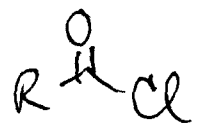
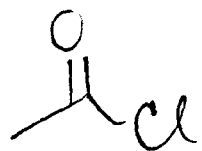


Acid chlorides (acyl chlorides)

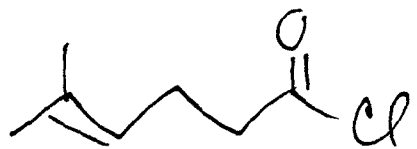


name parent acid

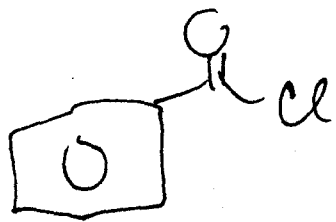
replace "ic acid" with "yl chloride"



acetyl chloride

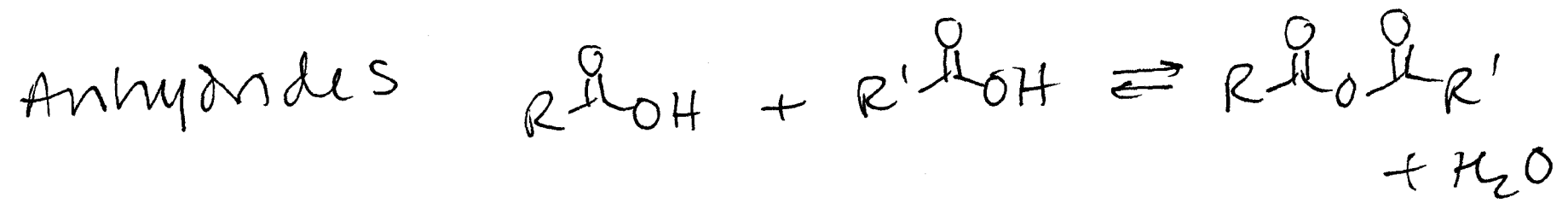


5-methyl-4-hexenoyl chloride

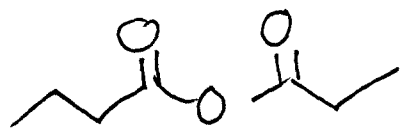


benzoyl chloride

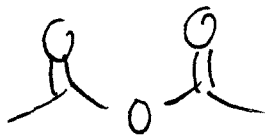
* NOT benzyl chloride \rightarrow 



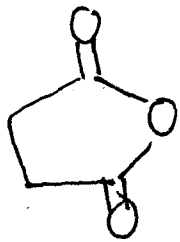
name both parent acids
replace "acid" with "anhydride"



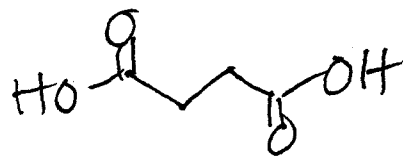
butanoic propanoic anhydride



acetic anhydride

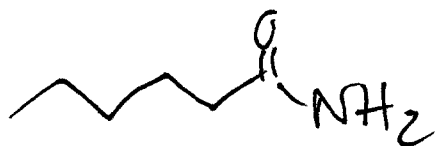
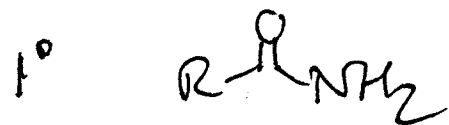


succinic anhydride - from



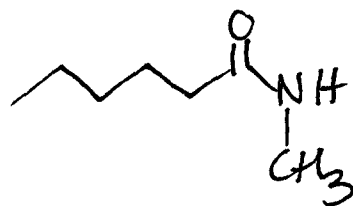
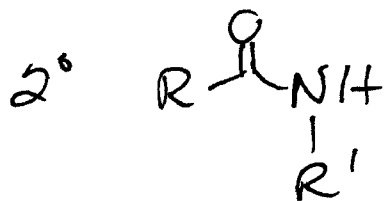
succinic acid

Amides



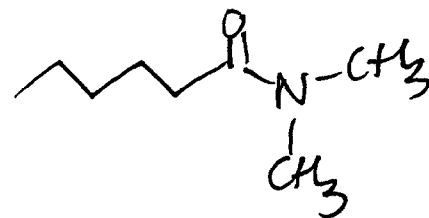
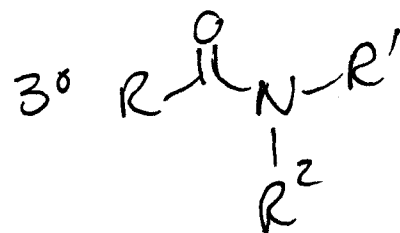
hexanamide

"oic acid"
 \Rightarrow "amide"



hexanamide

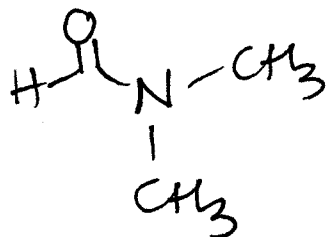
BUT -
what about
the CH_3 ?



