

Practical Organic Chemistry II

Experiment No. (3)

Canizzaro reaction

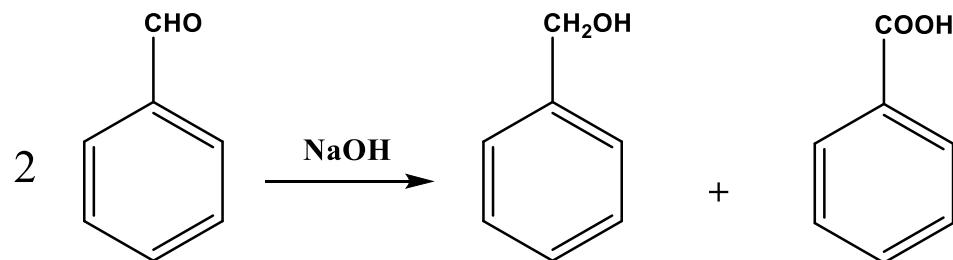
Lecturer
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2023

Canizzaro reaction

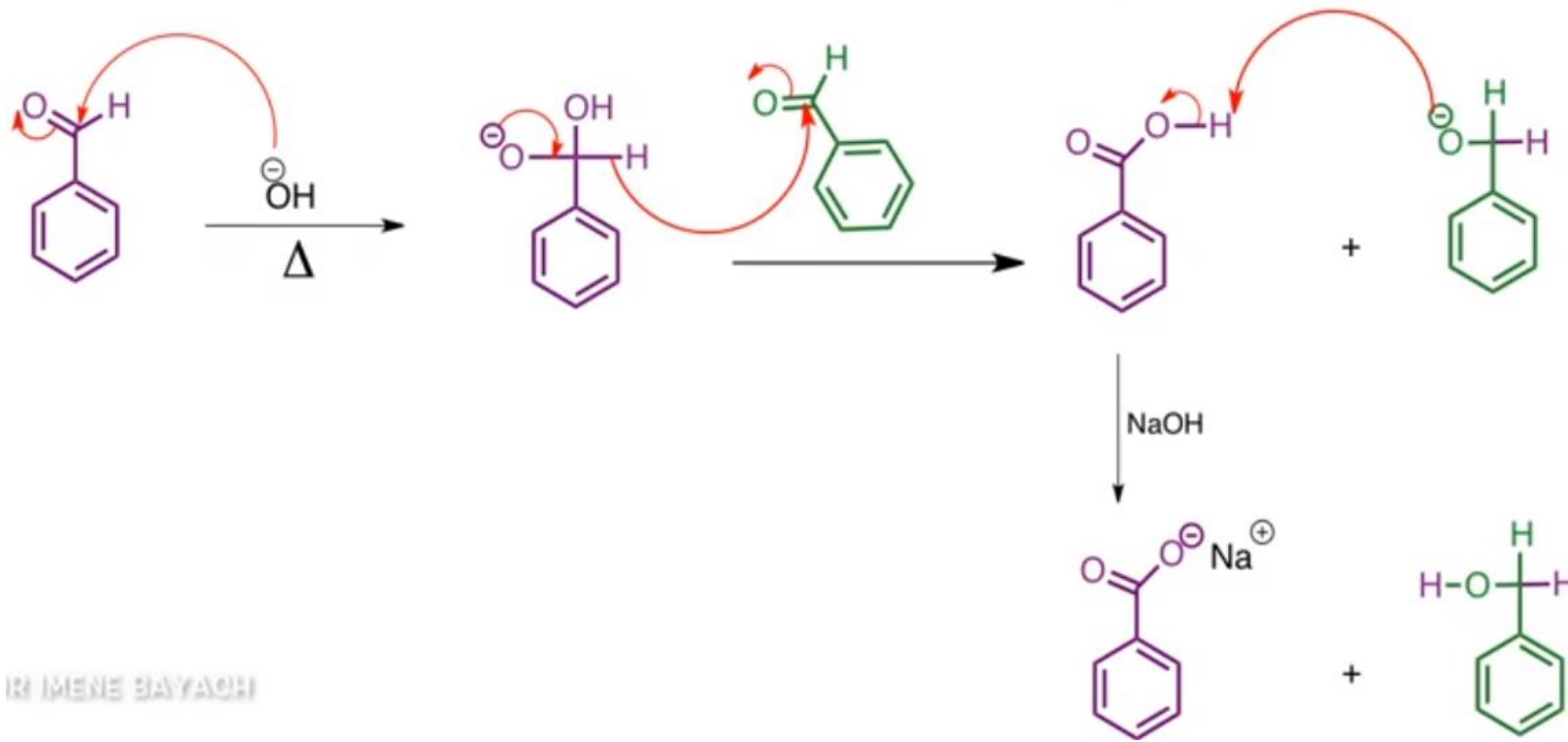
The chemical reaction of aldehydes without α -hydrogens in presence of a strong base to produce an alcohol and a carboxylic acid

Stanislao Cannizzaro is an Italian Chemist who first discovered this reaction.

One molecule of aldehyde is reduced to the corresponding alcohol, while a second one is oxidized to the carboxylic acid.



mechanism



IR IMENE BAYACH

❖ In Pharmaceutical , Benzyl Alcohol used at Low Concentration as:

- 1) Antiseptic (Bacterio Static).
- 2) Local Anesthetic.
- 3) Preservative for Food Industry.
- 4) In 10% Ointments is used as Antipruritic.

❖ In High Concentration Could Cause Hypotension and Respiratory Failure

❖ In Pharmaceutical Benzoic Acid used as:

- 1) Preservative For Food.
- 2) Cosmetic Industry (Lotions , Mouth Wash and Ointments).

Procedure

Part 1

1. Dissolve (2gm) of NaOH in (2.5ml) of water , cool the solution at T.R. or tap water, transfer in a dark bottle.
2. Add (2ml) of benzaldehyde cork the bottle securely and shake the mixture vigorously until it has been converted to a thick emulsion.

Part 2

1. Add (5ml) of water to dissolve the solid substance with stirrer by glass rod .
2. Pour the solution in beaker and with heating , cool the solution at R.T or tap water.
3. Pour the solution in separation funnel add (4ml) ether .
4. The separation funnel with the opening of the valve to exit the gases will form two layers (water and organic).
5. Separated the organic layer (benzyl alcohol) from aqueous layer (sodium benzoate)
6. Separate aqueous layer which are contain the salt .
7. Evaporate the ether layer and collect (benzyl alcohol) .
8. Transfer aqueous layer to beaker and add concentration HCl .
9. Filter the solid substance and wash it in the water (10 ml)

Safety

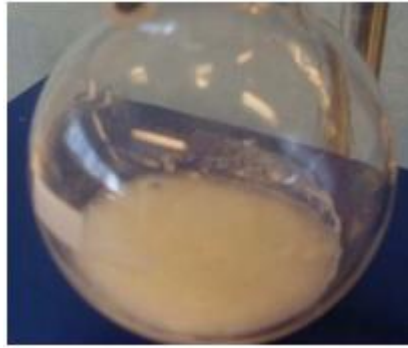
NaOH Causes severe skin burns and eye damage .

HCl Causes severe skin burns and eye damage , may cause respiratory irritation.

must Wear protective gloves / protective clothing / eye protection / face protection.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately .

part 1



part 2

