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Organic Chemistry

Class- T.Y.B.Sc.

Nucleophilic Substitution Reactions : The S_N1 and S_N2 Mechanisms

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More common and IUPAC names

isopropyl chloride	(2-chloropropane)
sec-butyl chloride	(2-chlorobutane)
isobutyl chloride	(1-chloro-2-methylpropane)
tert-butyl chloride	(2-chloro-2-methylpropane)
allyl chloride	(3-chloro-1-propene)
vinyl chloride	(chloroethene)
benzyl chloride	(chloromethylbenzene)
phenyl chloride	(chlorobenzene)

Nucleophilic substitution

- The substitution reaction: S_N1 and S_N2
- Primary halides = S_N2
- Secondary halides = both mechanisms!
- Tertiary halides = S_N1
- Leaving groups: halogens most common
- There are a number of different nucleophiles!!

S_N2 Mechanism

- reaction and mechanism
- kinetics
- stereochemistry
- substrate structure
- nucleophiles
- leaving groups
- solvents

S_N2 Mechanism: kinetics

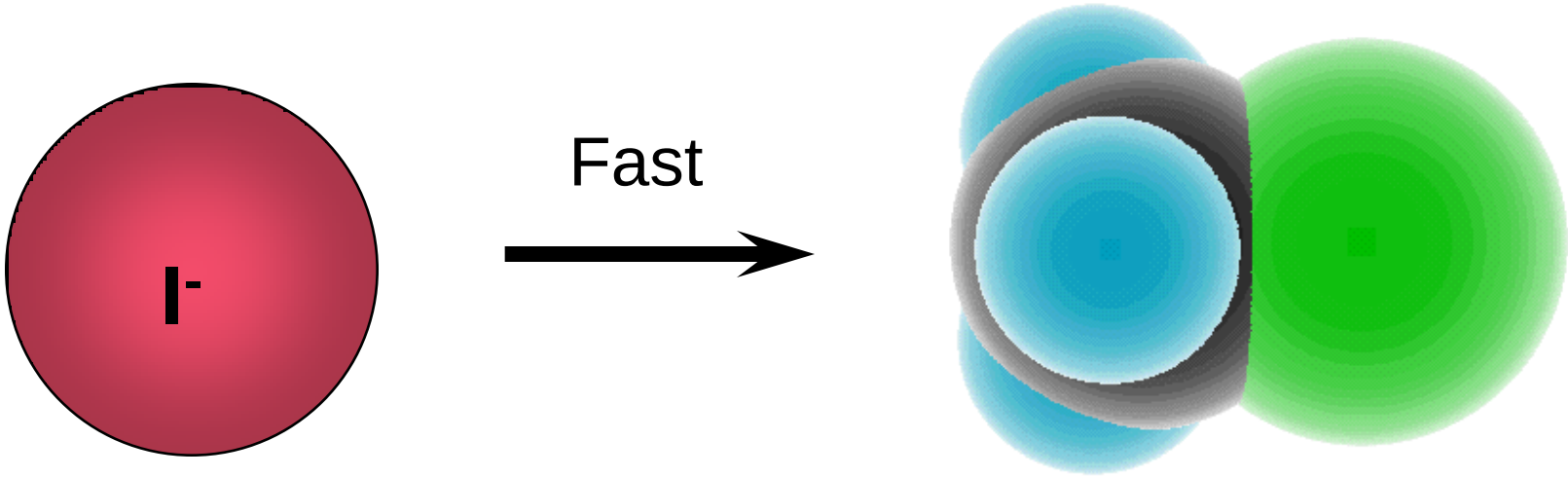
- The reactions follows second order (bimolecular) kinetics

- Rate = k $[R\text{-}Br]^1$ $[OH^-]^1$

For an S_N2 Reaction:

EVERY REACTION EVENT
ALWAYS LEADS TO
INVERSION OF CONFIGURATION

Chloromethane + Iodide as the Nucleophile



tert-Butyl Chloride + Iodide as the Nucleophile