Semister I

Core course I

UNIT- IV - Reaction mechanism of transition metal complexes

Topic Differences between D (dissociative) and Id (dissociative interchange mechanism).

- The intimate mechanism in both the cases is dissociative (D).
- The formation of intermediate with reduced co-ordination number to be detected experimentally.
- When the 5- coordinate intermediate is detectable, the stoichiometric mechanism is D (dissociative) the other case is Id (dissociative interchange).
- Differing in sequences of elementary steps, different stoichiometric mechanisms.
- These are related with the Stöichiometric mechanisms S_N1 in organic chemistry.

Factors Favoring A (associative) or D (or Ia or Id)

- Sterics :-
  Bulky ligands clearly will obstruct the nucleophile, so favoring the D mechanism over A mechanism.
- Large metal Ion:
  It favours A mechanism
- Good leaving group:
  It favours D mechanism

Nucleophilicity

It highly favours A mechanism.

I (iodine) is good for soft metals

F (fluorine) is good for hard metals

Spectator ligands

no trans effect is present for octahedral. However, strength of ligand matters. A good σ-donor increases e-density on the metal, so M-X breaks more easily. They may also stabilise low co-ordination number activated complex after the dissociation.