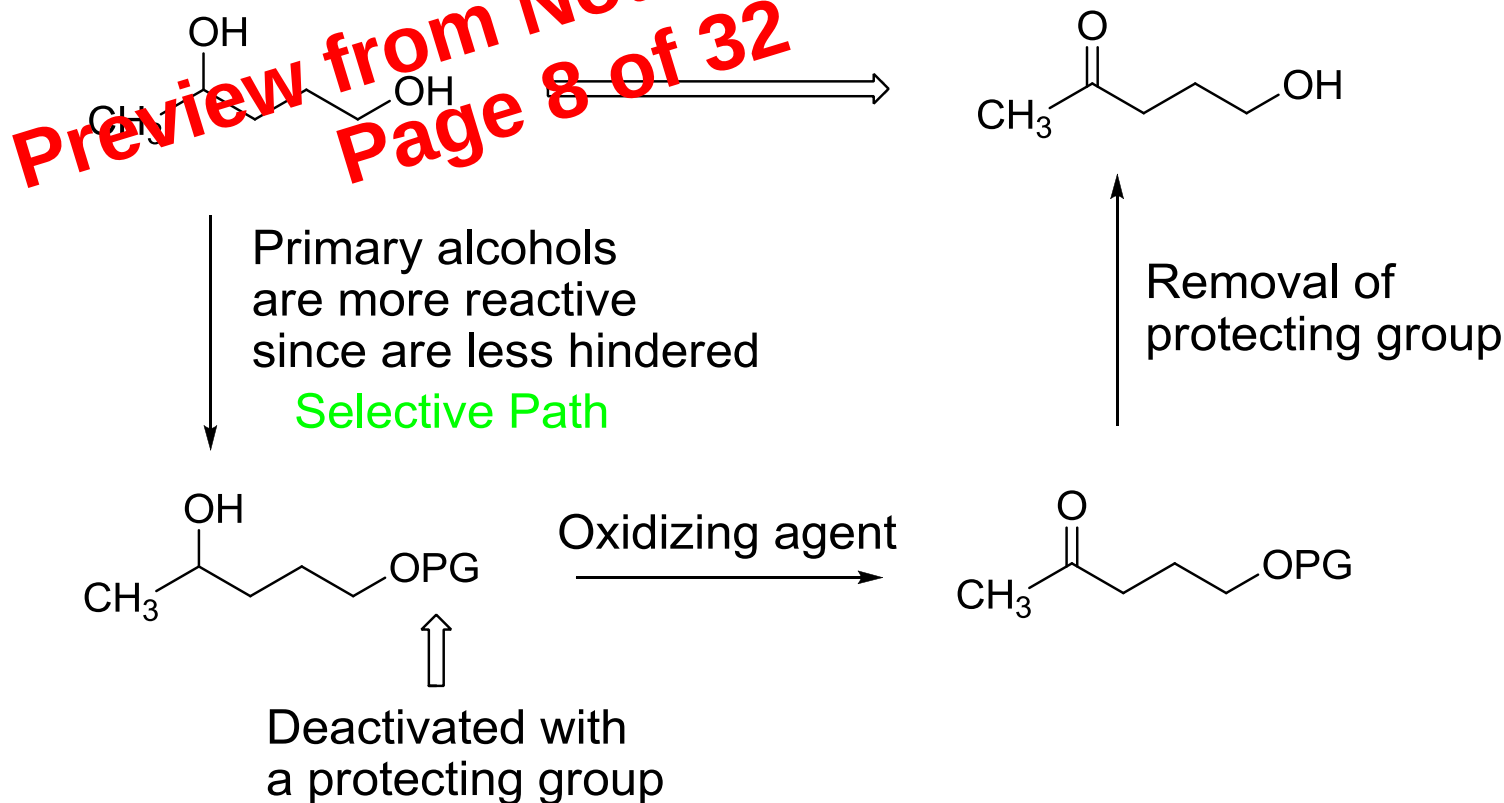


Protecting Groups: A Necessary Evil

Building the Case for Protecting Groups



Note that the introduction of each protecting group in a multi-step synthesis increases the synthesis by two non-productive steps reducing the overall yield and efficiency of the synthesis.

Protecting Groups in Organic Synthesis

The Qualities of a Good Protecting Group

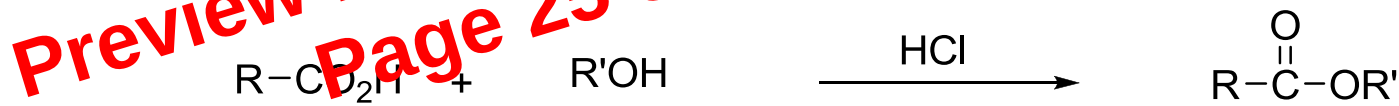
A good protecting group should be such that:

- (a) It should be readily and selectively introduced to the desired functional group in a poly-functional molecule.
- (b) It should be resistant (inert) to the reagents employed in the subsequent reaction steps in which the group being masked (protected) is desired to remain deactivated (protected).
- (c) It should be capable of being selectively removed under mild conditions when its protection is no longer required.

