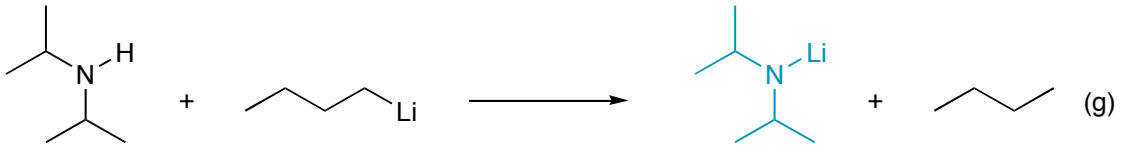
Chapter 24 - Amines

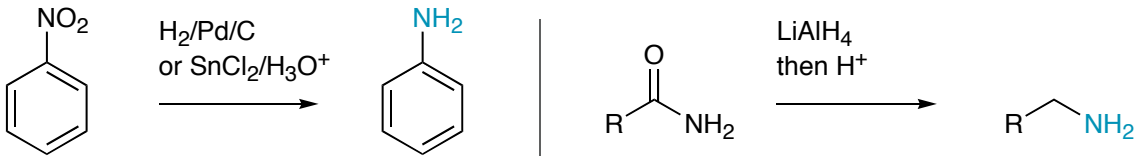
Amines are very poor acids

But they can be deprotonated with very very strong bases like bultyl lithium. For example, this is how chemists prepare LDA.



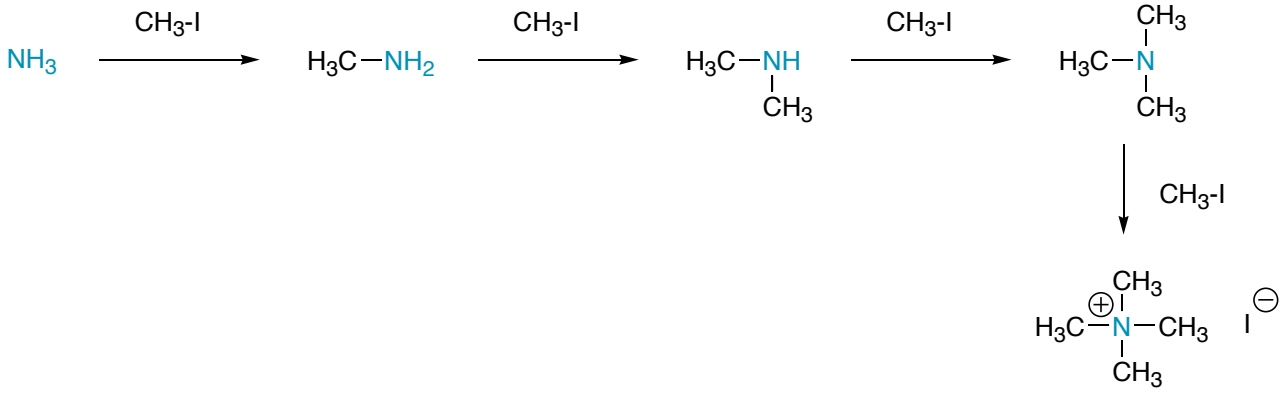
Preparation of Amines - from previous chapters

Aromatic nitro compounds can be reduced to afford anilines and amides can be reduced to form amines.



Alkylation of Amines

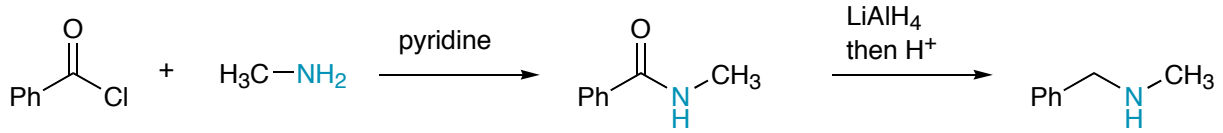
Amines are very good nucleophiles. Too good as a matter of fact. It is difficult to stop the reaction with just one alkylation.



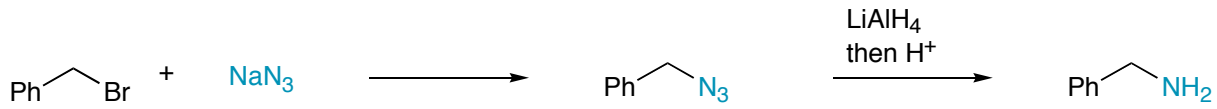
Controlling the Alkylation of Amines

In order to avoid problems with over alkylation, there are several strategies that can be undertaken.

Make Amide then Reduce

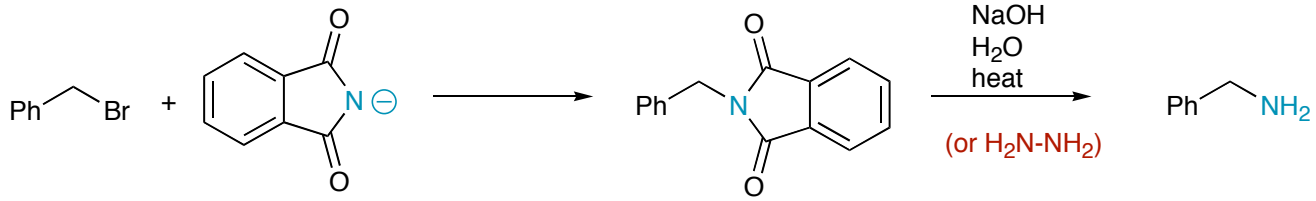


Use Azide as Nucleophile, then reduce

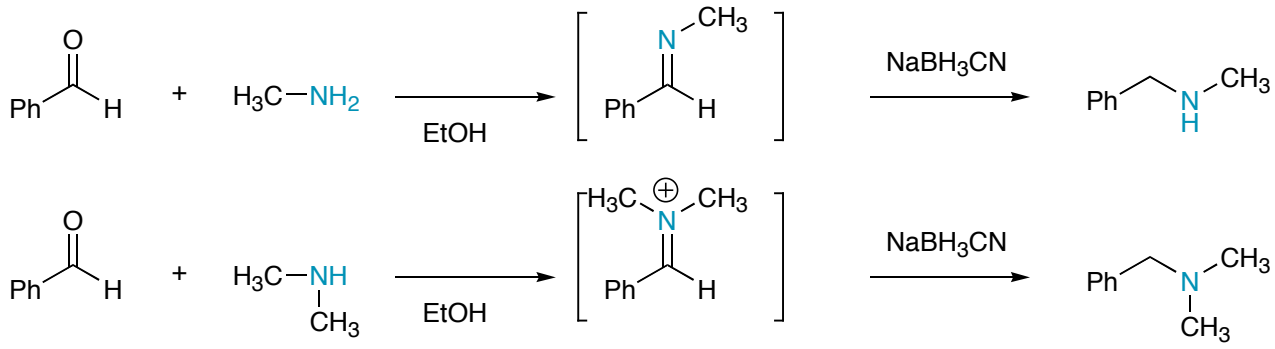


azides will alkylate only once

Use Phthalimide as Nucleophile, then deprotect



Reductive Amination with amine and Aldehyde or Ketone



Hofmann Elimination

Amines can be exhaustively methtylated with iodomethane. The ammonium salt that is generated undergoes elimination reactions with base generated from silver oxided. This was historically used to determine the structures of natural alkaloids by selective degredation.