

4.10 Relative Strengths

Using Stronger Acid to predict direction :

In a B.L., equilibrium there is an acid & a base on both sides,
How do you know which direction the reaction proceeds? (which side is favoured?)

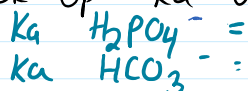
Especially, if both reactants are amphiprotic?

Which way will the reaction proceed?



Both acids; (H_2PO_4^- & HCO_3^-) can donate a proton... which way will reaction proceed?

1. Look up K_a values



Summary: in B-L eq. the side with the weaker acid is Favoured.

*** Shift AWAY from the stronger Acid! ***

Example #1 Predict whether reactants or products will be favoured, when HCN reacts with HCO_3^-



1. Write eqn :

2. Look up K_a 's of both acids ; determine which acid is stronger

3. Direction is Away from stronger acid.
(- Larger K_a means it ionizes more ; more H^+ ions to react with base)

Example #2: What happens when HCO_3^- & HS^- are mixed together?

Beware!! Both are amphiprotic & can be found on both sides of table

1. Start by looking for both HCO_3^- & HS^- on acid side:

2. Try looking for both on base side:

3. Write Eqn:

4. Now, look up both acids in your equilibrium equation

- Go to table a 2nd time! when both are amphiprotic

First step
&
Last step

5. Away from stronger acid

Example #3 ... on own or at start of next class

Predict whether reactants or products will be favoured: * Beware!! Both Amphiprotic!!



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