

Summary

- The S_N2 mechanism is not an option for substitution at C(sp²)-X σ bonds.
- Under very strongly basic conditions, halobenzenes undergo β-elimination to give benzyne, compounds that are highly strained and very reactive. Substitution takes place by a two-step process involving: (1) β-elimination and (2) nucleophile addition.
- π bonds in aromatic compounds that are substituted with electron-withdrawing groups are electrophilic (i.e., they have a low-energy π* LUMO); thus, they are prone to attack by nucleophiles under basic conditions. When a good leaving group is present, substitution takes place by a two-step process involving: (1) nucleophile addition and (2) elimination of a suitable leaving group.
- The NH₂ group of arylamines can be replaced by a variety of other groups after transforming the amine to an aryldiazonium ion. The large driving force (i.e., due to formation of the stable byproduct, N₂) accounts for the formation of the high-energy aryl cation intermediate.