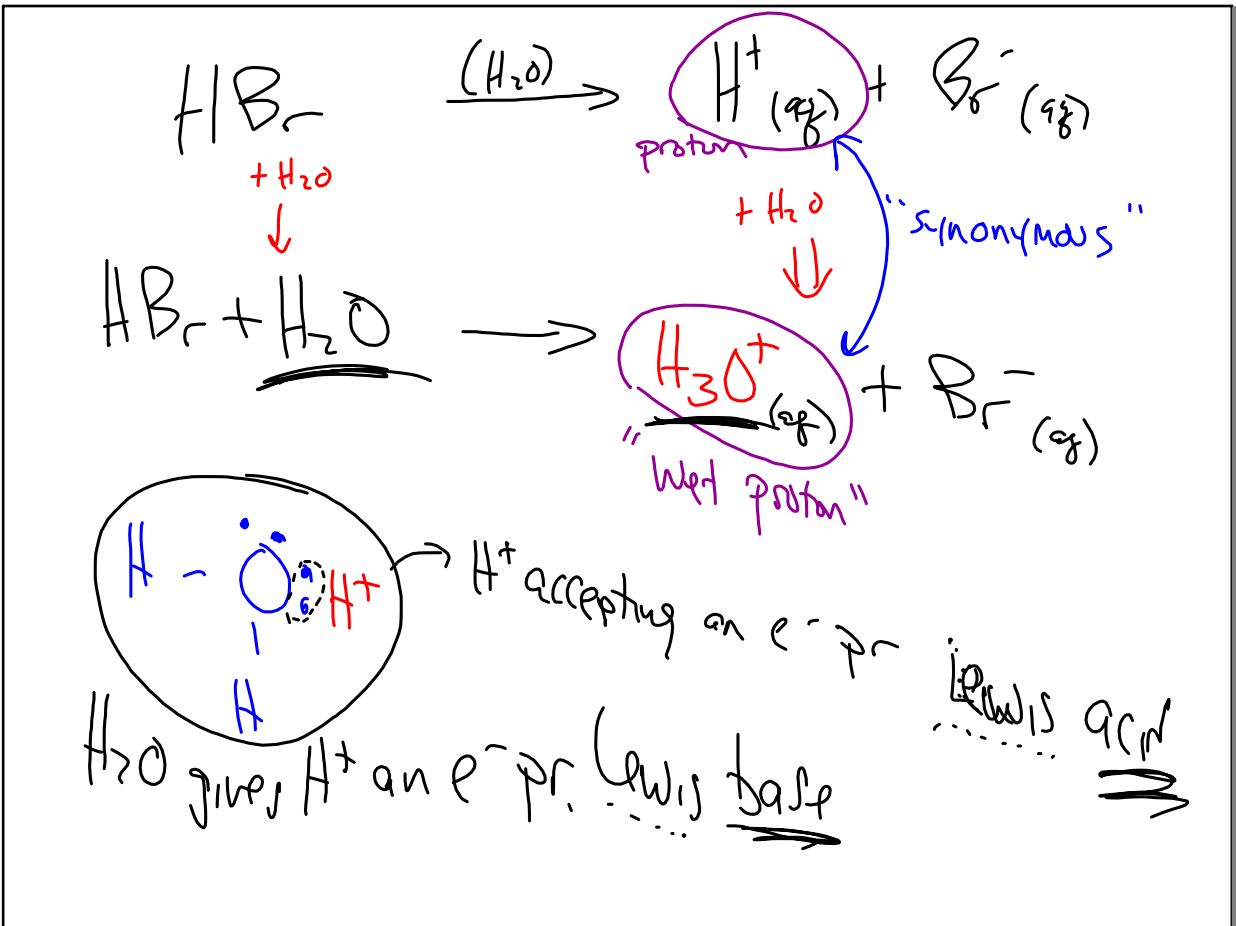
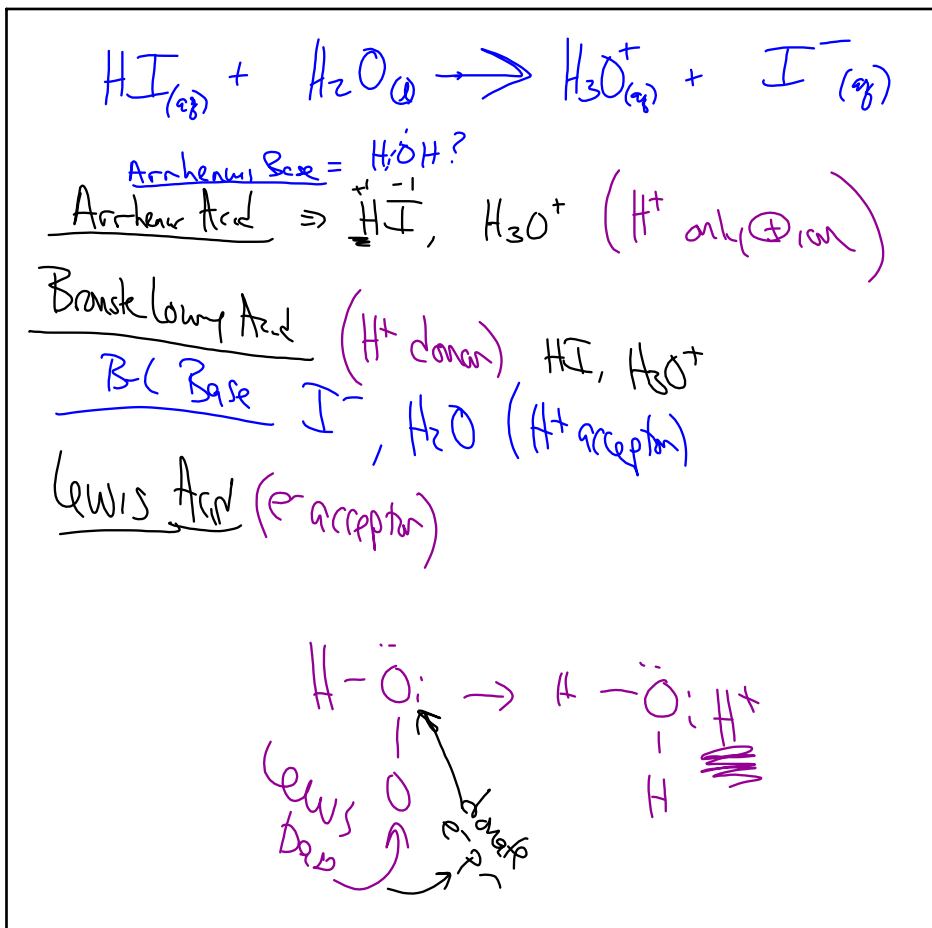


