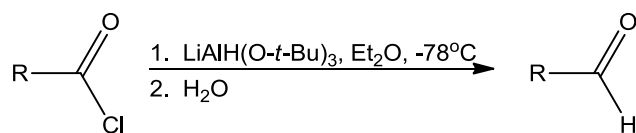


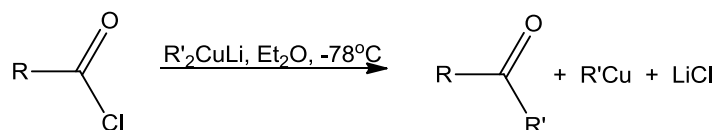
Functional Group Reactions – CHEM 263

Acyl chlorides

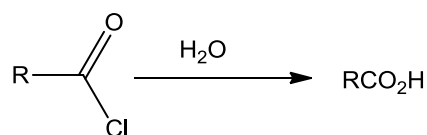
1. Reduction



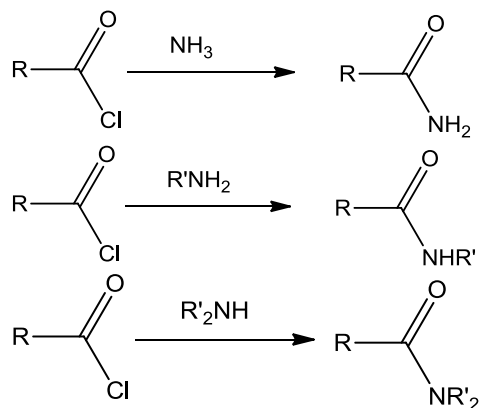
2. Reaction with lithium dialkylcuprates



