Yesterday

Thermodynamics, kinetics (Selection with ΔT and time)

Orbitals, Bonding σ, π

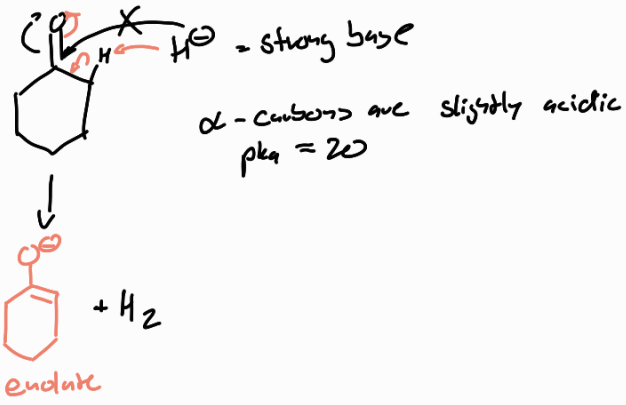
FMO = HOMO, LUMO

Burgi-Dunitz (angle of Attack of Nu)

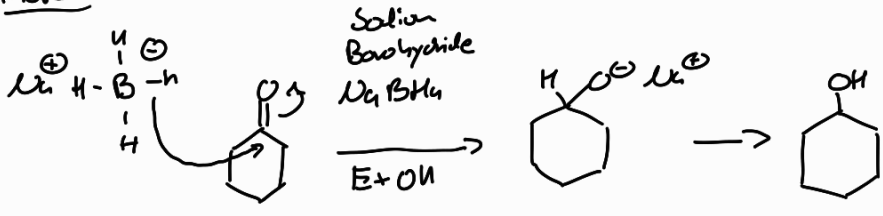
Today

Nu additions to carbonyl

(2) Hydride $H^{\ominus}$ as NaH



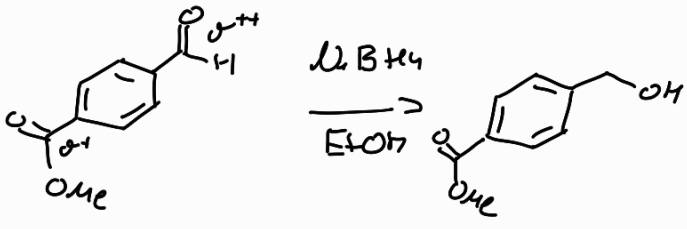
Indeed



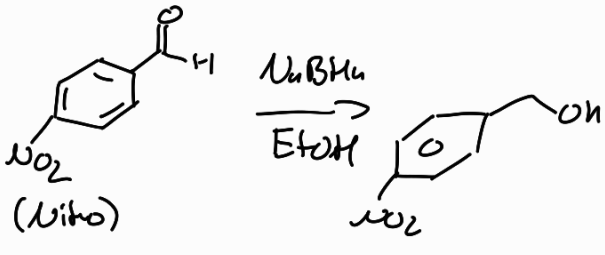
(reduction

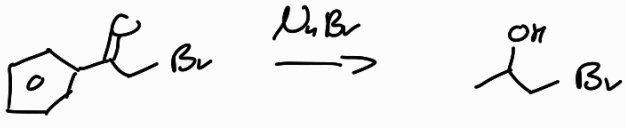
Boride acts as a lewis Acid and lowers the basicity of the Hydride

Selectivity



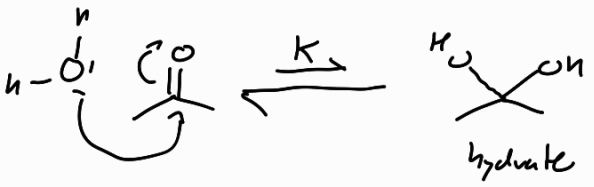
Selective for aldehydes over ketones

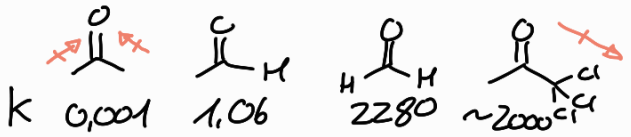




③ O-nucleophiles

a) H_2O





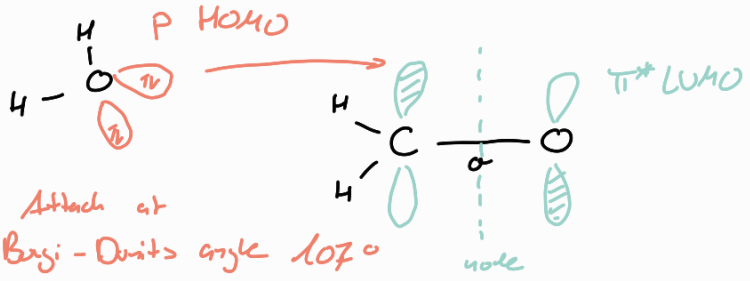
→ Formaldehyde is 100% hydrate in water

Why ?