N-methylhexanamide

DMF

N,N-dimethylformamide



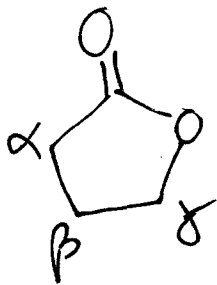
N,N-dimethylhexanamide

cyclic amides are called lactams



a β -lactam

cyclic esters are called lactones

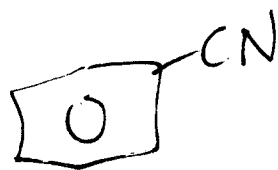


a γ lactone

Nitriles - are considered derivatives of carboxylic acids

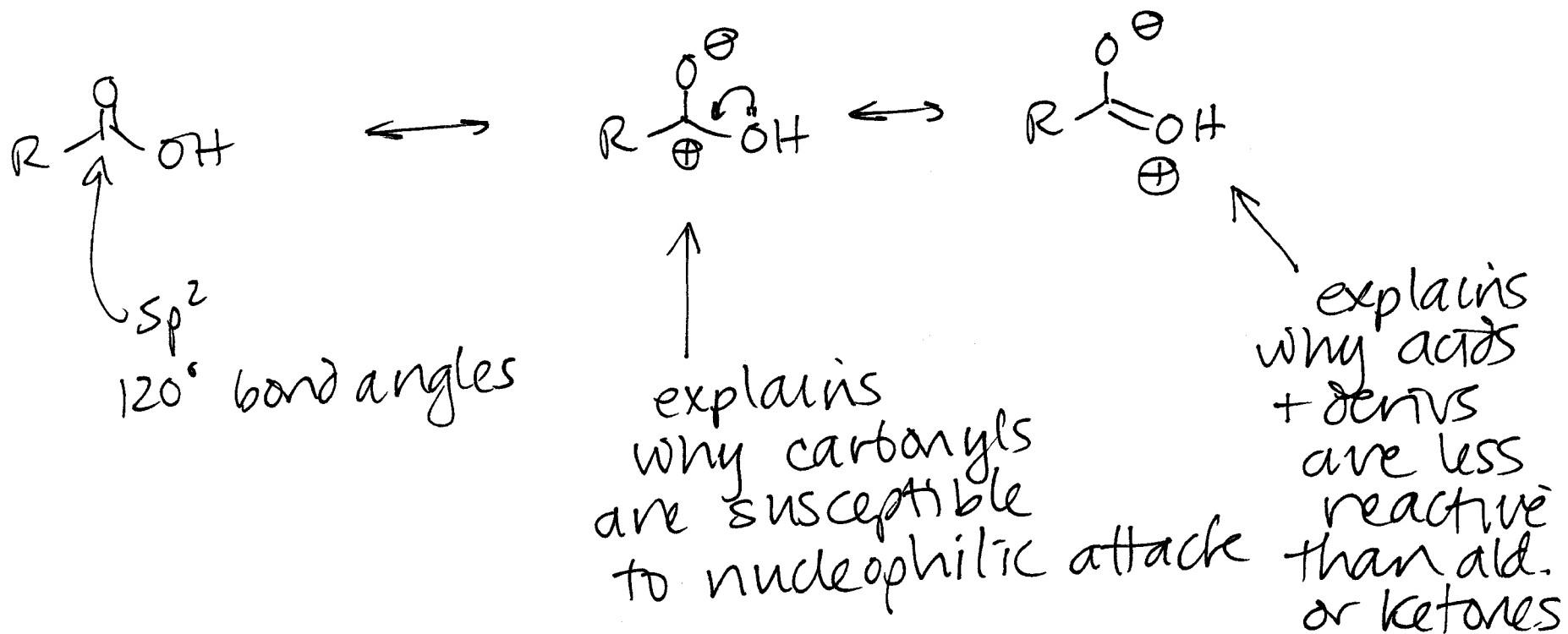


pentanenitrile

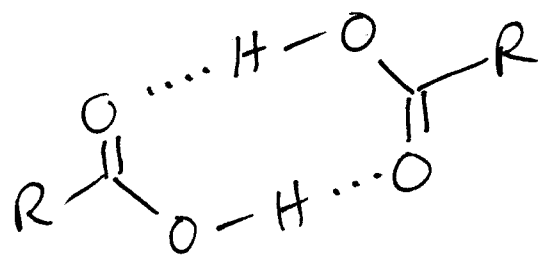


benzonitrile

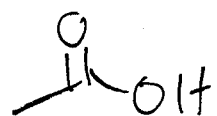
structural features



carboxylic acids can form H-bond pairs



increases both
mp + bp



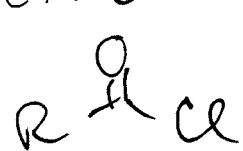
mw $\text{C}_2\text{H}_4\text{O}_2$

$$24 + 4 + \frac{32}{28} = 60$$

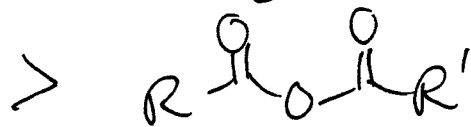
$= 60 \text{ g/mol}$

