Crown ETHERS as PHASE TRANSFER AGENTS

Principles: - Crown ethers can solubilize metal salts in non-polar solvents \( \rightarrow \) Phase transfer from aqueous to non-aqueous.
- Separation of cation from crown ether encapsulated cation increases cation reactivity:
  1. As a nucleophile e.g. KF
  2. As a redox agent e.g. KMnO\(_4\) in aromatic solvents which cannot solvate and stabilise MnO\(_4^−\) ion.

Molecular SENSORS: Principles

Definition: A receptor (host) molecule can report the presence of the guest via a physical technique - spectroscopic change.

Important properties: - Selectivity for specific guest.
- Quantitative determination of guest concentration.

Design Strategy: - Combine binding site + reporter group in a single molecule.
- Reporter group has electrochemical/spectroscopic properties which are altered by host-guest interaction.

Example: Electrochemical Sensor

Ferrocene has reversible Fe(II)/Fe(III) redox couple.
- Redox potential changed by binding of Na\(^+\).