

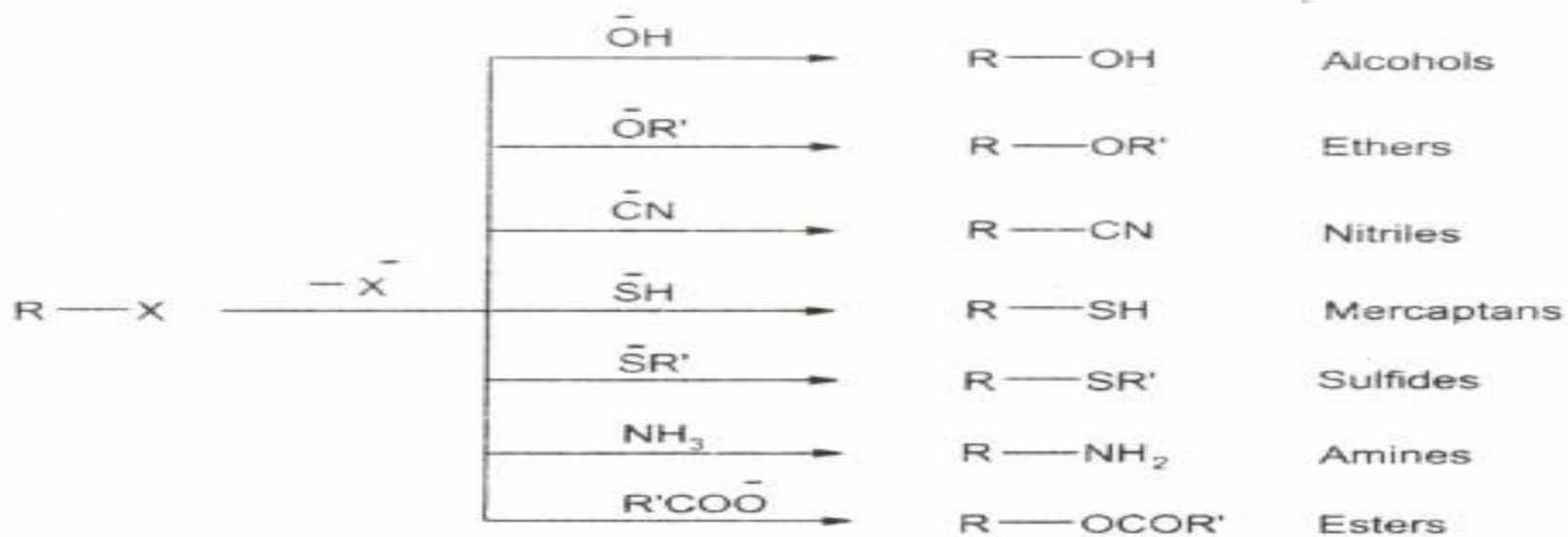
# Nucleophilic substitution reactions

## $S_N1$

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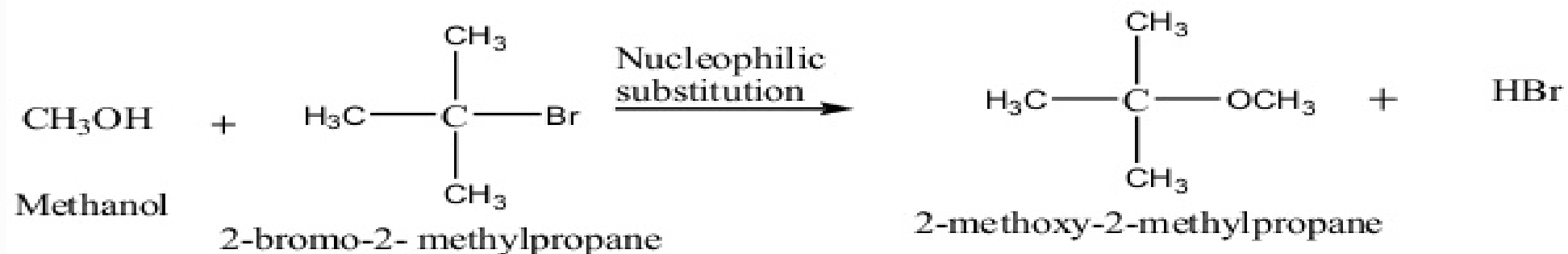
## Nucleophilic substitution

In Nucleophilic Substitution reaction the replacement of one group by another is called substitution reaction. There are three main types of these reactions: radical, electrophilic and nucleophilic substitution. In this section we will deal with nucleophilic substitution at saturated carbon atom.



