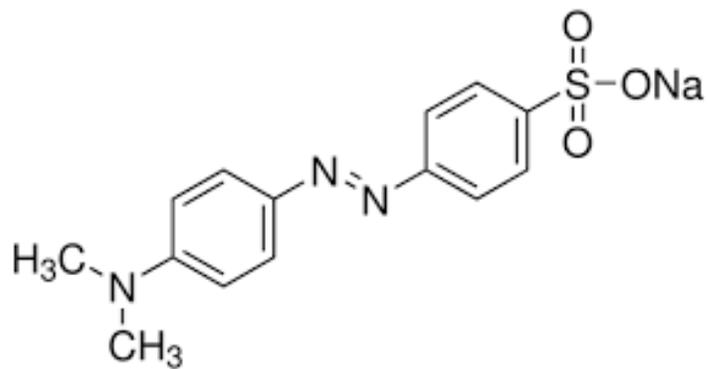


Preparation of Dyes

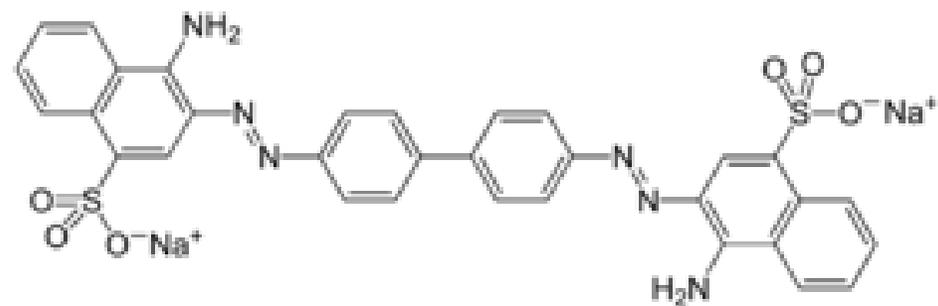


Passang Tshering Lepcha
Department of Chemistry
Ananda Chandra College

Azo Dyes



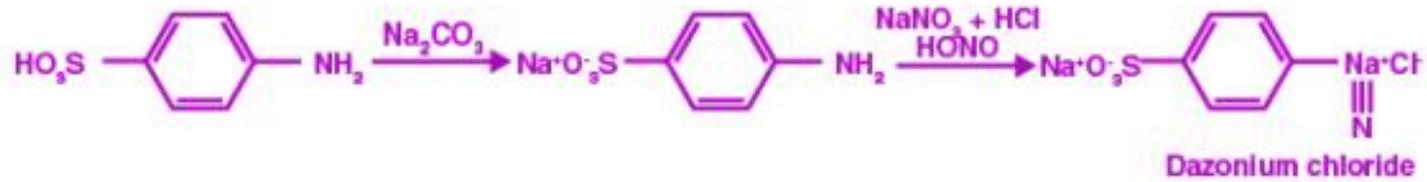
Methyl Orange



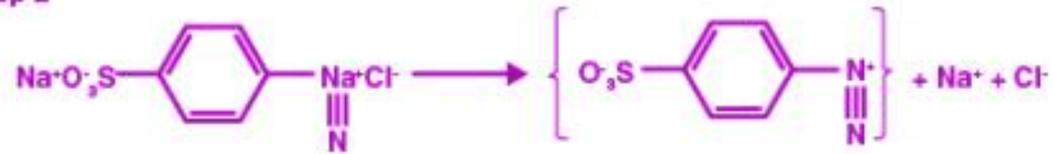
Congo Red

