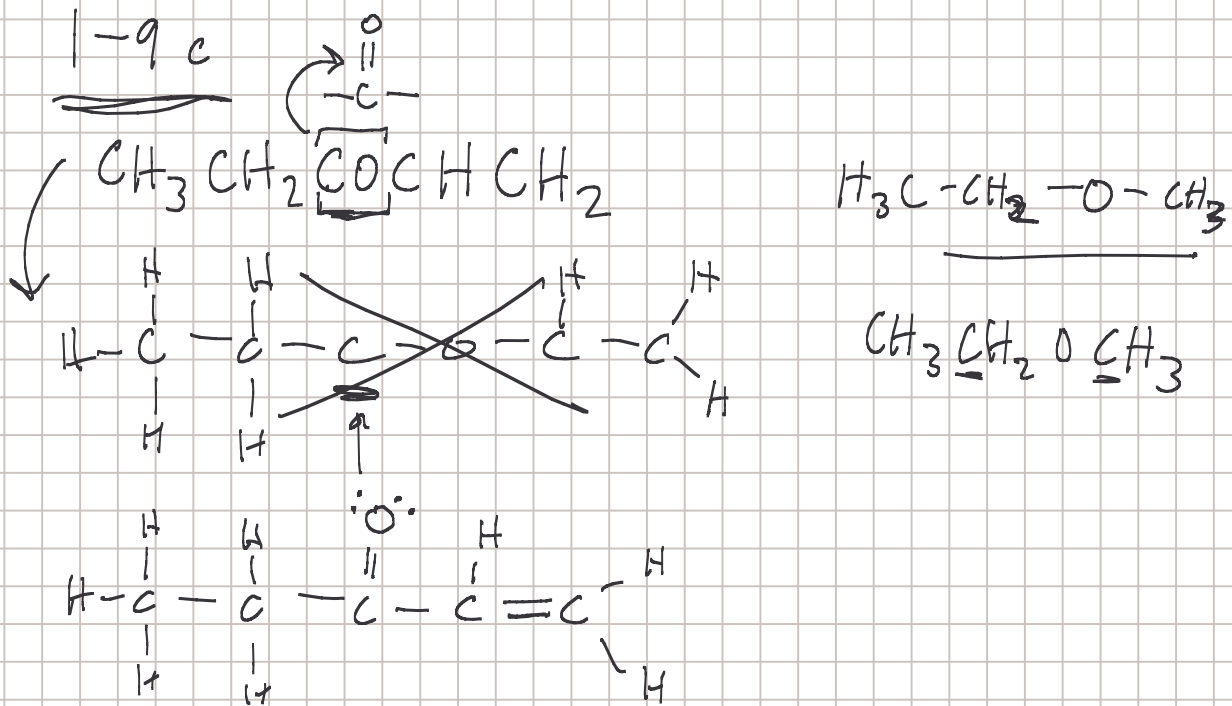


Ch 1

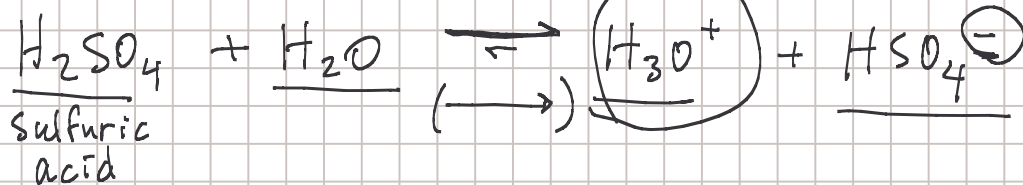
Note Title

8/29/2005



Acids & Bases

Arrhenius acid: produces H_3O^+ when in H_2O
 (hydronium)

