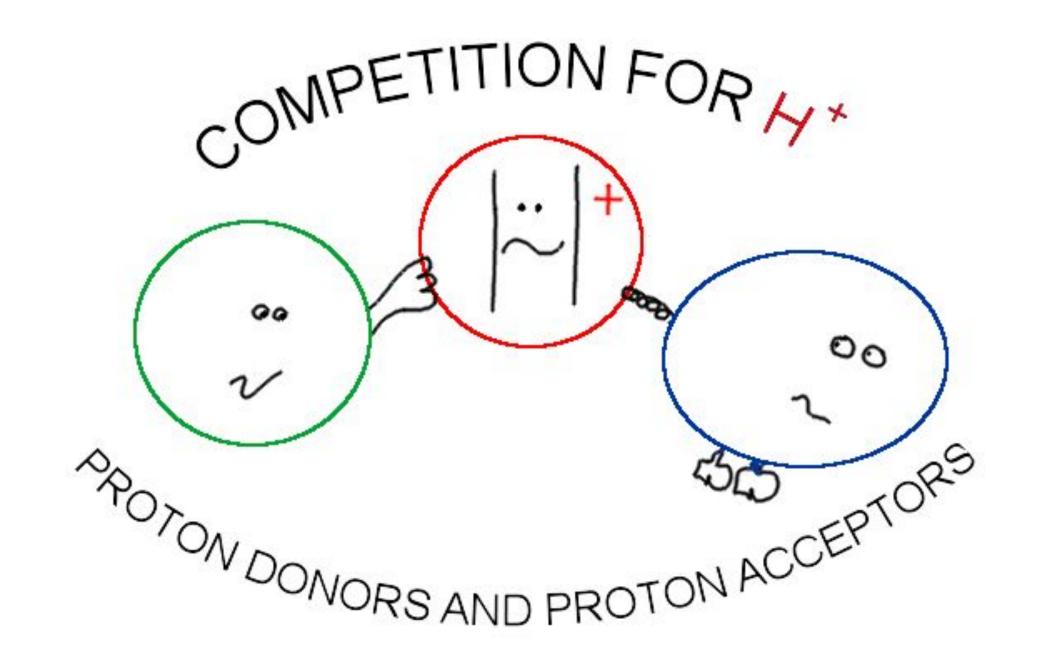
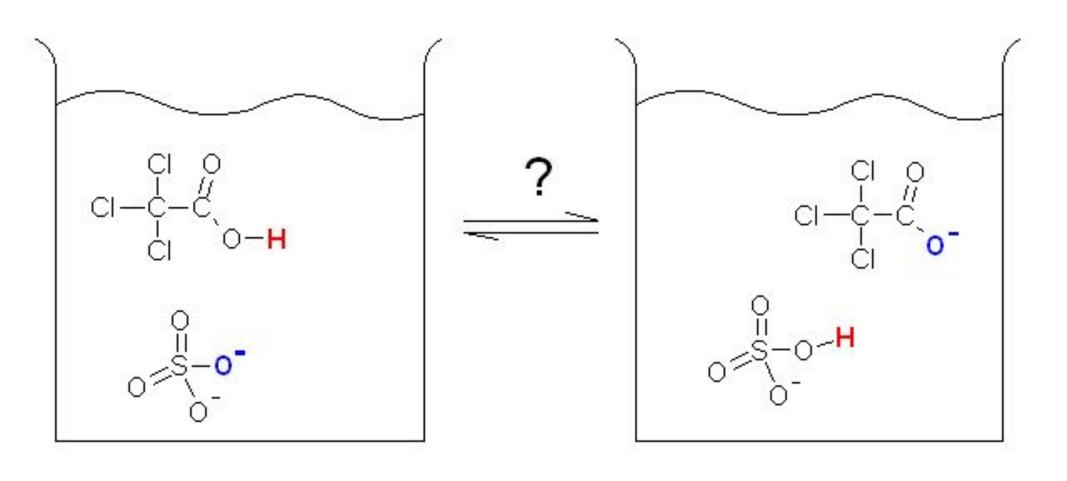
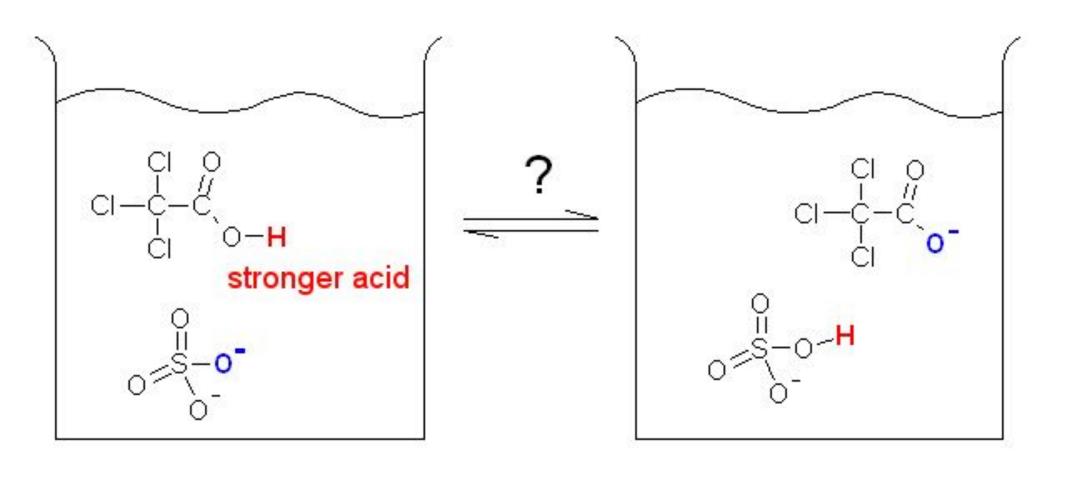
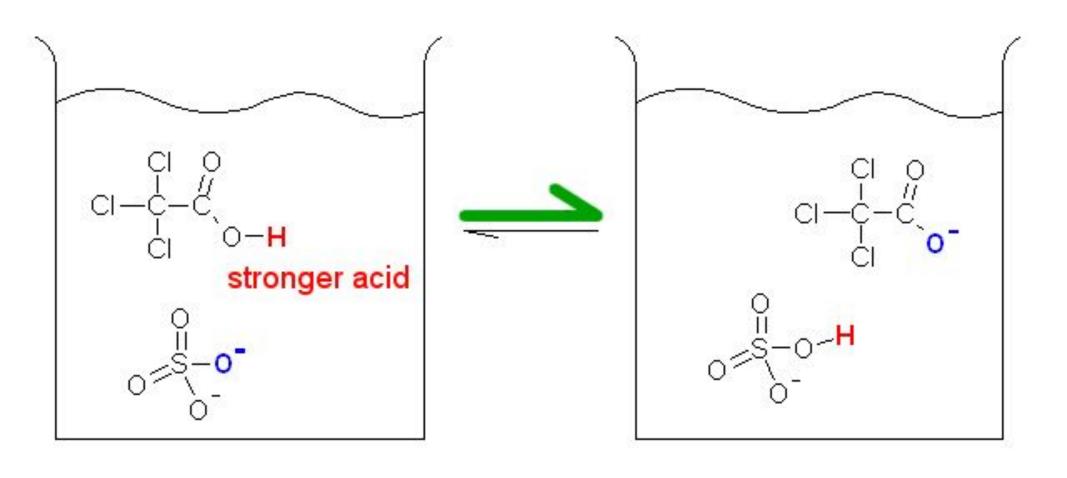
Acid Base Chemistry

