

This Class

Chap 6 Acid and Bases

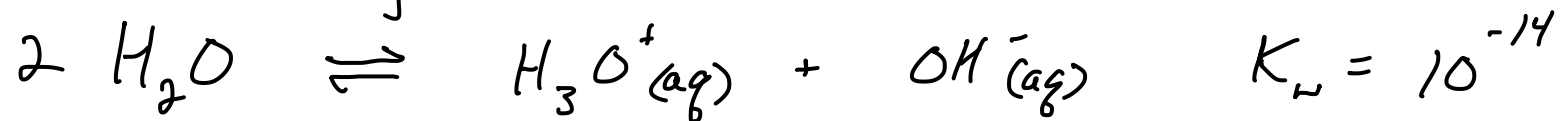
Next Class

Chap 6 Acid and Bases

Acids are sour

Bases are bitter

aqueous chemistry



pH scale comes from this equilibrium

$$\text{at } 25^\circ\text{C} \quad [\text{H}^+] = 10^{-7} \text{ M} = [\text{OH}^-]$$

Is pH = 7 neutral pH @ 1°C ? no, pH is lower for a neutral pH at 1°C .

Anything that increases $[\text{H}_3\text{O}^+]$ in aqueous solution is an Arrhenius acid

Anything that increases $[\text{OH}^-]$ in aqueous solution is an Arrhenius base



Brønsted-Lowry acids are H^+ donors ... substances that give H^+ to another substance



HCl donates H^+ to the H_2O molecule.

H_2O must be acting as the base in this acid-base reaction

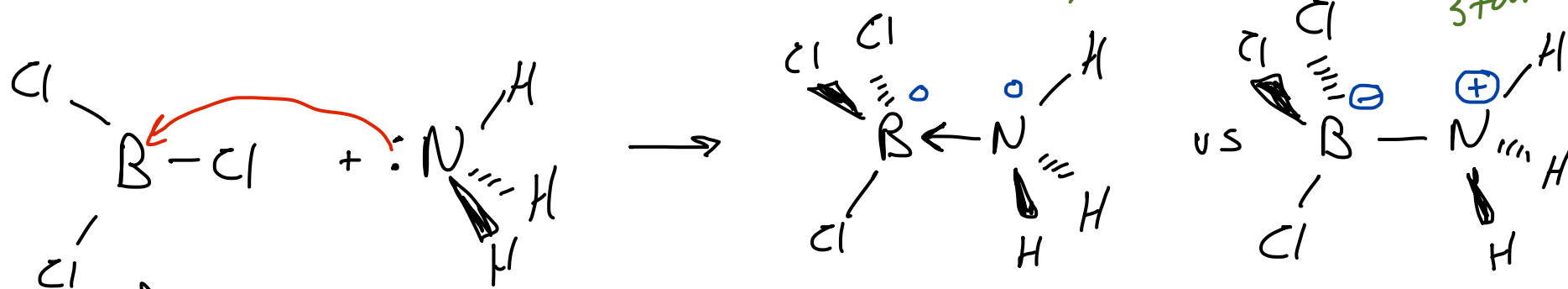
BL bases are H^+ acceptors

H^+ doesn't have e^- so...

Lewis acids are e^- pair acceptors

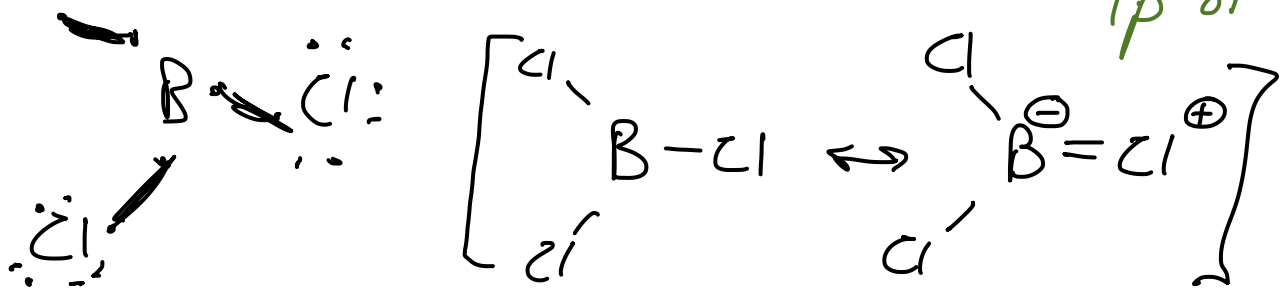
Lewis bases are e^- pair donors

these things come up when we measure oxidation states



Lewis acid-base adduct
 ← is a dative bond the N atom still "owns" the lp of e^-

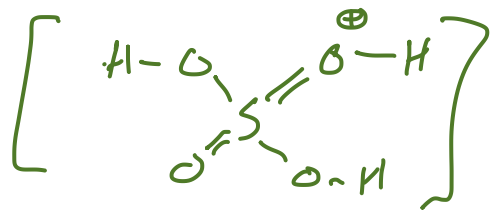
$:Cl:$ Lewis acid because...