Synthesis of Methyl Orange

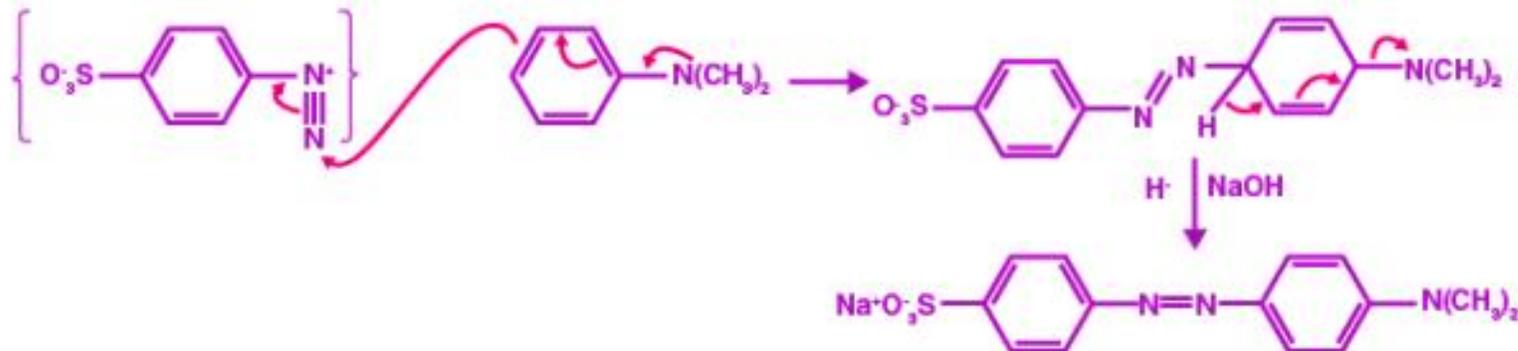
Step 1



Step 2



Step 3



Methyl orange ([pH indicator](#))

below pH

3.1

3.1

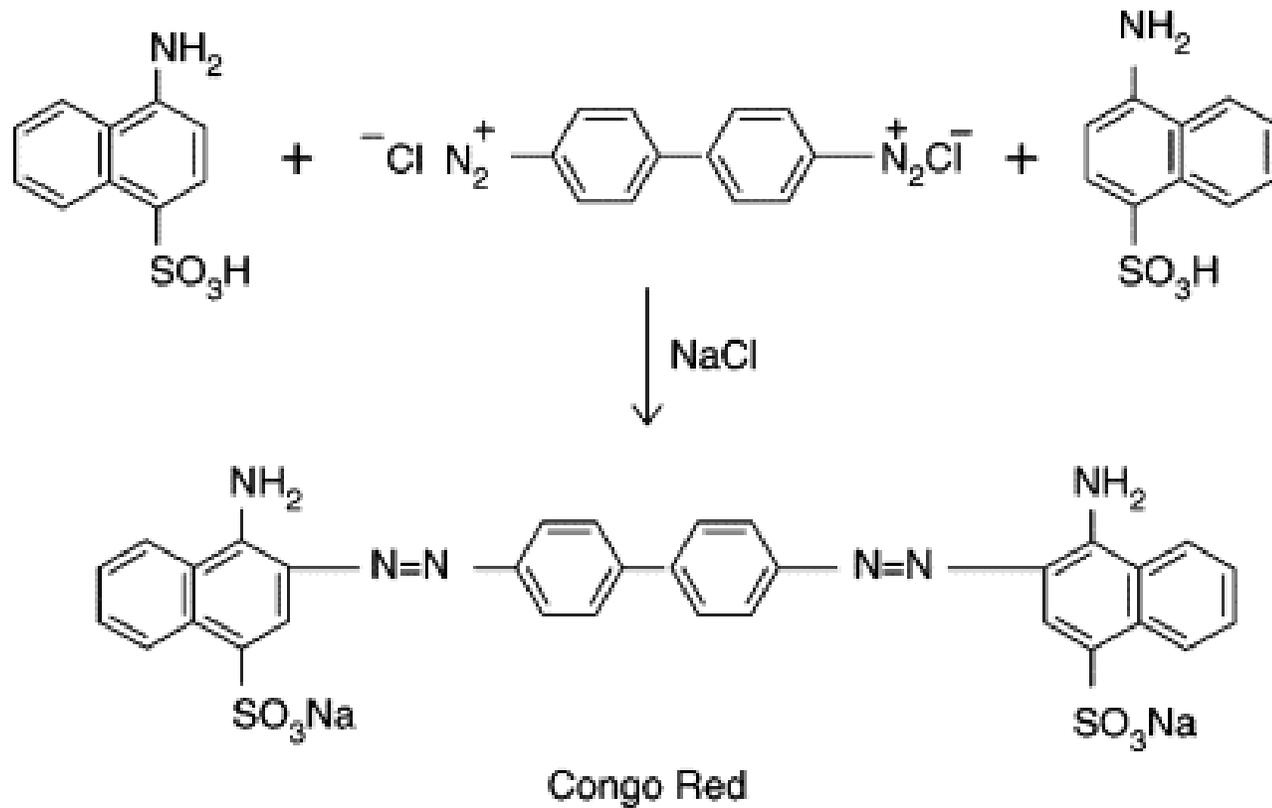
\rightleftharpoons

above pH

4.4

4.4

Preparation of Congo Red



Congo red ([pH indicator](#))