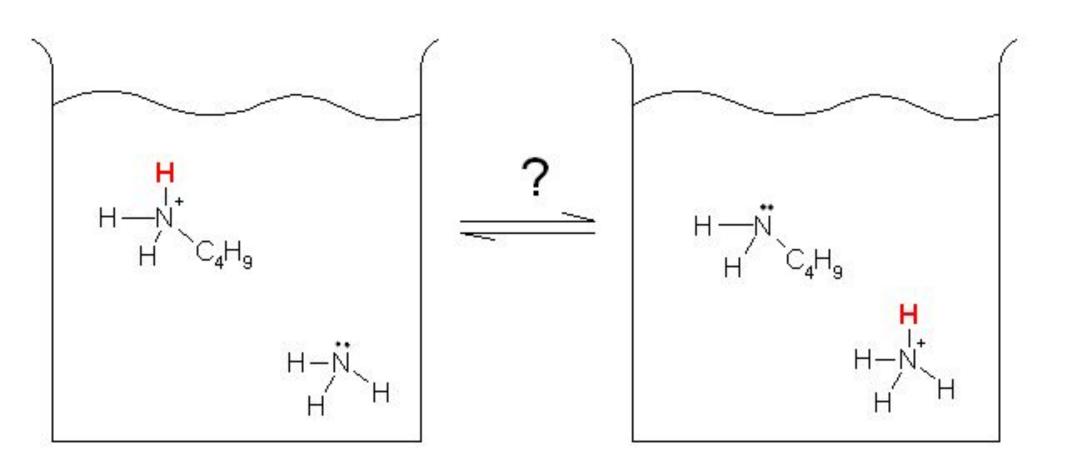
- Foundation knowledge
- The pH scale
- The pH of Water
- 4. Acids
- 5. Bases
- 6. Acid base titrations
- 7. Relative acidity and basicity competition for H+
 - a. pKa and pKb of conjugate acids and bases
 - b. Competition for H+





