heterolytic cleavage $R-X \longrightarrow R^{+}/R^{-} + X^{-}/X^{+}$

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- Carbanion → formed from heterolytic cleavage.
* Organic reactions which proceed through heterolytic bond cleavage are called ionic or heteropolar or polar reactions.
* homolytic cleavage → $R-X \xrightarrow{\text{heat/light}} R^{\cdot} + X^{\cdot}$ (fish hook arrow)
  ↳ generation of free radical which are neutral species. STABILITY → $\dot{C}H_3 < 1^{\circ} < 2^{\circ} < 3^{\circ}$
- Organic rean, which proceed by homolytic fission → free radical or homopolar or non polar reactions.
* Nucleophiles and Electrophiles
  (they are reagent)
  Brings e⁻ pair — takes away e⁻ pair
  → in a polar organic rean, nucleophile attack electrophilic centre of substrate (e⁻ deficient) & electrophile attack nucleophilic centre (e⁻ rich) → curved arrow notation movement of e⁻ pair from nucleophile to electrophile
  Eg of nucleophile → HO^-, NC^-, $RC\equiv C^-$ (cyanide) & if neutral → $H_2\ddot{O}:$, $R_3N:$, $R_2\ddot{N}H$ due to presence of lone pair
  Eg of electrophile → Carbocation, neutral molecule having functional group as carbonyl group, alkyl halide
* Carbon in Carbocation has sextet configuration. hence it is e⁻ deficient. & in neutral molecules due to polarity, partial +ve charge is generated on carbon hence it becomes electrophilic.

Electron displacement effects

e⁻ displacements due to the influence of an atom or a substituent grp present in molecule cause permanent polarisation of bond
Eg- Inductive effect & resonance effect