look at derivatives - e⁻ donation from the substituent stabilizes the C=O, making it less susceptible to nucleophilic attack.

(the more stabilized the C=O, the less reactive)



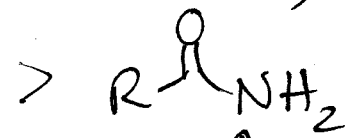
↑
not a
great e⁻
donor



↑
good donor
but shared
by two C=O's

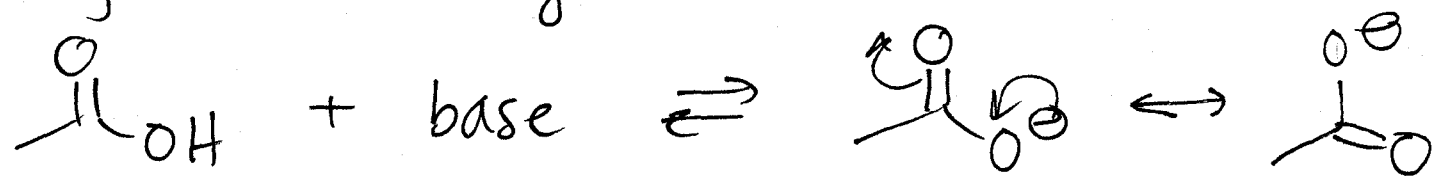


↑
good
donor



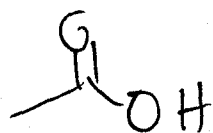
↑
less e⁻ neg
than oxygen
better donor

Acidity of carboxylic acids

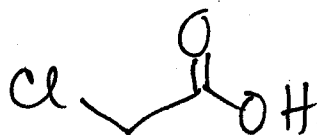


resonance stabilization

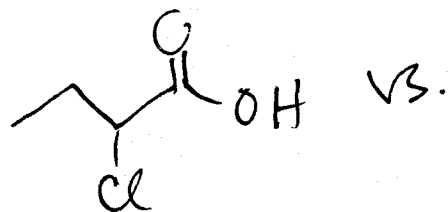
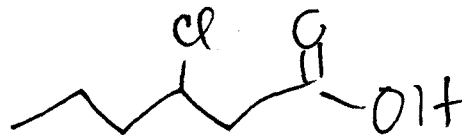
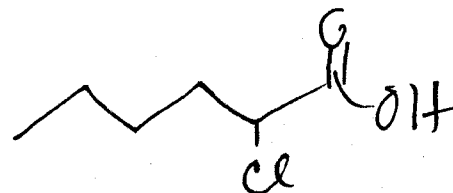
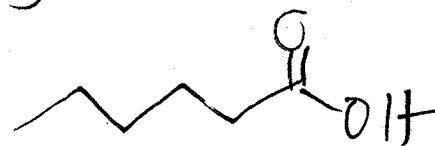
e⁻neg substituents (e⁻withdrawers) close to OH will stabilize the corresponding anion by induction. \Rightarrow increased acidity.



pKa 4.7



2.9



vs.