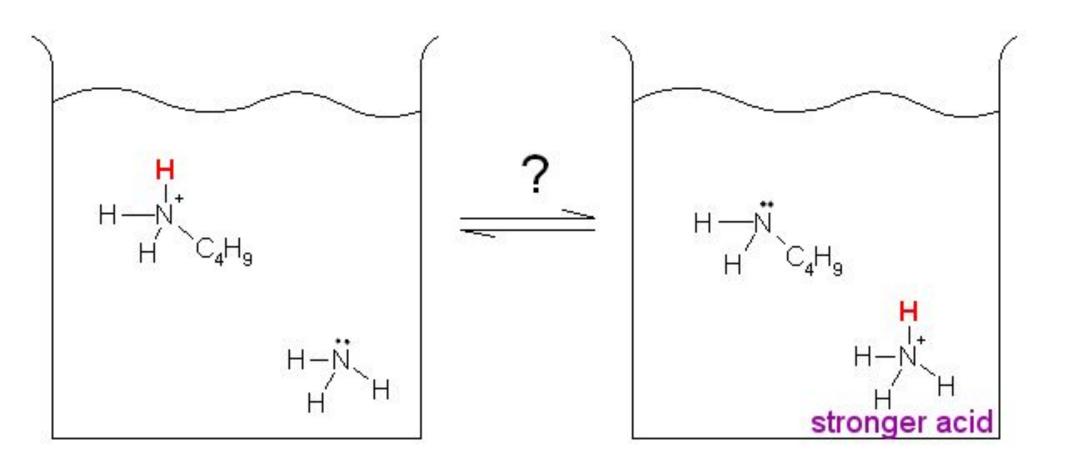


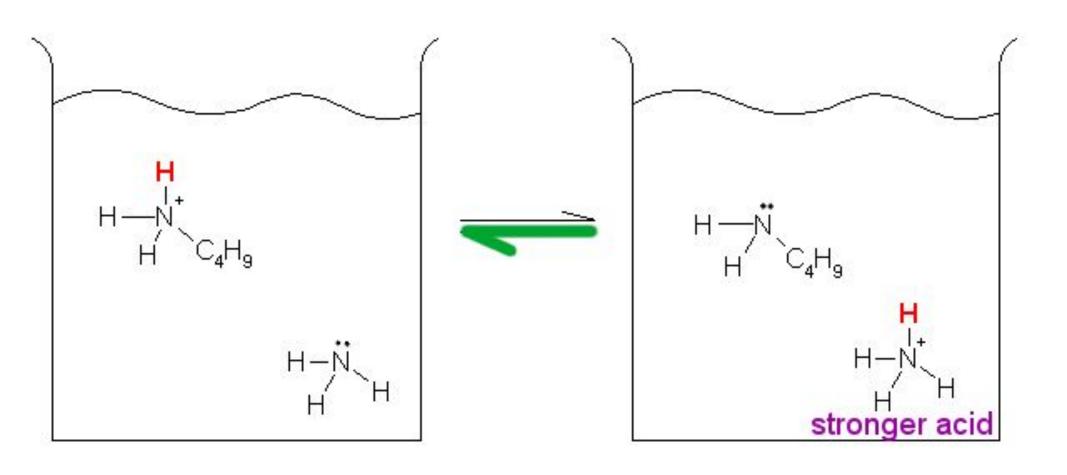


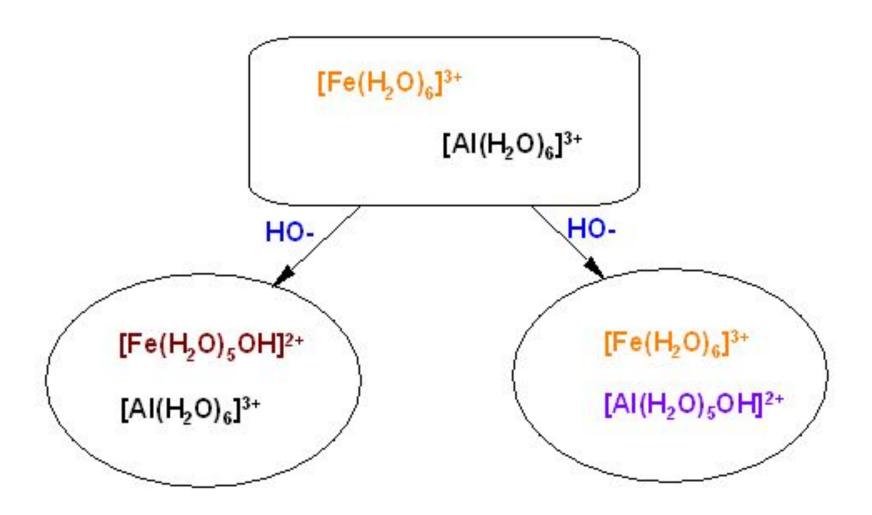


$$H - N + C_4H_9$$
 $PK_a = H - N + C_4H_9$
 $H - C_4H_9$
 $PK_a = H - N + C_4H_9$
 $H - C_4H_9$

HH H
$$9.3$$
 H H H 9.3 H H 10.8 H 1