— covalent bond e^- are shared

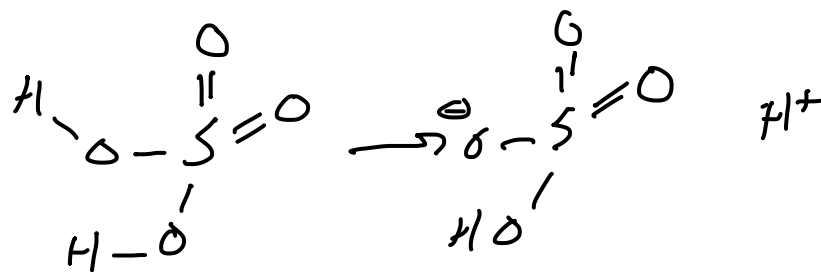
Super acids are acids that can protonate H_2SO_4

Section 6.1, 6.2,
6.3, 6.4



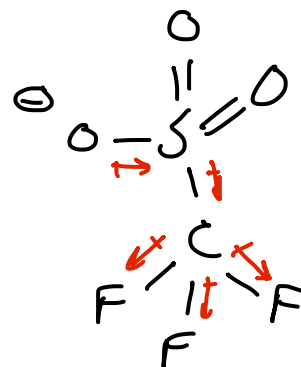
$$H_0 = pK_{BH^+} - \log \left(\frac{[BH^+]}{[B]} \right)$$

→ H_2SO_4	-11.9
$HClO_4$	-13.0
→ HSO_3CF_3 triflic acid	-14.6
HSO_3F fluorosulfuric acid	-15.6
HSO_3F-SbF_5	-21 - -25
$2 HF + 2 SbF_5 \rightleftharpoons H_2F^+ + Sb_2F_{11}^-$	-21 - -28



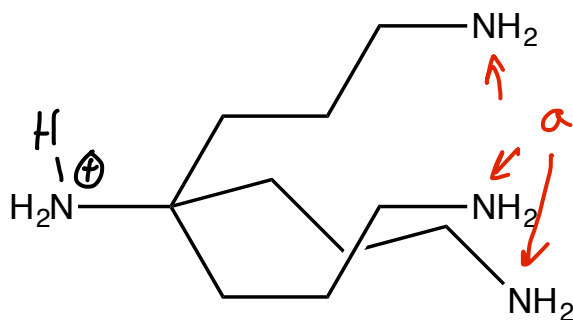
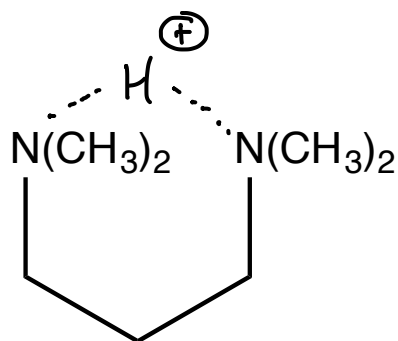
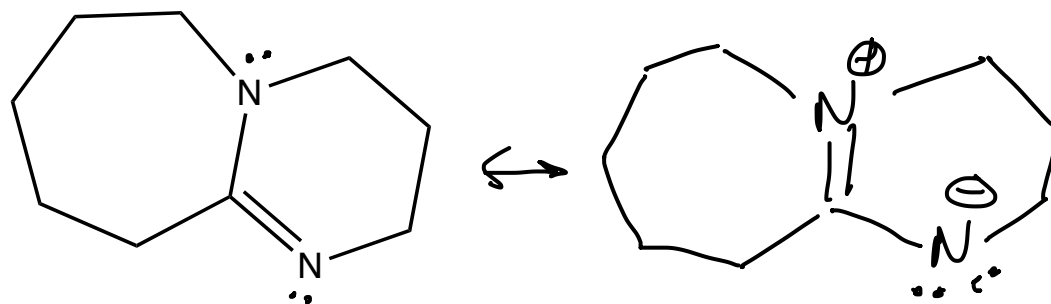
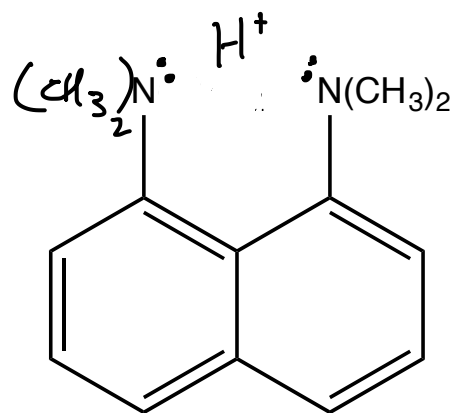
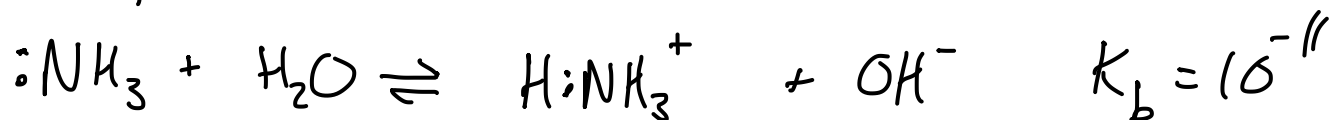
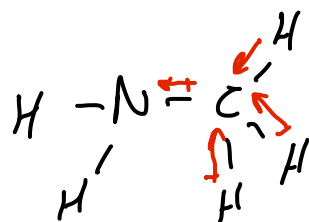
resonance +
eneg O atoms
help spread \ominus
charge around

These molecules
are all much
better than HSO_4^-
at stabilizing the \ominus charge
that forms H^+



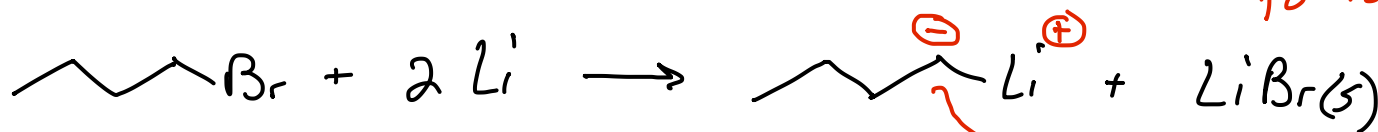
Super bases

Section 6.3.5



all these
lp e⁻
will
be attracted
to the NH₃⁺

Must be done VERY CAREFULLY



carbanion is a super base