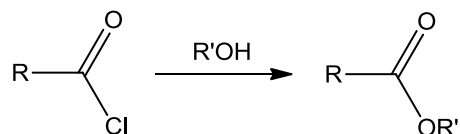
3. Hydrolysis



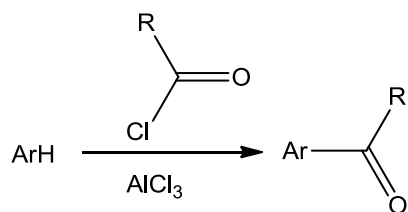
4. Ammonolysis



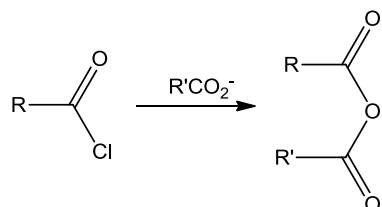
5. Alcoholysis



6. Friedel – Crafts acylation

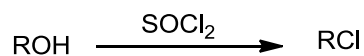


7. Synthesis of anhydrides

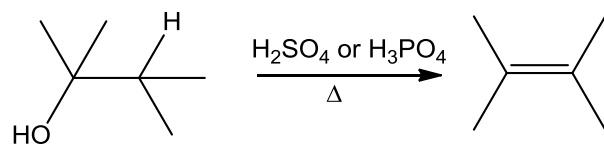


Alcohols

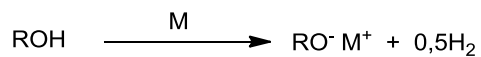
1. Reaction with SOCl_2 , PX_3 or HX



2. Dehydration

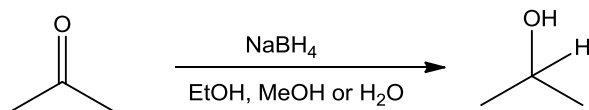


3. Reaction with Li, Na or K

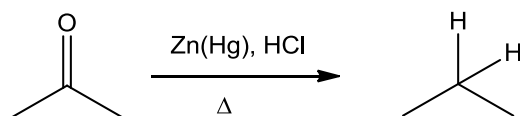


Aldehydes and ketones

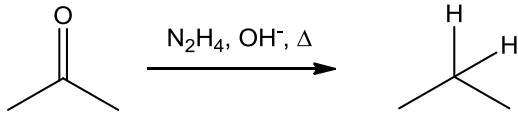
1. Reduction



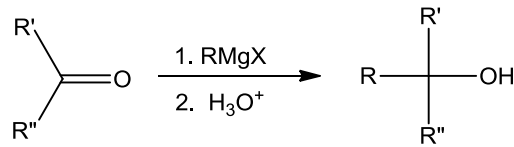
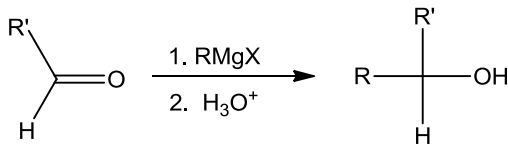