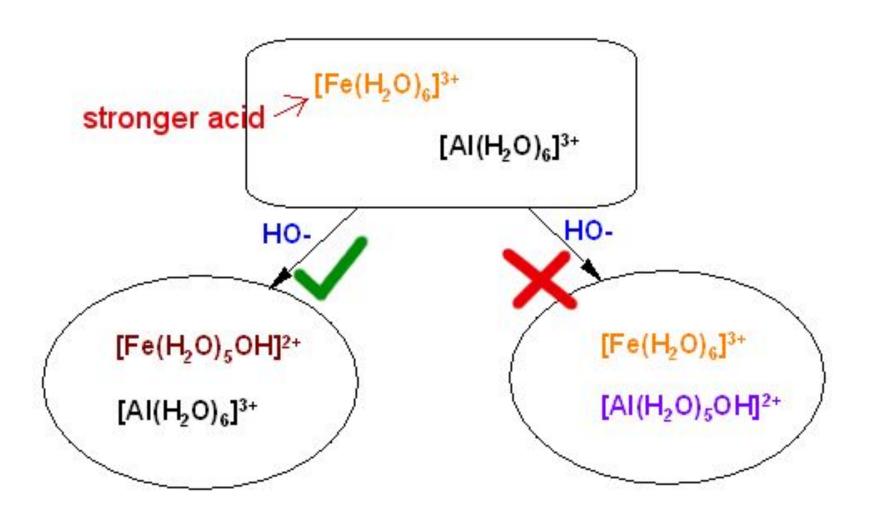


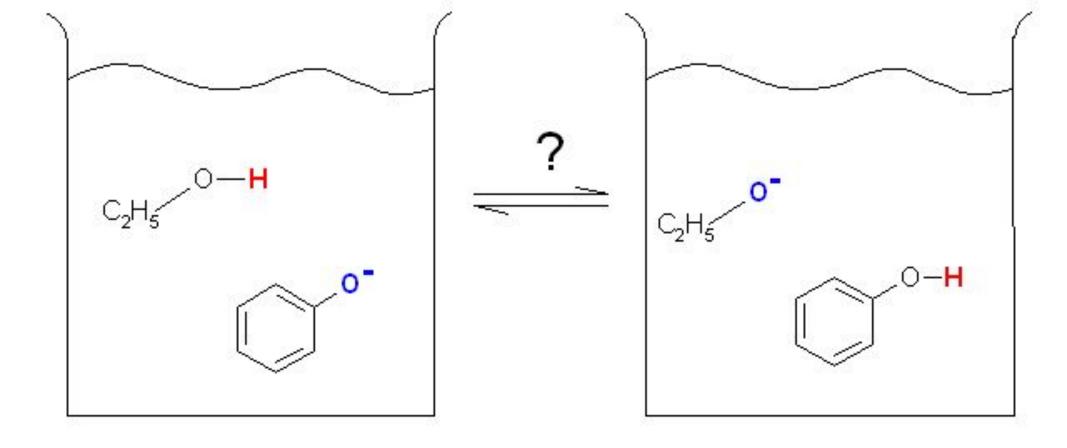


$$[Fe(H_2O)_6]^{3+} = \frac{\kappa_3}{6.0 \times 10^{-3}} \qquad [Fe(H_2O)_5OH]^{2+} = H^{+}$$

$$[AI(H_2O)_6]^{3+} = \frac{\kappa_3}{1.0 \times 10^{-5}} \qquad [AI(H_2O)_5OH]^{2+} = H^{+}$$