Protecting Groups for Carboxylic Acids

(Esters)

Methyl, ethyl and benzyl esters can be prepared based on the following rationale:



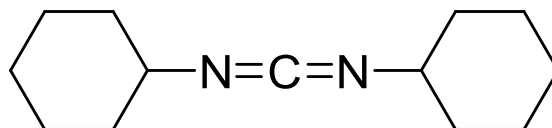
Fischer Esterification: Incompatible with α -enolizable carboxylic acids and other acid-labile protecting groups that may be already present in the polyfunctional molecule.

Best approach:

Milder conditions for esterification



DCC = 1,3-Dicyclohexyl carbodiimide



Protecting Groups for Carboxylic Acids

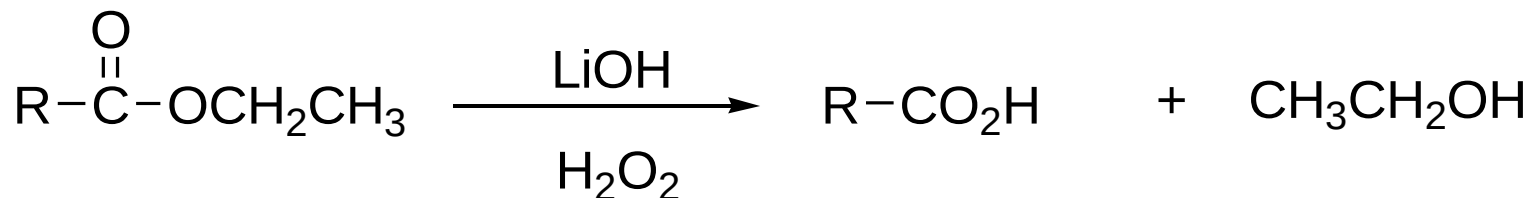
(Esters)

Ethyl Esters

Formation



Cleavage

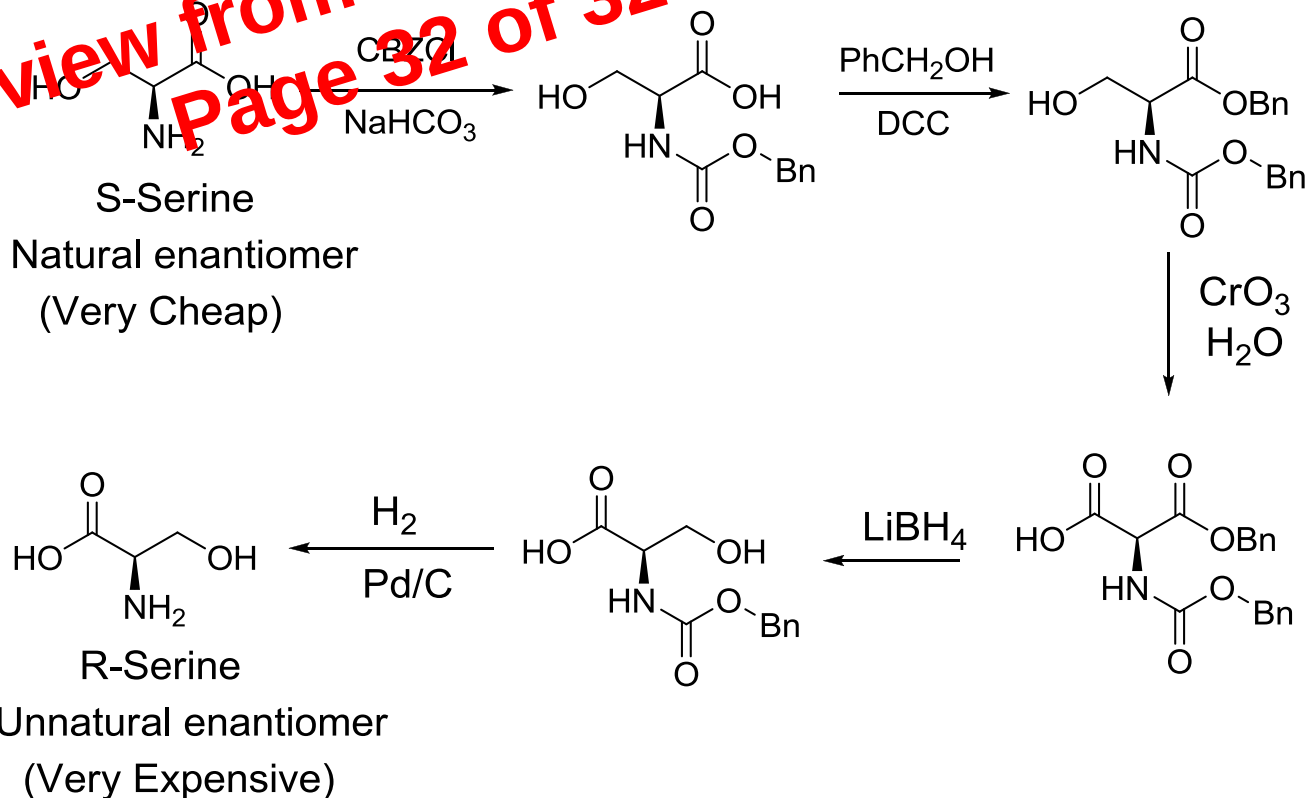


Protecting Groups for Carboxylic Acids

(Ester and Carbamate Protecting Groups)

Perspectives in the Synthetic Applications of the Ester and Carbamate Protecting Groups

Preview from Notesale.co.uk
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LiBH_4 reduces the more reactive ester functional group leaving the less reactive carboxylic acid and carbamate groups unaffected.