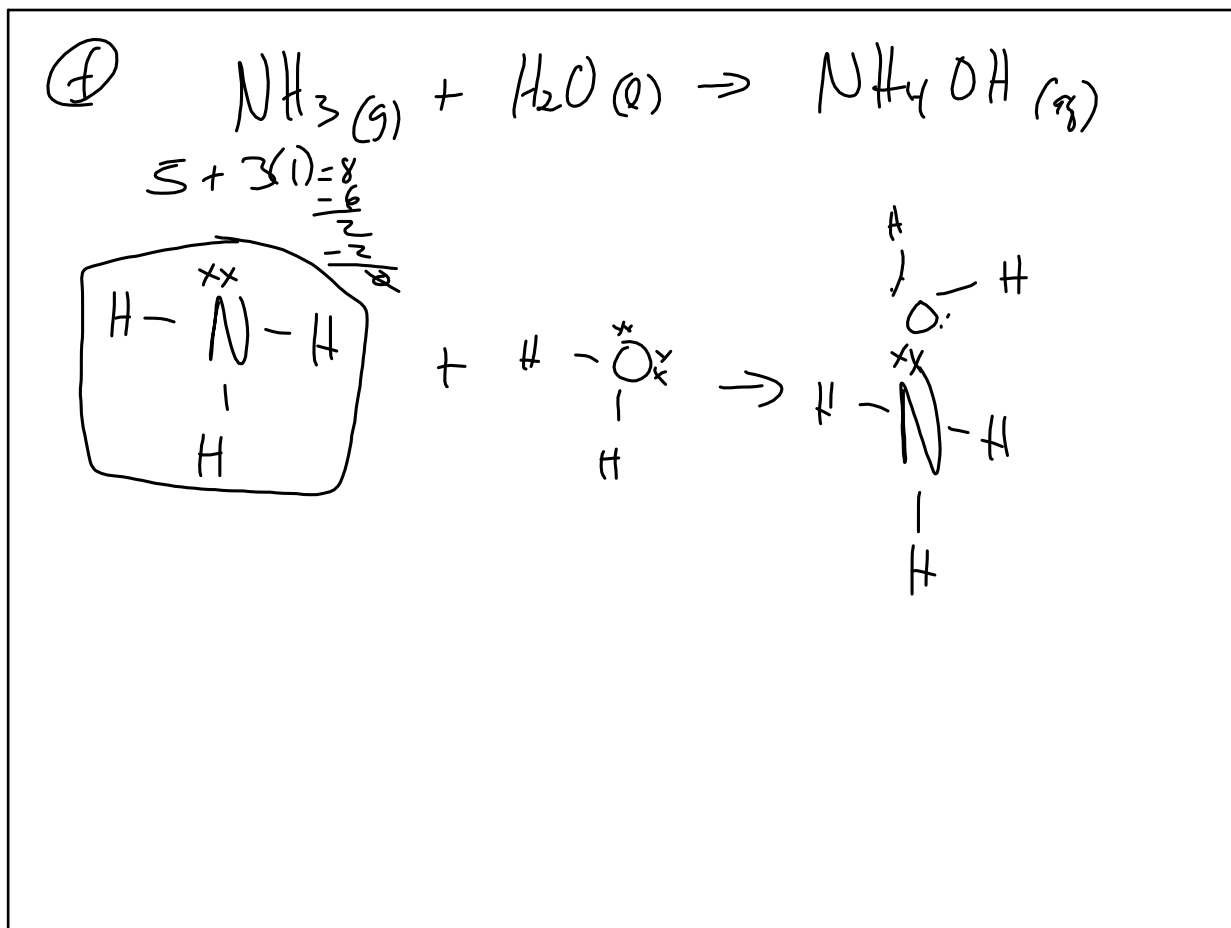
Apr 21-8:34 AM



Apr 21-8:50 AM



Apr 21-8:56 AM



Apr 21-9:05 AM

SA dissociates ~ 100%

? HF

$HCl \rightarrow H^+ + Cl^-$

Small Radii  
(gain e<sup>-</sup> most easily)  
↑ eneg  
↑ I.E.

17  
F  
Cl  
Br  
I

Dipole-Dipole : H bond  
HF  
HF  
HF

H bonding (F, O, N)

acidity

Apr 21-9:10 AM

$HCl \rightarrow H^+ + Cl^-$

R			
I	6M	0	0
E	≈ 0 (0.0000001)	6	6

← - ≈ 6M      + 6M      + 6M

1:1:1  
mole ratio

$K = \frac{(H^+)(Cl^-)}{(HCl)} = \frac{(6)(6)}{\approx 0} = \text{Large } K_a$

SA

Apr 21-9:16 AM

R	HF	→	H <sup>+</sup>	+	F <sup>-</sup>
I	6M		0		0
C	~ -0.01		+ 0.01		+ 0.01
E	5.99M		0.01		0.01

$$K_a = \frac{[H^+][F^-]}{[HF]} = \frac{(0.01)(0.01)}{5.99} = \text{SMALL } K_a \text{ WA}$$

Little Product

Apr 21-9:23 AM

Auto ionization of water

$$H_2O(l) \rightarrow H^+(aq) + OH^-(aq)$$

$$H_2O(l) + H_2O(l) \rightarrow H_3O^+(aq) + OH^-(aq)$$

$$K_w = \frac{[H^+][OH^-]}{1}$$

\*  $K_w = [H^+][OH^-] = 1 \times 10^{-14}$  at 298K

Apr 21-9:26 AM

$$10^x \quad \text{"opposite"}$$

$$1 \times 10^x \quad \text{(inverse)}$$

$$\log$$

$$\text{(base 10)}$$