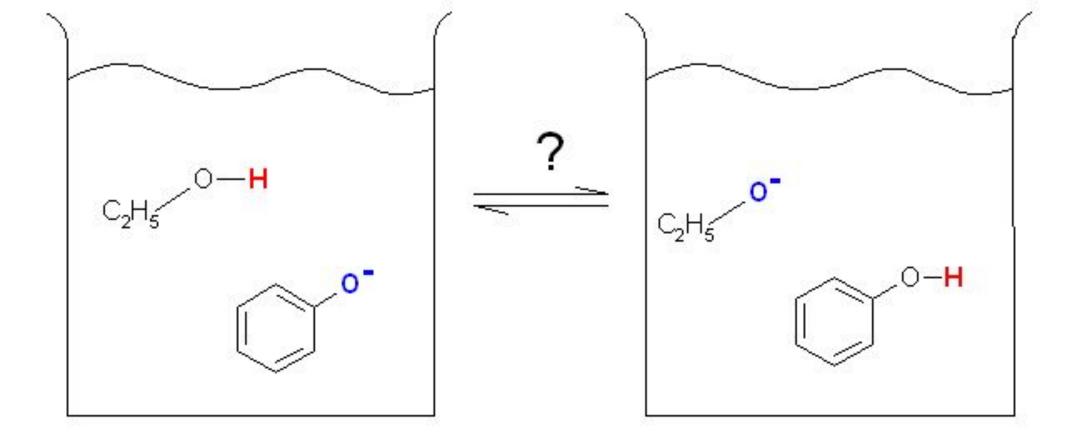
[Fe(H₂O)₆]³⁺
$$K_a$$
 [Fe(H₂O)₅OH]²⁺ H^+ stronger acid K_a [Al(H₂O)₆]³⁺ K_a [Al(H₂O)₅OH]²⁺ H^+



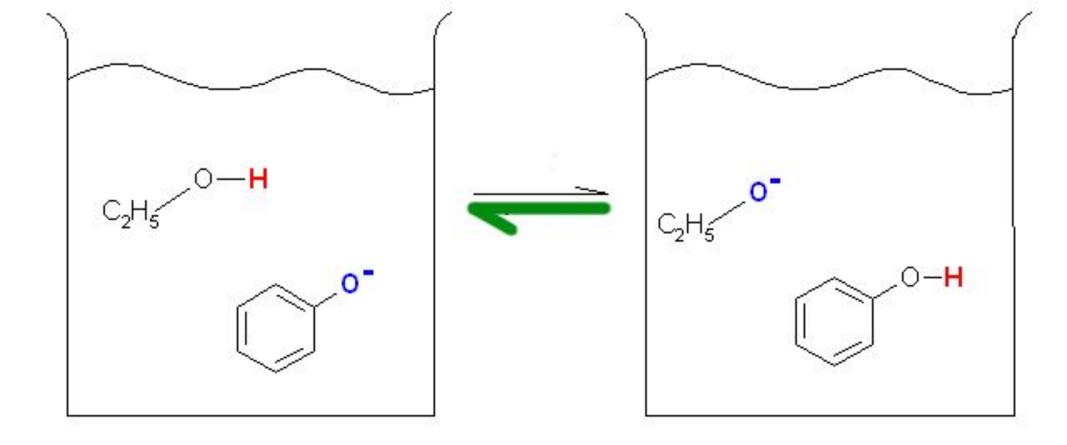


$$O-H$$
 $= \frac{pK_a}{16.0} C_2H_5$ $O^ H^+$

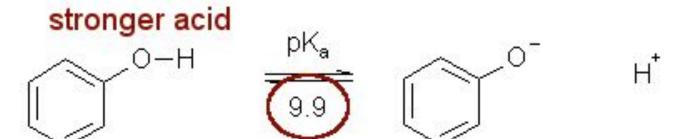
$$\begin{array}{c|c} O-H & \begin{array}{c} pK_a \\ \hline 9.9 \end{array} & \begin{array}{c} O^- \\ \end{array} \end{array}$$



$$C_2H_5$$
 $O-H$ $\frac{pK_a}{16.0}$ C_2H_5 $O^ H^+$



$$C_2H_5$$
 $O-H$ $\frac{pK_a}{16.0}$ C_2H_5 $O^ H^+$



Which species would be protonated first?

$$H_3C$$
 C
 H_3C
 H_3C

$$H_3C$$
 H_2
 H_3C
 H_3C
 H_3C
 H_3C
 H_4
 H_4

Which species would be protonated first?

$$H_3C$$
 H_2
 H_3C
 H_3C
 H_3C
 H_3C
 H_4
 H_4

Which way would this equilibrium lie?

Which way would this equilibrium lie?

Put these bases in order of increasing basicity: -CN, NH₃, Ph-NH₂

Put these bases in order of increasing basicity: -CN, NH₃, Ph-NH₂