

CHEM 101 Day 11

If the following solutions are mixed will a precipitate form? If so, what is it?



Acid-Base neutralization Reactions

Arrhenius definition of acid = a substance that produces H^+ (hydrogen ions) in water



Not all H are acidic:



Acidic H's (those that ionize) are bonded to O or F.



Strong acids dissociate completely (HCl, HNO_3 , HBr, HI, H_2SO_4 , HClO_4)

Weak acids ionize partially

How acidic is a solution? How much H^+ is in the solution?

$[\text{H}^+]$ = molar concentration (mol/L)

Two solutions:



A is more acidic

pH scale

$$\text{pH} = -\log[\text{H}^+]$$

$$\text{pH} = -\log(1 \times 10^{-4}) = 4$$

$$\text{pH} = -\log(1 \times 10^{-9}) = 9$$

On a pH scale, 0-6 are acidic, 7 is neutral, and 8-14 are basic

What is the pH of lemon juice that has $[\text{H}^+] = 2.5 \times 10^{-3}$

$$\text{pH} = -\log(2.5 \times 10^{-3}) = 2.60$$

What is the pH of an ammonia solution whose $[H^+] = 5.3 \times 10^{-12}$?

$$pH = -\log(5.3 \times 10^{-12}) = 11.28$$

What is the pH of stomach acid whose $[H^+] = 1.6 \times 10^{-2}$?

$$pH = -\log(1.6 \times 10^{-2}) = 1.80$$

What is $[H^+]$ in a lake whose pH is 4.5?

$$pH = 4.5 = -\log[H^+]$$

$$10^{-(4.5)} = [H^+] = 3 \times 10^{-5} \text{ M}$$

What is the $[H^+]$ of blood with a pH of 7.40/

$$pH = 7.40 = -\log[H^+]$$

$$10^{-(7.40)} = [H^+] = 3.98 \times 10^{-8} \text{ M}$$