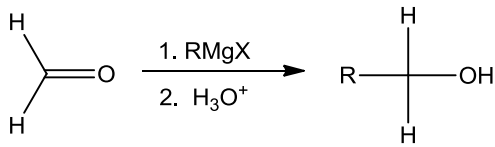
Clemmensen:



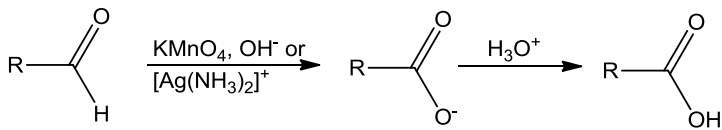
Wolff-Kishner:



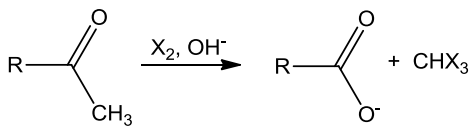
2. Grignard reagents



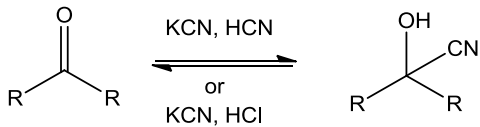
3. Oxidation



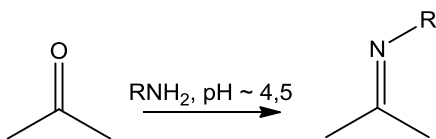
4. Haloform reaction



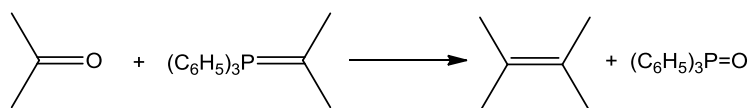
5. Formation of cyanohydrins



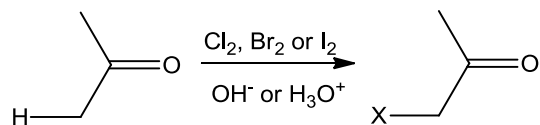
6. Formation of imines



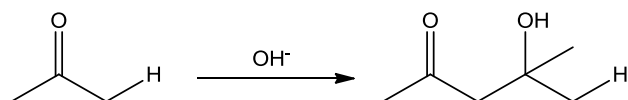
7. Wittig reaction



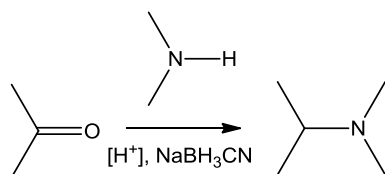
8. Halogenation



9. Aldol addition

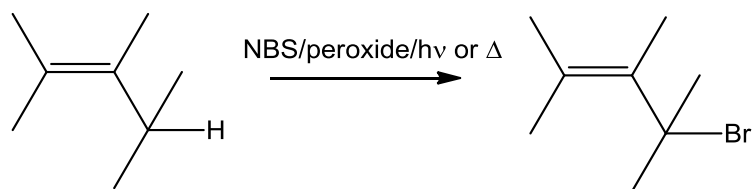
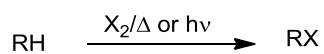


