General organic chemistry

Classification of Reagents:

Electrophiles (E^+) – They are electron deficient species. Have a tendency to accept electron pair from another molecule.

- In a reaction, an electrophile attacks the substrate at the point of maximum electron density.
- Electrophiles are generated by heterolytic fission of a covalent bond.
- All electrophiles are lewis acids.
- Transition metal cations are electrophiles – Fe^{3+}, Fe^{2+}, Ag^+ etc.
- Neutral Electrophiles : BF_3, $AlCl_3$, $FeCl_3$, $BeCl_2$, SO_3 etc.
- Charged Electrophiles:

Cl^+, Br^+, I^+, NO_2^+, NO^+, H^+, H_3O^+, NH_4^+, R^+, etc.

Nucleophiles (Nu^-):

- Electron rich species, have a tendency to donate electron pair.
- All nucleophiles are lewis bases.
- Attack the centre of minimum electron density in substrate molecule.
- Charged nucleophiles: F^-, Cl^-, Br^-, I^-, OH^-, $RCOO^-$, RO^-, R^-, $R-C\equiv C^-$, NH_2^-.
- Neutral Nucleophiles:

$\ddot{N}H_3$, $R\ddot{N}H_2$, $R\ddot{N}HR$, $R_3\ddot{N}$, $H_2\ddot{O}$, $R\ddot{O}H$, $R-\ddot{O}-R$