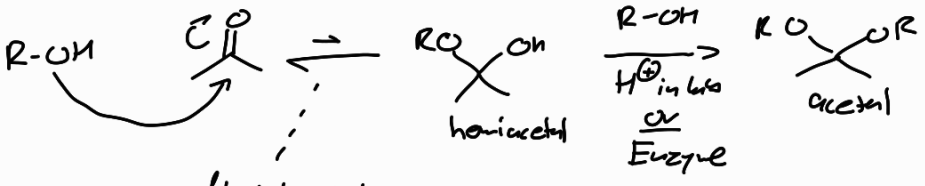
alkyls have an e^- donating effect

=> More polarised carbon favours the hydrate

HOMO ; LUMO ?

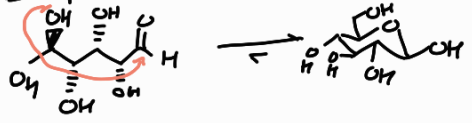


b) Alcohols



Alcohols react
Similar to Water
≈ same eq.

Exeption to selectivity intra molecular

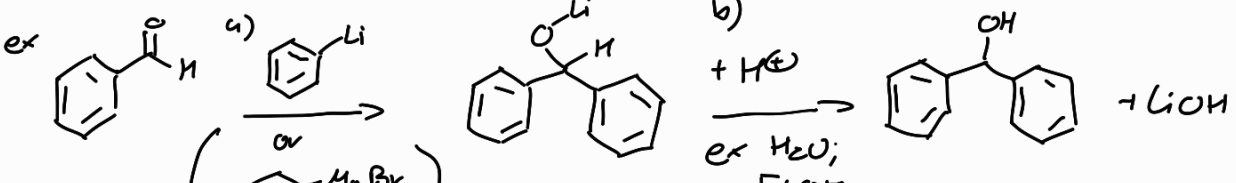


D-Glucose D-glucopyranose

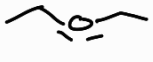
Rule if 5 ; 6 membered ring is possible
it will form

c) Metallorganic Mg CH3

ex

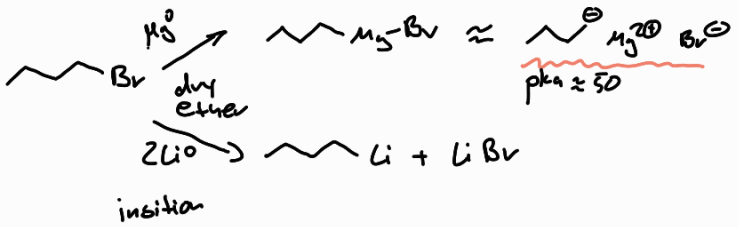


In dry conditions,
otherwise base
Acid reaction => ex:

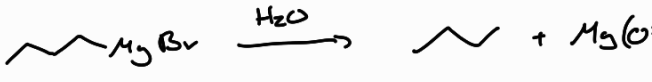


Synthesis of Grignard reagent

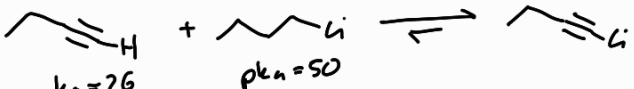
a)



b) strong bases

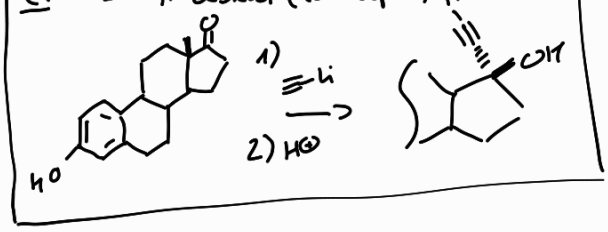


(→ dry ether!)