10. Reductive amination



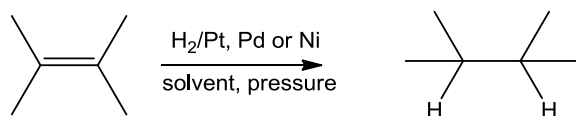
Alkanes

1. Halogenation

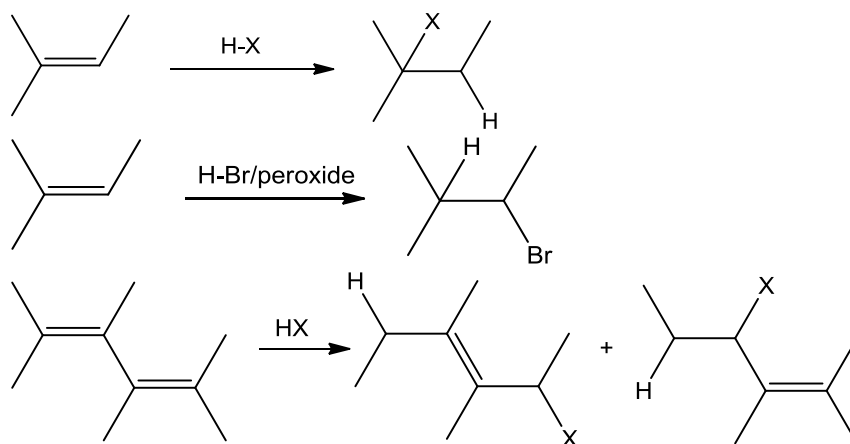


Alkenes

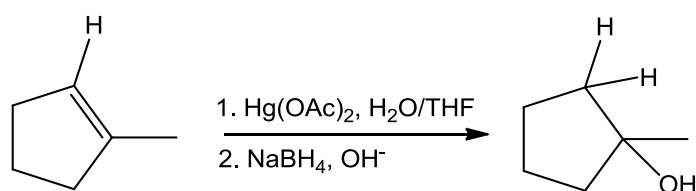
1. Hydrogenation



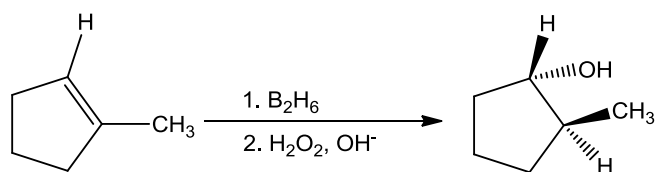
2. Addition of HX



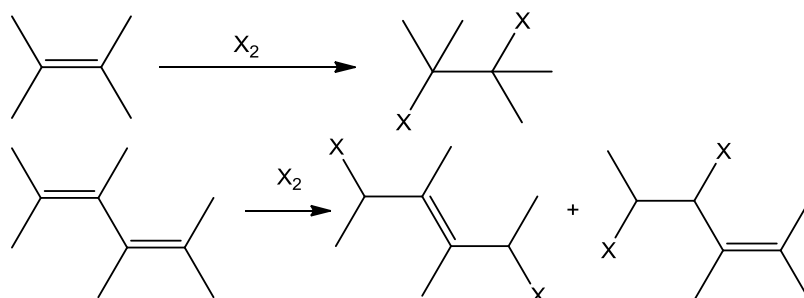
3. Oxymercuration



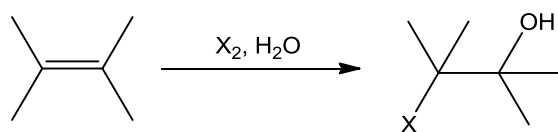
4. Hydroboration



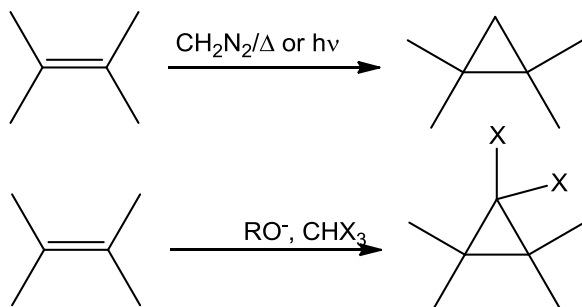
5. Addition of halogen



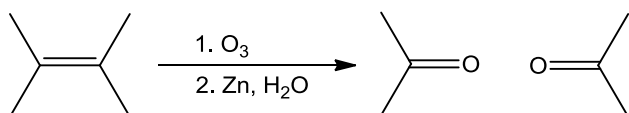
6. Addition of X_2/H_2O



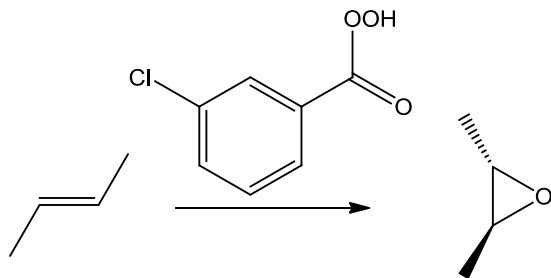
7. Addition of carbenes



8. Ozonolysis

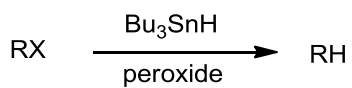


9. Formation of oxacyclopropanes

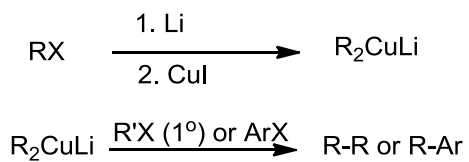


Alkyl halides

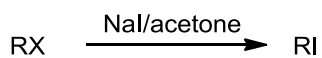
1. Reduction



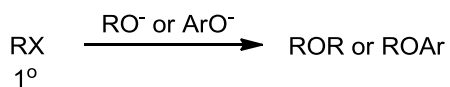
2. Corey - Posner, Whitesides – House reaction