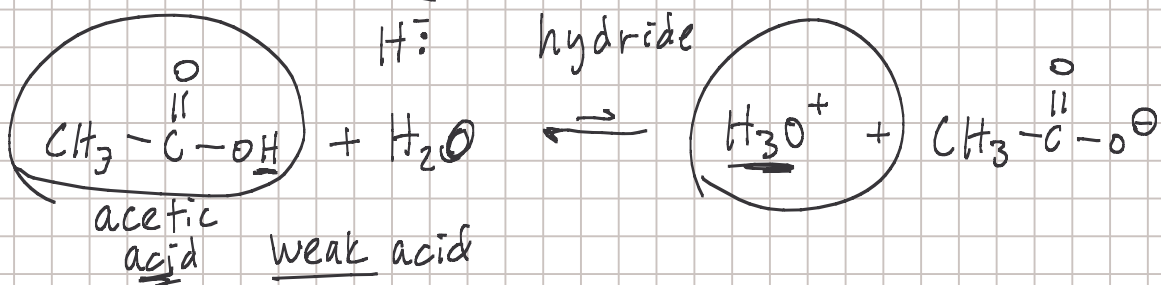


Strong acid

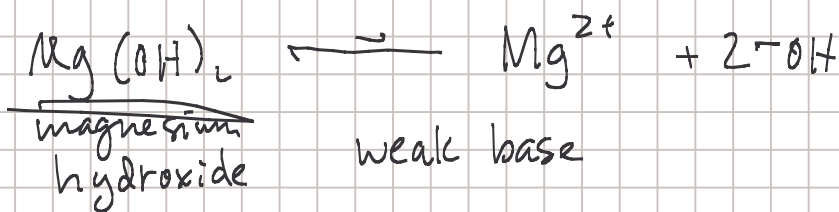
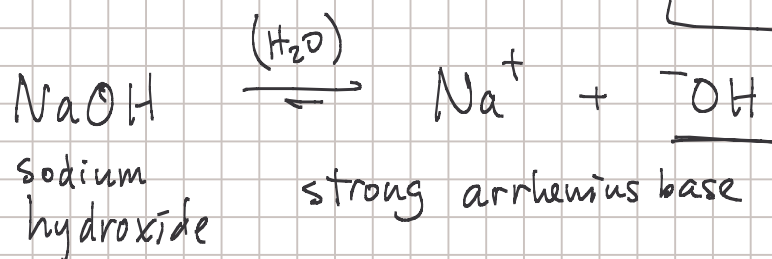
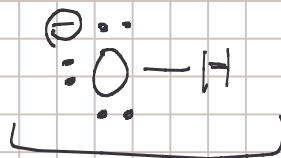
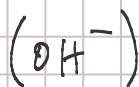
$\text{H} \cdot$ (H atom = proton + electron)

H^+ proton

H^- hydride



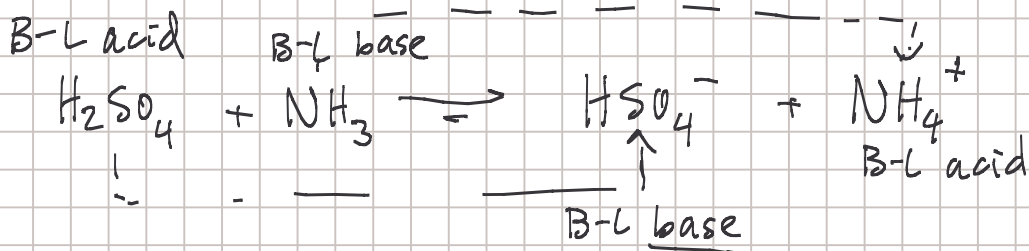
Arrhenius base produce OH^- (hydroxide)



NH_3 is a weak base

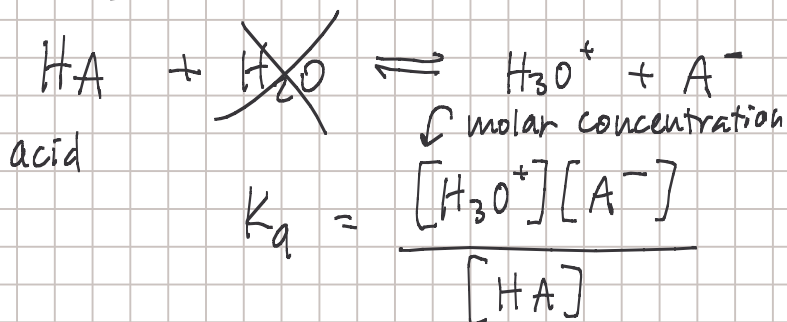
Brønsted-Lowry Acid: donates a proton

Base: accepts a proton



never draw arrows tracking movement of protons!