$$\left[ \begin{array}{l} \log AB = \log A + \log B \\ \log \frac{A}{B} = \log A - \log B \\ \log A^B = B \log A \end{array} \right] \text{Log Rules.}$$

Apr 21-9:45 AM

$$K_w = \underline{[H^+][OH^-]} = 1 \times 10^{-14}$$

$$\log([H^+][OH^-]) = \log(1 \times 10^{-14})$$

$$- (\log[H^+] + \log[OH^-]) = (-14) - 1$$

$$-\log[H^+] + -\log[OH^-] = 14$$

$$\boxed{pH + pOH = 14}$$

Apr 21-9:48 AM

$[H^+][OH^-] = 1 \times 10^{-14}$  at 25°C  
 $pH + pOH = 14$   
 $pH = -\log[H^+]$   
 $pOH = -\log[OH^-]$

pH = power of the hydrogen ion

← Acid → pH → base →  
 0 7 14

Apr 21-9:52 AM

$[H^+] = \cancel{1} \times 10^{-5}$   
 $pH = -\log[H^+] = -\log(1 \times 10^{-5}) = 5$

---

$[H^+] = \cancel{1} \times 10^{-8} = pH = 8$

$[H^+] = 2.39 \times 10^{-6}$   
 $pH = -\log(2.39 \times 10^{-6})$   
 $pH = 5.62$

$pOH = 8.38$

Apr 21-9:56 AM

$\text{pH} = ?$

$\text{Ca(OH)}_2 \Rightarrow \text{Ca}^{+2} + 2\text{OH}^-$

I	3M	3	6
Δ	~3	+3	+6
E	~3	3	

Mole Ratio

$6 = [\text{OH}^-]$

$\text{pOH} = -\log_5([\text{OH}^-]) = -0.78 \text{ pOH}$

$\text{pH} = 14.78$

Apr 21-9:59 AM

ABS P 11 + 12

Apr 21-10:03 AM