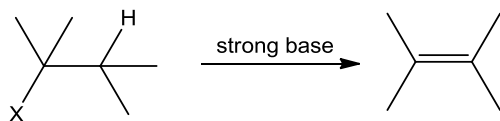
3. Finkelstein reaction



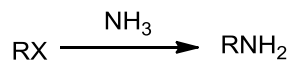
4. Williamson synthesis



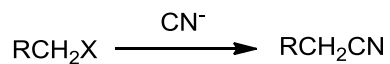
5. Dehydrohalogenation



6. Reaction with ammonia and amines

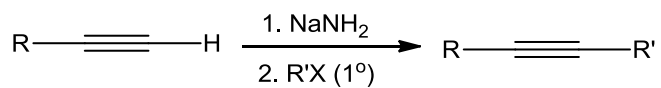


7. Reaction of primary alkyl halides with CN^-

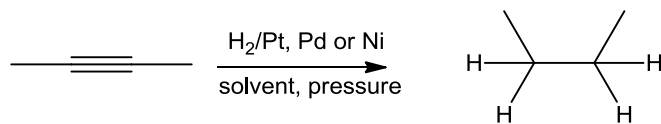


Alkynes

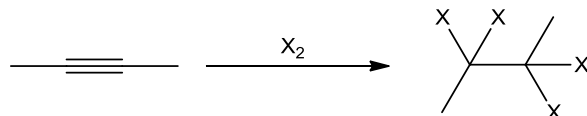
1. Alkylation of terminal alkynes



2. Hydrogenation



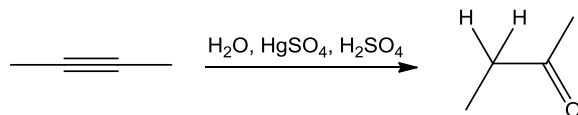
3. Addition of halogens



4. Addition of HX

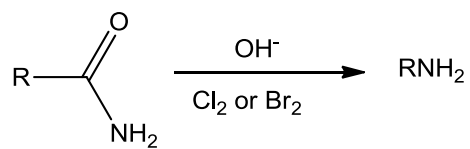


5. Addition of water

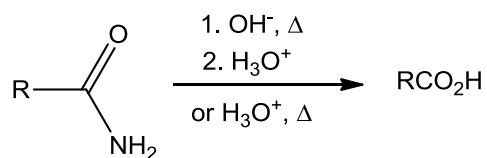


Amides

1. Hofmann degradation

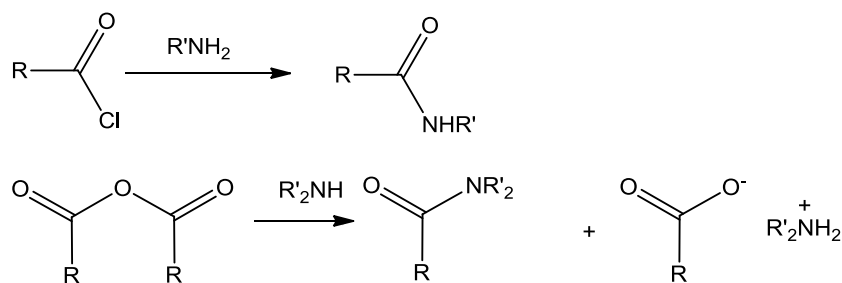


2. Hydrolysis

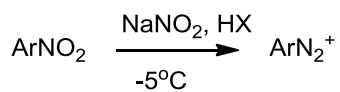


Amines

1. Reaction with derivatives of carboxylic acids

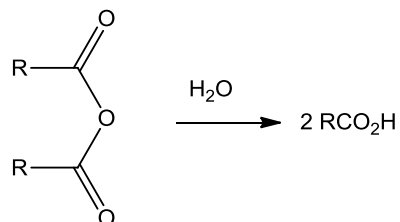


2. Reaction with nitrous acid

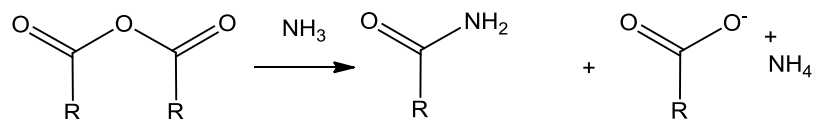


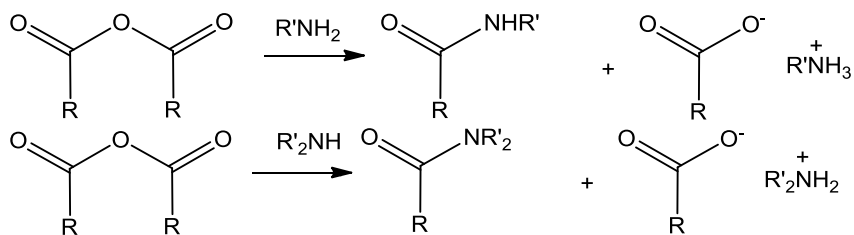
Anhydrides

1. Hydrolysis

