Introductory Organic Chemistry
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Lecture – 18
Learning Objectives for Week – 4

Hello, this week we will begin our journey into the chemical reactions; and Acids and Bases is going to be our first chapter. Now we are not going to talk about a particular functional group in this chapter, but we are going to look at the whole spectrum of organic compounds and their acidity and basicity. Why I feel acids and bases is one of the most important chapters of all the chapters you will probably see is that understanding of the acidity and basicity of molecules is so important, it can give you very quick clues in a particular chemical reaction as to what the next step is going to be.

More often Acid-Base reactions are the fastest reactions in Organic Chemistry and they also drive the reaction mechanism forward. So, protons exchange is going to be a very important step in most of the reaction mechanisms that we will see. And you will see that depending on the functional group and its acidity, a lot of its reactivity is determined. So, if I have to focus on a particular chapter in this whole course it would be the Acids and Bases chapter.

Understanding the values of pKa and how they correlate to the structure also becomes important because you can use the same pKa values to determine which is going to function as a better leaving group; you can use the same pKa values to determine what molecule will be a better nucleophile and so on. So, not just for acidity and basicity, for other reactions also these pKa values help you a lot. For example, in a reaction let's say you have two probable leaving groups, you can easily determine which one leaves based on the acidity of the corresponding leaving group. So, if I have to pin point the learning objectives of this particular week number 4 they are as follows.

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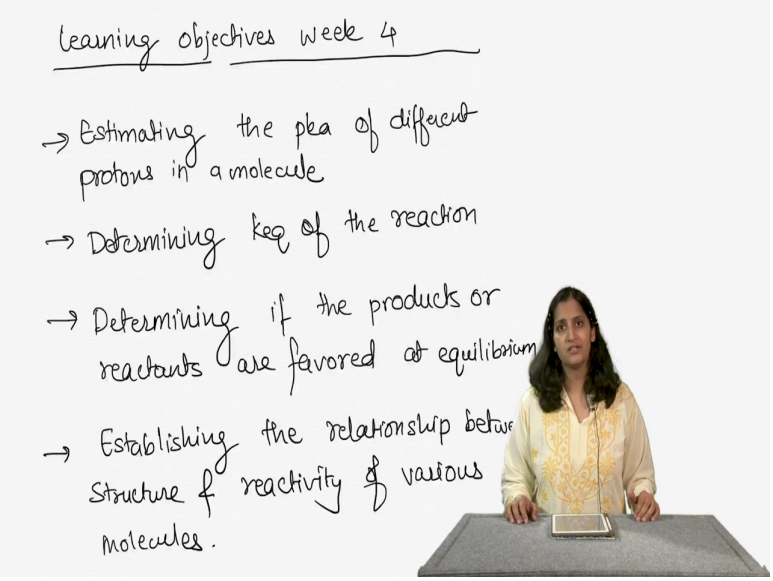

The first thing we are going to focus on is estimating the pKa of different protons in various molecules and how those pKa's are correlated to their structure. The second thing is determining the K equilibrium (Keq) of a chemical reaction. So, given a chemical reaction, involving organic compounds you should be able to write down what is the Keq; what is the rate at which this reaction is going to happen?

Third and most important is the concept of thermodynamic equilibrium. So, it also talks about which one of the products or the reactant is favoured in a chemical reaction. Such that, if a chemical reaction happens, does it go towards the product formation or do the reactants just sit around in the flask without reacting with each other. So, things like that are going to be very important in this particular chapter.

And the last and not really the least important but the probably the most important, is this correlation between the structure of a particular compound and its acidity; that part you have to really-really focus on and understand. And being able to determine which one is a better acid or which one is a better base depending on the given structure is going to be very important task in this chapter. So, let's begin our journey in Acids and Bases.