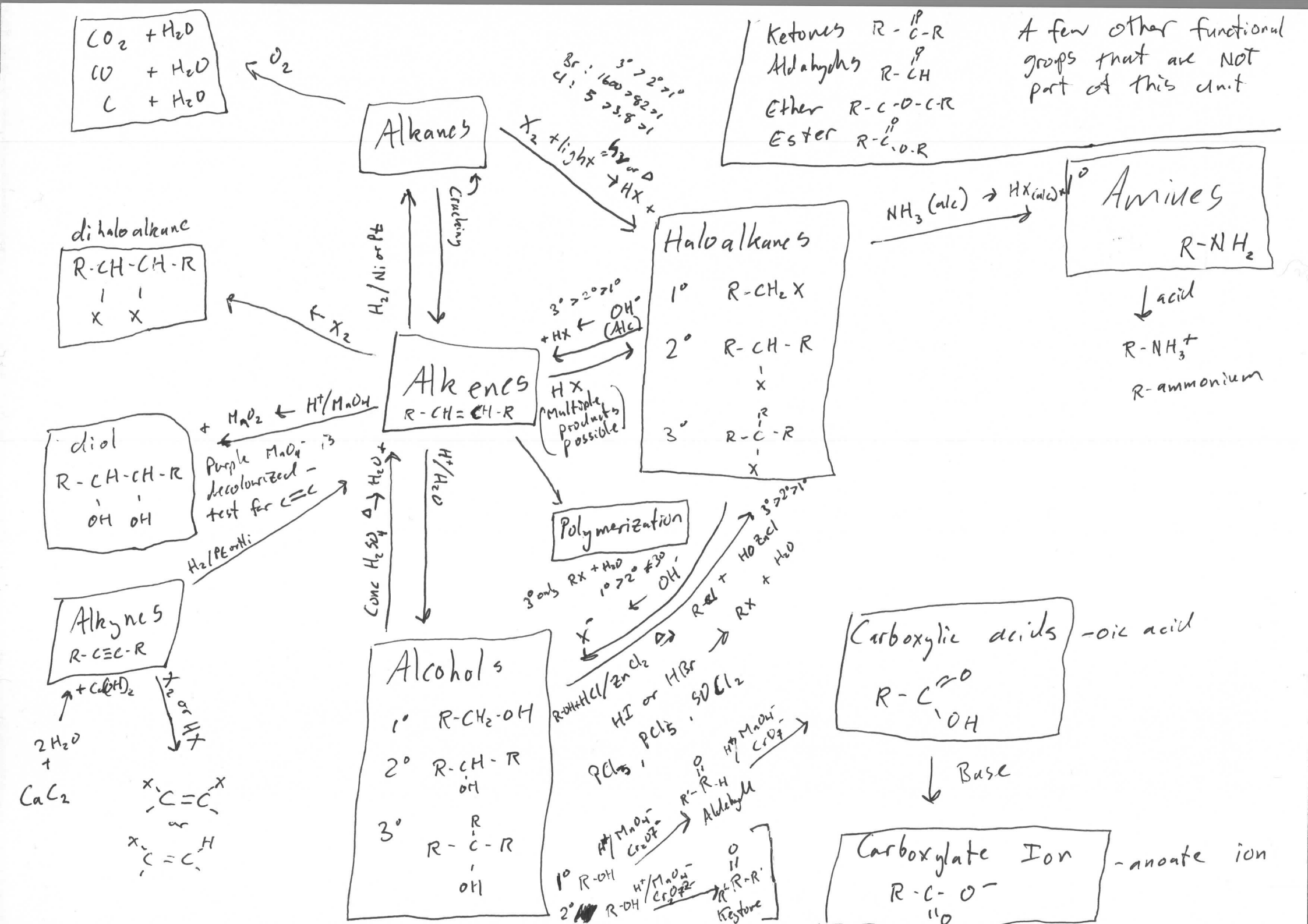

Ketones R-C(=O)-R
Aldehydes R-CH(=O)
Ether R-C-O-C-R
Ester R-C(=O)-O-R
A few other functional groups that are NOT part of this unit
CO2 + H2O
CO + H2O
C + H2O
O2
Alkanes
Br: 3° > 2° > 1°
Cl: 5 > 3.8 > 1
X2 + light = Sv or Δ → HX +
Cracking
H2/Ni or Pt
dihaloalkane
R-CH-CH-R
X X
X2
Haloalkanes
1° R-CH2X
2° R-CH-R
X
3° R-C(R)-R
X
NH3 (alc) → HX(alc) + 1°
Amines
R-NH2
acid
R-NH3+
R-ammonium
3° > 2° > 1°
+ HX ← OH⁻ (Alc)
HX (Multiple products possible)
Alkenes
R-CH=CH-R
+ MnO2 ← H+/MnO4
Purple MnO4⁻ is decolourized - test for C=C
diol
R-CH-CH-R
OH OH
H2/Pt or Ni
Alkynes
R-C≡C-R
+ Ca(OH)2
2H2O + CaC2
X2 or HX
X-C=C-X
or
X-C=C-H
Conc H2SO4 Δ → H2O +
H+/H2O
Polymerization
3° only RX + H2O
1° > 2° ≠ 3°
OH⁻
X⁻
R-OH + HCl/ZnCl2
Δ
R-Cl + HOZnCl
RX + H2O
3° > 2° > 1°
HI or HBr
PCl5, PCl5, SOCl2
Alcohols
1° R-CH2-OH
2° R-CH-R
OH
3° R-C(R)-R
OH
H+/MnO4⁻ Cr2O7⁻
R'-R-H
Aldehyde
1° R-OH
2° R-OH
H+/MnO4⁻ Cr2O7⁻
R'-R-R'
Ketone
Carboxylic acids
R-C(=O)-OH
-oic acid
Base
Carboxylate Ion
R-C-O⁻
-anoate ion