K_a equation



for a strong acid, equilibrium favors right
(products)
 K_a is large

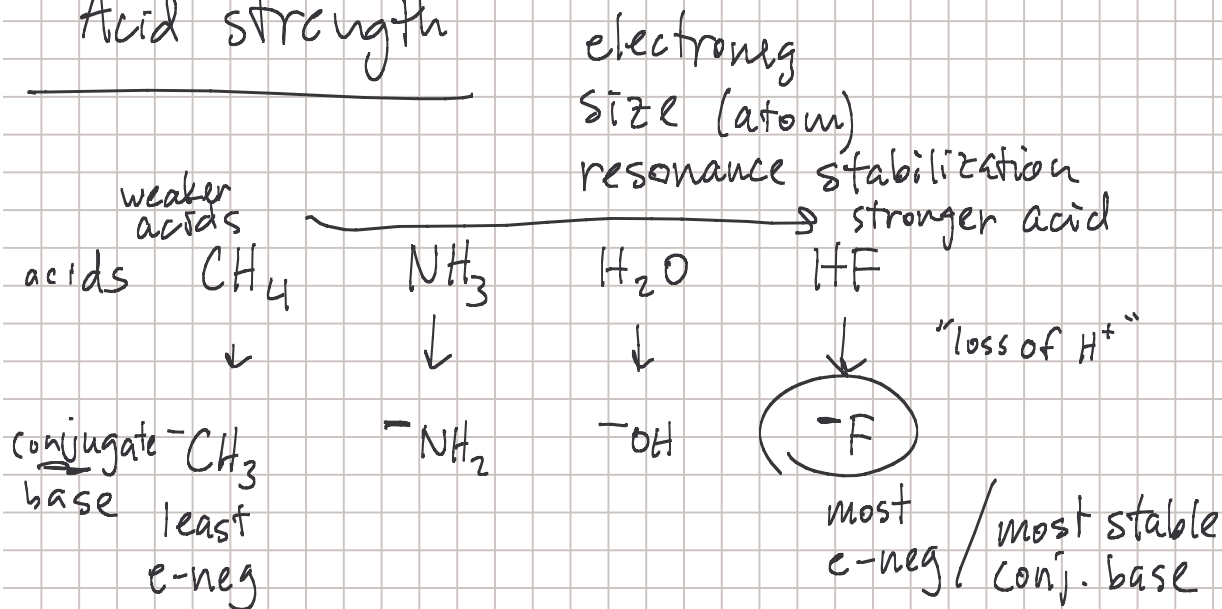
weak acid: $K_a = \text{small}$

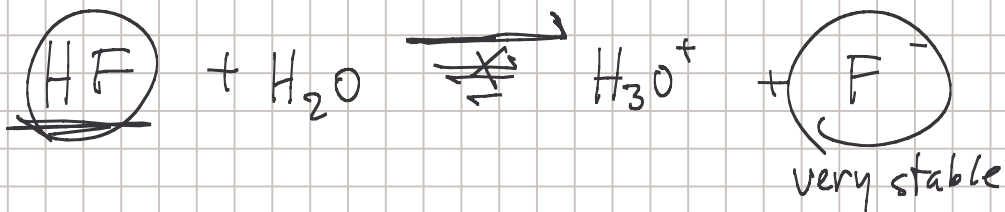
p. 25 table 1-5

		K_a	pK_a
strongest acids ↑ weakest acids	HCl	1.6×10^2	-2.2
	$\text{CH}_3\text{-C(=O)-OH}$	1.8×10^{-5}	4.74
	$\text{CH}_3\text{-OH}$ methanol	3.2×10^{-16}	15.5
	H_2O	1.8×10^{-16}	15.7
	CH_4	$< 10^{-40}$	> 40

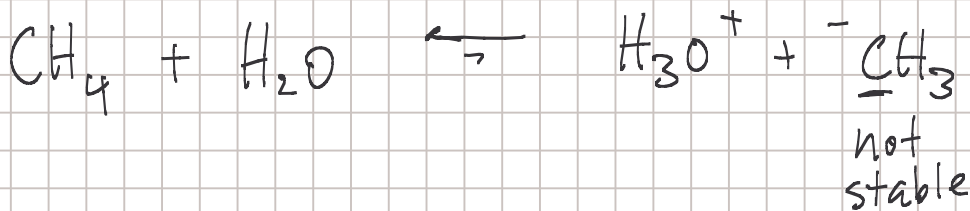
$$pK_a = -\log_{10} K_a$$

Acid strength





stable conj. bases come from
rel. Strong acids.



weaker
acid

HF

HCl

HBr

HI

stronger
acid

↓

↓

↓

↓

F⁻

Cl⁻

Br⁻

I⁻

smallest

largest

○

○

Br⁻

I⁻

less
stable
anion

more
stable anion
(more area to spread charge
over)