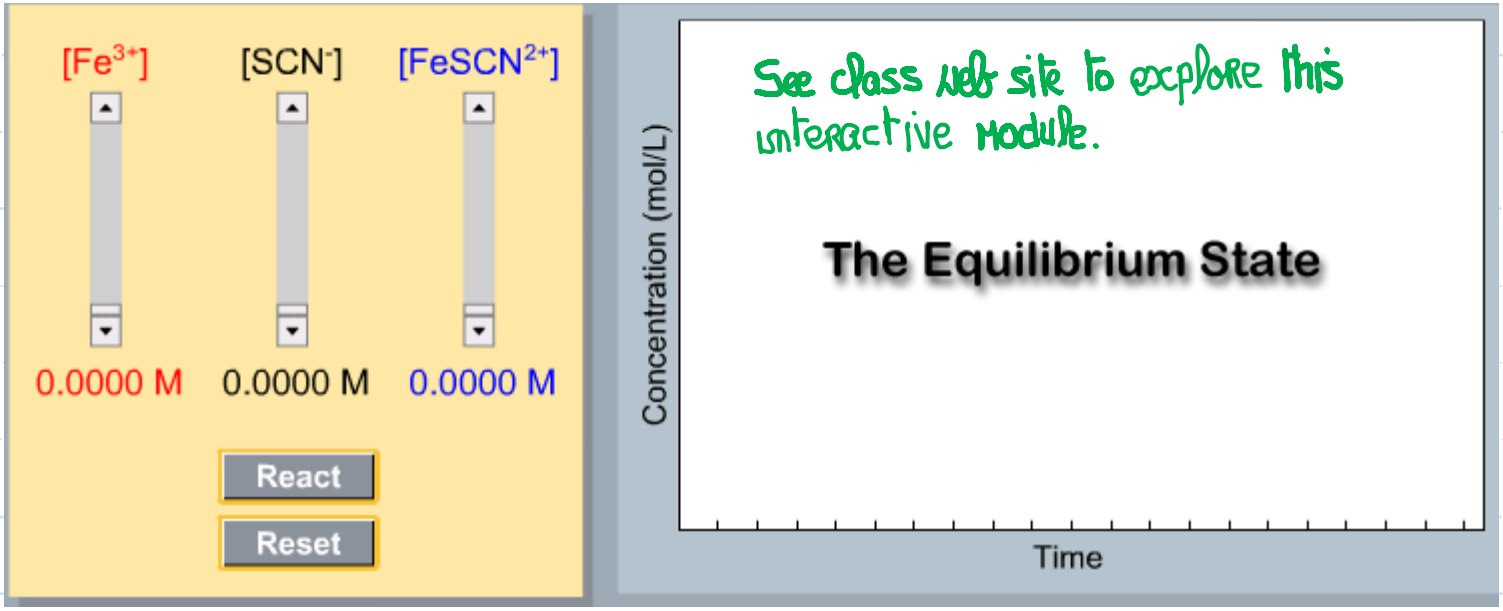


$Hb + O_2(g) \rightleftharpoons Hb\text{-}O_2$

$Hb\text{-}O_2 \rightleftharpoons Hb + O_2(g)$

"$\rightleftharpoons$" used to indicate an equilibrium

7.5 What Does It Mean to Say That a Reaction Has Reached Equilibrium



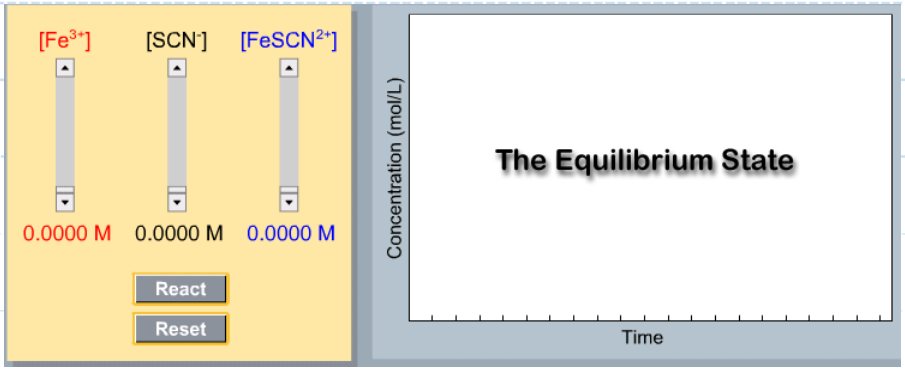
See class web site to explore this interactive module.

$$Fe^{3+} + SCN^- \rightleftharpoons FeSCN^{2+}$$

$$FeSCN^{2+} \rightleftharpoons Fe^{3+} + SCN^-$$

7.5 What Does It Mean to Say That a Reaction Has Reached Equilibrium

* [ ] : $mol.L^{-1}$



Starting Concentrations			
	$[Fe^{3+}]$	$[SCN^-]$	$[FeSCN^{2+}]$
#1	0.004	0.007	0
#2	0	0	0.007
#3	0.004	0.003	0.004

Equilibrium Concentrations					
	$[Fe^{3+}]$	$[SCN^-]$	$[FeSCN^{2+}]$	$[Fe^{3+}][SCN^-]/[FeSCN^{2+}]$	$[FeSCN^{2+}]/[Fe^{3+}][SCN^-]$
#1	2.285×10^{-3}	5.285×10^{-3}	1.714×10^{-3}	7.046×10^{-3}	141.9
#2	4.333×10^{-3}	4.333×10^{-3}	2.666×10^{-3}	7.042×10^{-3}	142.0
#3	5.069×10^{-3}	4.069×10^{-3}	2.930×10^{-3}	7.040×10^{-3}	142.0

$$\frac{[Fe^{3+}][SCN^-]}{[FeSCN^{2+}]} = \text{Constant} \qquad \frac{[FeSCN^{2+}]}{[Fe^{3+}][SCN^-]} = \text{Constant}$$

7.6 What is an Equilibrium Constant and How Do We Use It?

Writing Equilibrium Expressions

1) K = [Products]/[Reactants] K = Equilibrium constant.

2) When writing Equilibrium Expressions (equations) ... pure solids and liquids do not appear in the expression.

1) $HBr + O_2 \Leftrightarrow HBrO_2$

$$K = \frac{[HBrO_2]}{[HBr][O_2]}$$

2) $N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$

$$K = \frac{[NH_3][NH_3]}{[N_2][H_2][H_2][H_2]}$$

$$K = \frac{[NH_3]^2}{[N_2][H_2]^3}$$

3) $AgCl(s) \Leftrightarrow Ag^+ + Cl^-$

$$K = [Ag^+][Cl^-]$$

4) $HF(aq) + H_2O(l) \Leftrightarrow H_3O^+ + F^-$

$$K = \frac{[H_3O^+][F^-]}{[HF]}$$

7.6 What is an Equilibrium Constant and How Do We Use It?

The Significance of the Magnitude of K