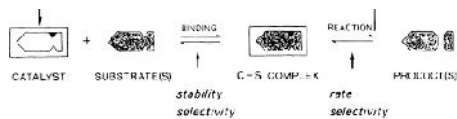


Supramolecular reactivity and catalysis

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- Supramolecular catalysis involve two main steps-
- Binding which Selects the Substrate.
- Transformation of the bound species into product.
- Both the steps takes part in molecular recognition of the productive Substrate and require the correct molecular information in the reactive receptor.

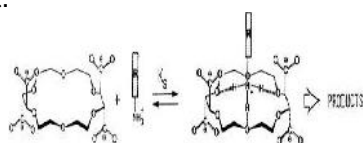
- For the catalysis process the binding should strain the substrate in order to bring towards the transition state of the reaction in order to lower the free energy of the activation.



Catalysis by Reactive Macrocyclic cation Receptor Molecules

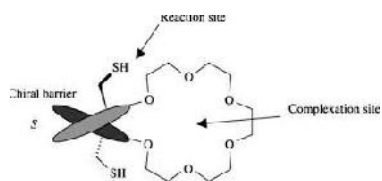
- [18]-O₆ macrocyclic polyether to bind primary ammonium ions which opens the possibility to induce chemical transformation on the substrate.
- Supramolecular catalysis is always connected with substrate recognition in terms of shape, size and presence of specific functional groups to engage in weak intermolecular forces.

Chemical transformation induced by reaction between a bound substrate and functional groups borne by the macrocyclic receptor unit.



Ester cleavage process most frequently found in Enzyme model studies. Macrocyclic polyether with side chain bearing bearing thiol groups cleave activated esters with rate enhancement and chiral discrimination

The optically active binaphthyl reagent performs thiolysis of activated esters of aminoacids with pronounced acceleration and chiral recognition



Catalysis by reactive Anion Receptor Molecules

Development of anion coordination Chemistry and anion receptor molecules has opened the possibility to perform molecular catalysis on anion substrate of chemical and biochemical interest.



ATP hydrolysis was found to be catalysed by a number of protonated macrocyclic polyamines.

