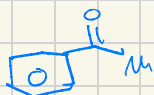


1) More reactive  $\rightarrow$  higher wavenumber



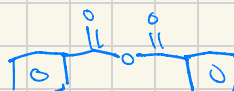
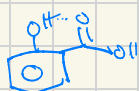
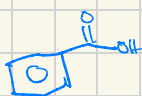
Me  $\equiv$  EDG  
 $\rightarrow$  stabilizes  
 $\rightarrow$  less reactive

CF<sub>3</sub>  $\equiv$  EWG  
 $\rightarrow$  destabilizes  
 $\rightarrow$  more reactive

1697 cm<sup>-1</sup>

1681 cm<sup>-1</sup>

1717 cm<sup>-1</sup>



reference

H-bond  $\rightarrow$  stabilizes  
 $\rightarrow$  lowers frequency

OR better LG

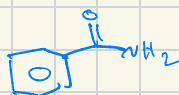
2 carbonyls  $\rightarrow$  2 freq.  
 $\rightarrow$  even better LG

1698 cm<sup>-1</sup>

1653 cm<sup>-1</sup>

1714 cm<sup>-1</sup>

1772, 1713 cm<sup>-1</sup>

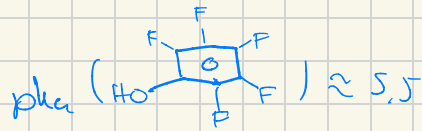
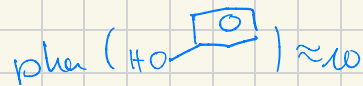


Me  $\equiv$  EDG  
 $\rightarrow$  stabilizes

1654 cm<sup>-1</sup>

1635 cm<sup>-1</sup>

## 2) Güte LG & pKa

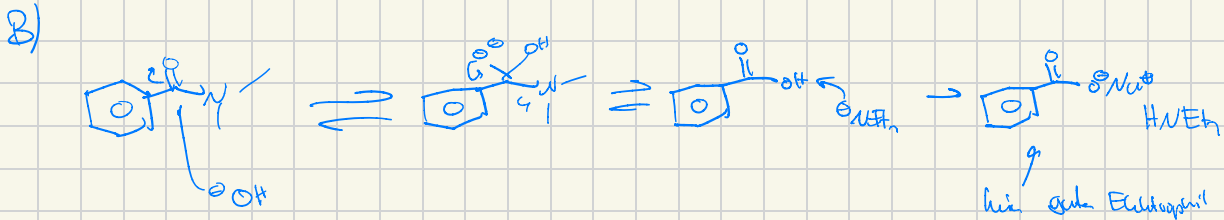
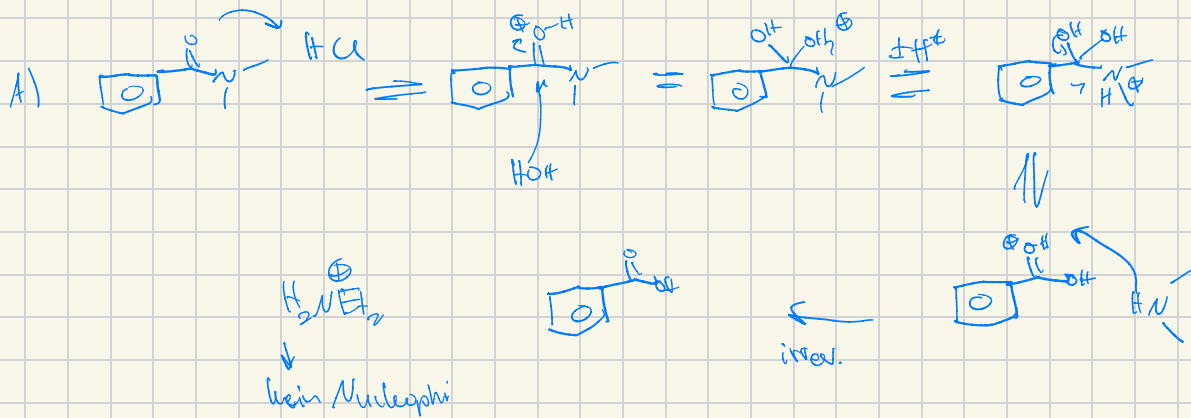


3)

Amide sind die stabilsten Carbonsäure derivative

→ keine Hydrolyse im neutralen möglich

Säure / Base cat.



4/

$\text{R}-\text{C}(=\text{O})-\text{Cl}$  nicht stabil in wasser → wasser wasser freisetzen

The reaction mechanism for the synthesis of *N*-phenylcyclopentanecarboxamide from cyclopentanecarboxylic acid and phenylamine ( $\text{Ph-NH}_2$ ) using  $\text{CDI}$  and imidazole is shown below. The mechanism involves several steps, including the formation of an intermediate, the release of  $\text{CO}_2$ , and the final product formation.

**Step 1: Activation of Cyclopentanecarboxylic Acid**

Cyclopentanecarboxylic acid reacts with  $\text{CDI}$  (1,1'-carbonyldiimidazole) to form an intermediate. The reaction is catalyzed by  $\text{CDI}$ .

**Step 2: Reaction with Phenylamine**

The intermediate reacts with  $\text{Ph-NH}_2$  to form the final product, *N*-phenylcyclopentanecarboxamide.

**Step 3: Mechanism of the Reaction**

The mechanism involves the following steps:

- Formation of the Intermediate:** Cyclopentanecarboxylic acid reacts with  $\text{CDI}$  to form an intermediate. The reaction is catalyzed by  $\text{CDI}$ .
- Reaction with Phenylamine:** The intermediate reacts with  $\text{Ph-NH}_2$  to form the final product, *N*-phenylcyclopentanecarboxamide.
- Release of  $\text{CO}_2$ :** The reaction is driven by the release of  $\text{CO}_2$ .

**Driving force – release of  $\text{CO}_2$**

reagiert hier

$\text{Me}-\text{C}(=\text{O})-\text{O}-$

FPG

EWG

Besseres Elektrophil aber stark nicht

vergessen? + EWG macht es zur guten LG

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