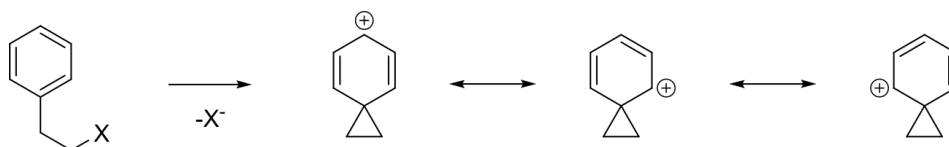


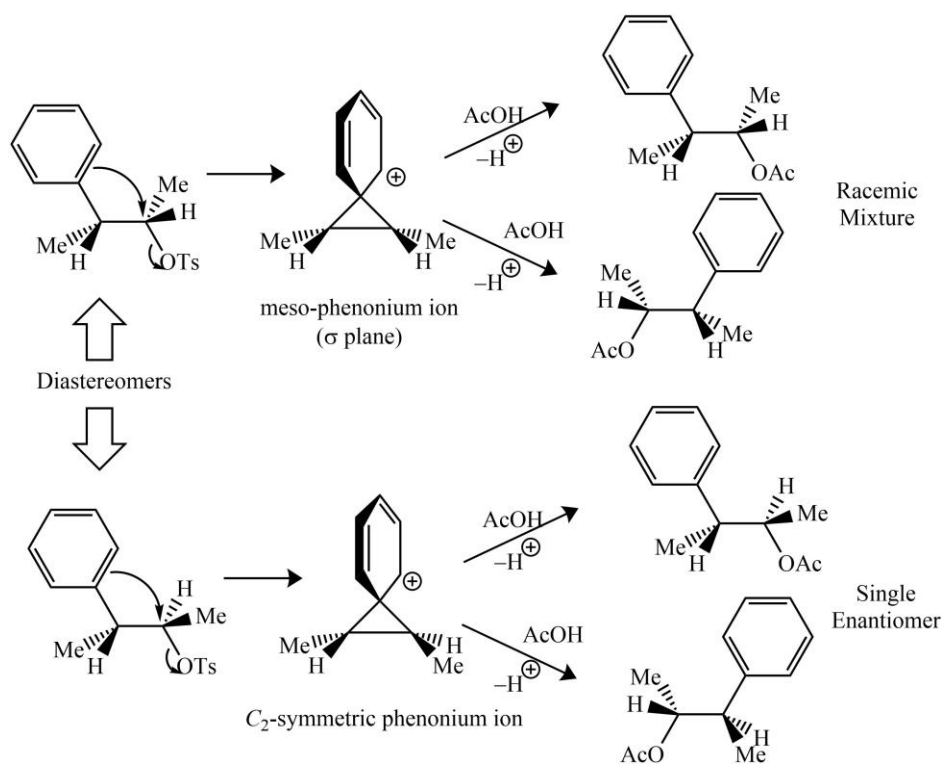
### ❖ Phenonium Ions

Phenonium ions may simply be defined as cyclohexadienyl cations which are spiro-annulated with a cyclopropane unit.

These ions form an arenium-ions' subclass and greatly affect the reactivity. An aromatic ring can give great support in the formation of a carbocationic intermediate by delocalizing the positive charge. In other words, the aryl group participates in the neighboring mechanism via the formation of phenonium ion yielding retention of the original configuration.



Furthermore, we can have many types of phenonium ions depending upon the degree and nature of substitution affecting its overall reactivity. In addition to the typical phenonium ion given above, two of the most commonly studied disubstituted phenonium ions are meso- and  $C_2$ -symmetric phenonium ions. The neighboring group mechanism when we use diastereomeric single enantiomer substrates is shown below.



It is obvious from the above routes that the double inversion in meso-phenonium ion created a racemic mixture whereas double inversion in  $C_2$ -symmetric phenonium ion has created a single enantiomeric product.

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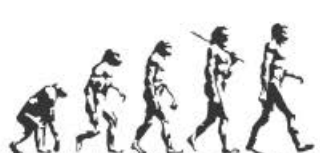
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# A TEXTBOOK OF ORGANIC CHEMISTRY

**Volume I**

**MANDEEP DALAL**



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