## $S_N1$ : Unimolecular Nucleophilic Substitution

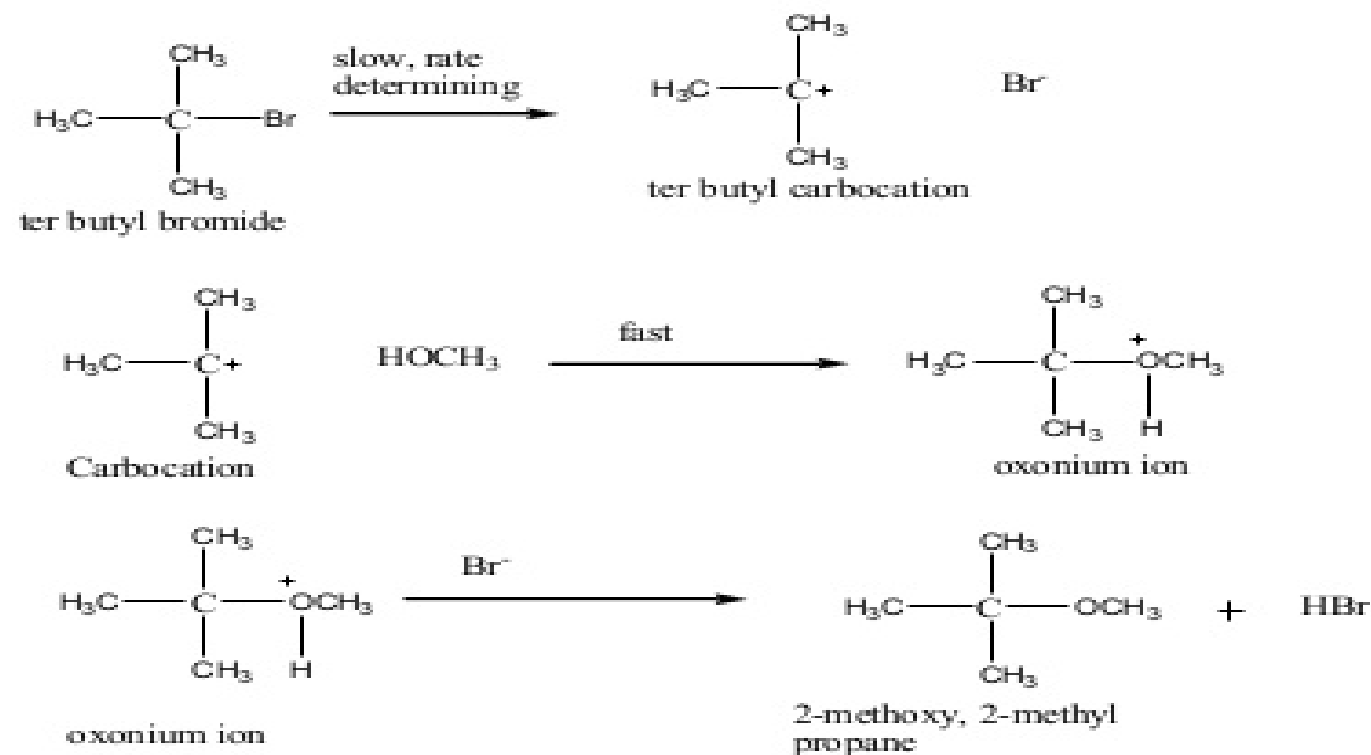
- In this reaction, bond breaking between carbon and leaving group is complete before bond formation with nucleophile.
- This type of reaction is classified as unimolecular because only the alkyl halide is involved in rate determining step.
- Rate:  $k[\text{alkyl halide}]$



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## I. Mechanism of $S_N1$

1. Ionization of a C-X bond gives a  $3^\circ$  carbocation intermediate
2. Reaction of methanol from either face of the planar carbocation intermediate gives an oxonium ion.
3. Proton transfer to give tert-butyl methyl ether



## Recap:

substitution reactions

$S_N1$

Mechanism of  $S_N1$

## I. Mechanism of $S_N1$

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**Source & References:**

*The materials presented in this lecture has been taken from various books and internet websites. This instruction materials is for instructional purposes only.*

1. <https://pt.slideshare.net/SheamaT/nucleophilic-substitution-reactions>
2. <https://www.slideshare.net/ganeshmote1/alkyl-halide-131723782>
3. <http://www.chem.ucalgary.ca/courses/350/Carey5th/Ch08/ch8-1.html>

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# School of Basic and Applied Sciences

Course Code : BSCC2004

Course Name: Organic Chemistry-II

**Thank You.....**

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