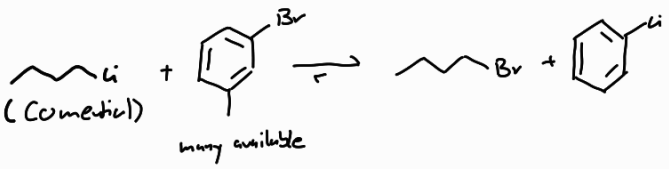
→ more acidic from DB, since add. p' lowers' EN

Ex Ethinyl oestradiol (contraceptive)

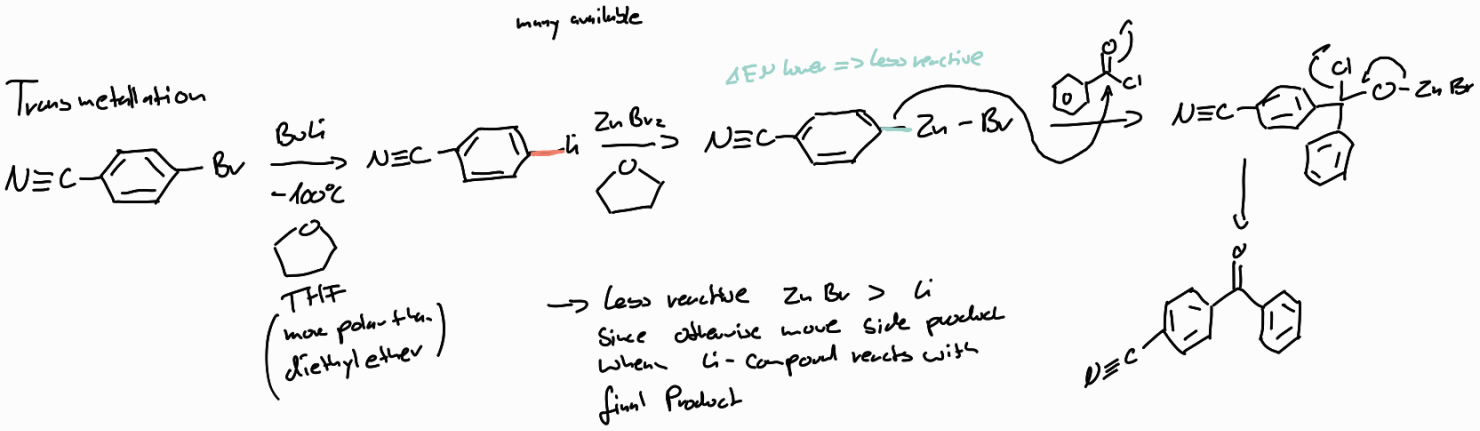


c) Synthesis with:

- halogen-metal exchange

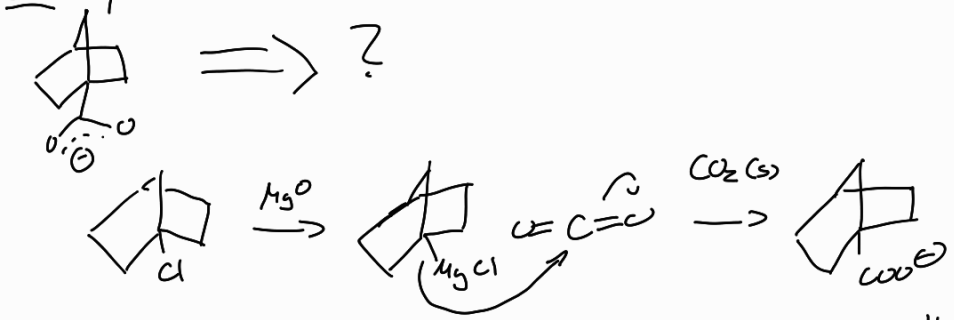


- Transmetallation

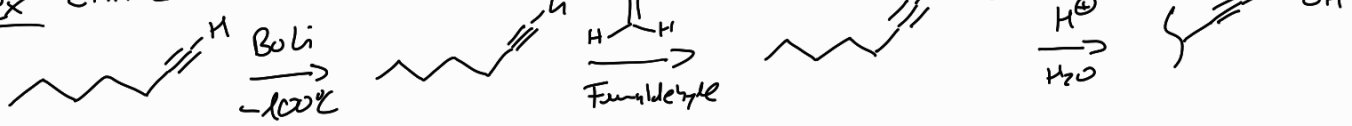


→ Less reactive Zn Br > Li
Since otherwise move side product when Li-compound reacts with final Product

Ex Synthesis of carboxylic acid



Ex chain extension



Synthesis Strategies