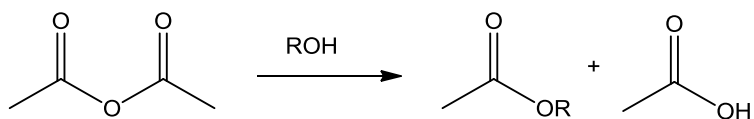


2. Ammonolysis

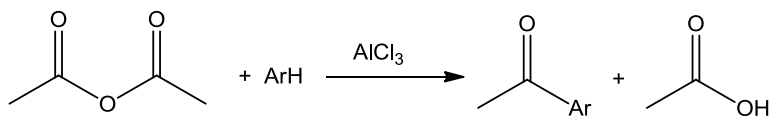




3. Alcoholysis

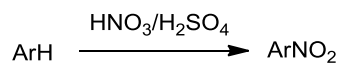


4. Friedel – Crafts acylation

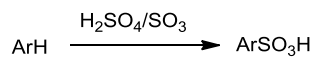


Aromatic rings

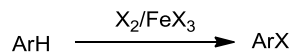
1. Nitration



2. Sulfonation



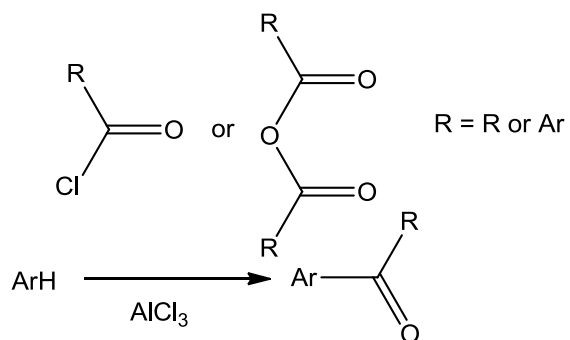
3. Halogenation



4. Alkylation

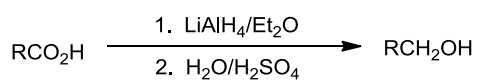


5. Acylation

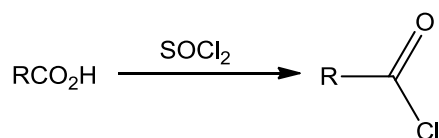


Carboxylic acids

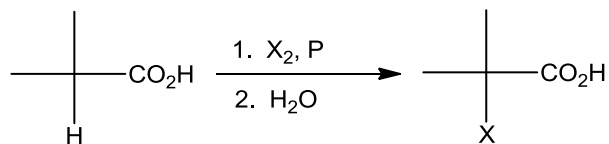
1. Reduction



2. Reaction with SOCl_2 , PCl_3 or PCl_5

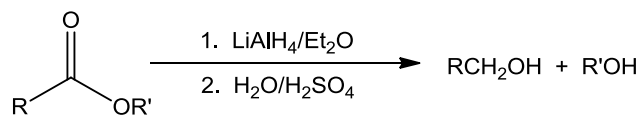


3. Hell-Volhard-Zelinski Reaction

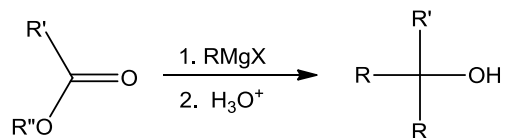


Esters

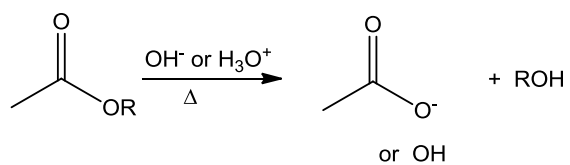
1. Reduction



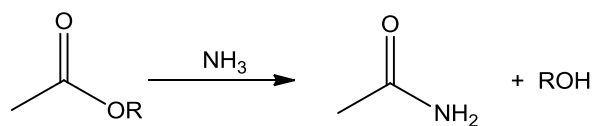
2. Grignard reagents



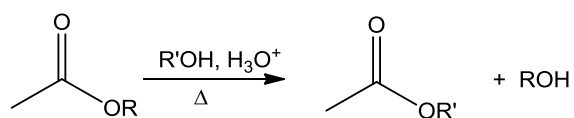
3. Hydrolysis



4. Ammonolysis

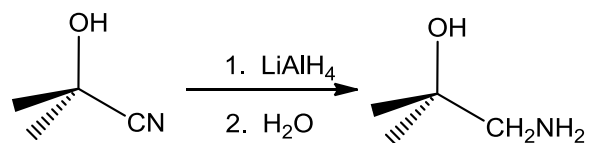


5. Trans esterification



Nitriles

1. Reduction



2. Hydrolysis

