

Chapter 2 - Polar Covalent Bonds; Acids and Bases

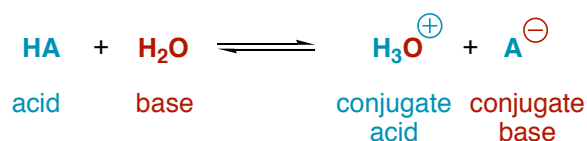
Brønsted-Lowry Acids and Bases

Acid base reactions are fundamental processes that are required for the initiation of many organic reactions. Recall some of the definitions from general chemistry.

Brønsted-Lowry Acid - a substance that donates a proton (H^+).

Brønsted-Lowry Base - A substance that accepts a proton.

Acidity Constant (K_a) - the equilibrium described by a given acid base reaction.



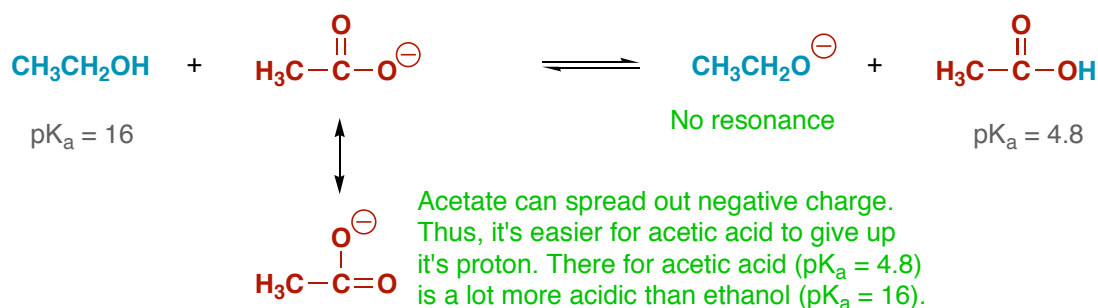
$$K_a = \frac{[H_3O^+][A^-]}{[HA]}$$

$$pK_a = -\log K_a$$

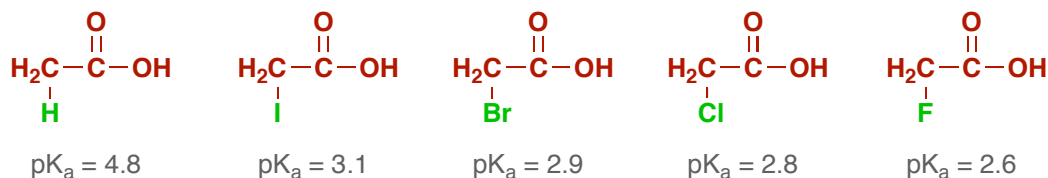
The higher the K_a , the higher the acidity. This is exactly opposite for the pK_a value.

An acid base equilibrium will lie on the side of the weaker acid.

Resonance effects have a large impact on acidity.



Electron negative groups have a small influence on the acidity.



increasing electronegativity of substituent \rightarrow

Lewis Acids and Bases

Some acid base interactions cannot be described by proton transfers. Other substances besides proton are electron deficient and can interact with a lone pair of electrons.

Lewis Acid - a substance that accepts a pair of electrons (forms a covalent bond).

Lewis Base - a substance that donates a pair of electrons.