below pH
3.0

3.0

⇌

above pH
5.2

5.2

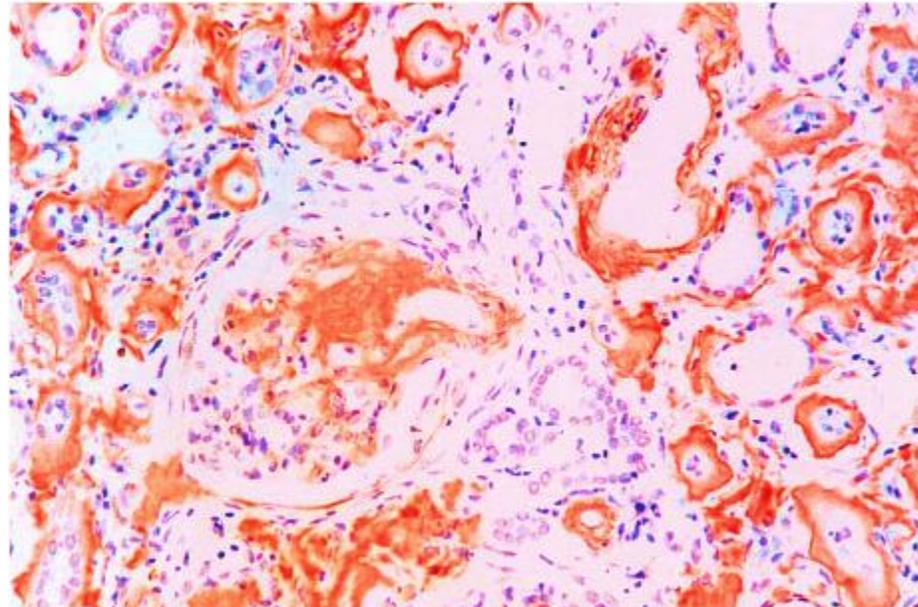
Uses:

Methyl Orange

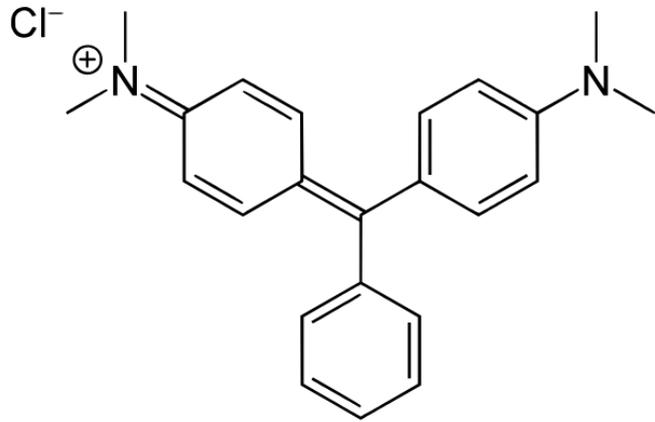
-as pH indicator

Congo Red

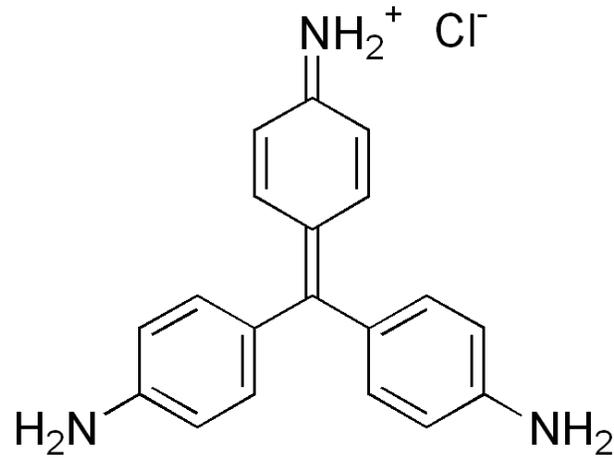
-histological staining of microbes



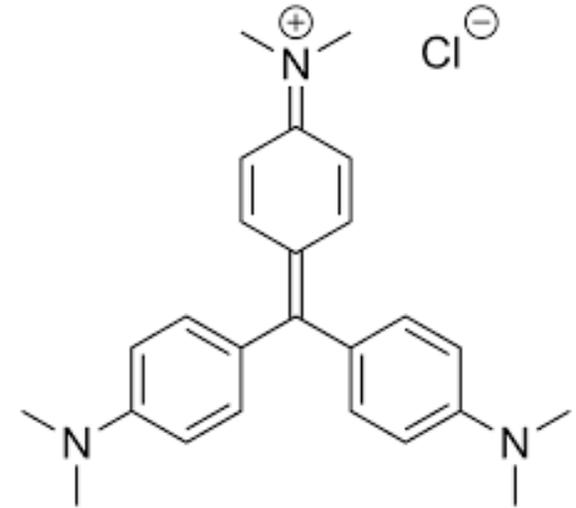
Triphenyl Methane Dyes



Malachite Green

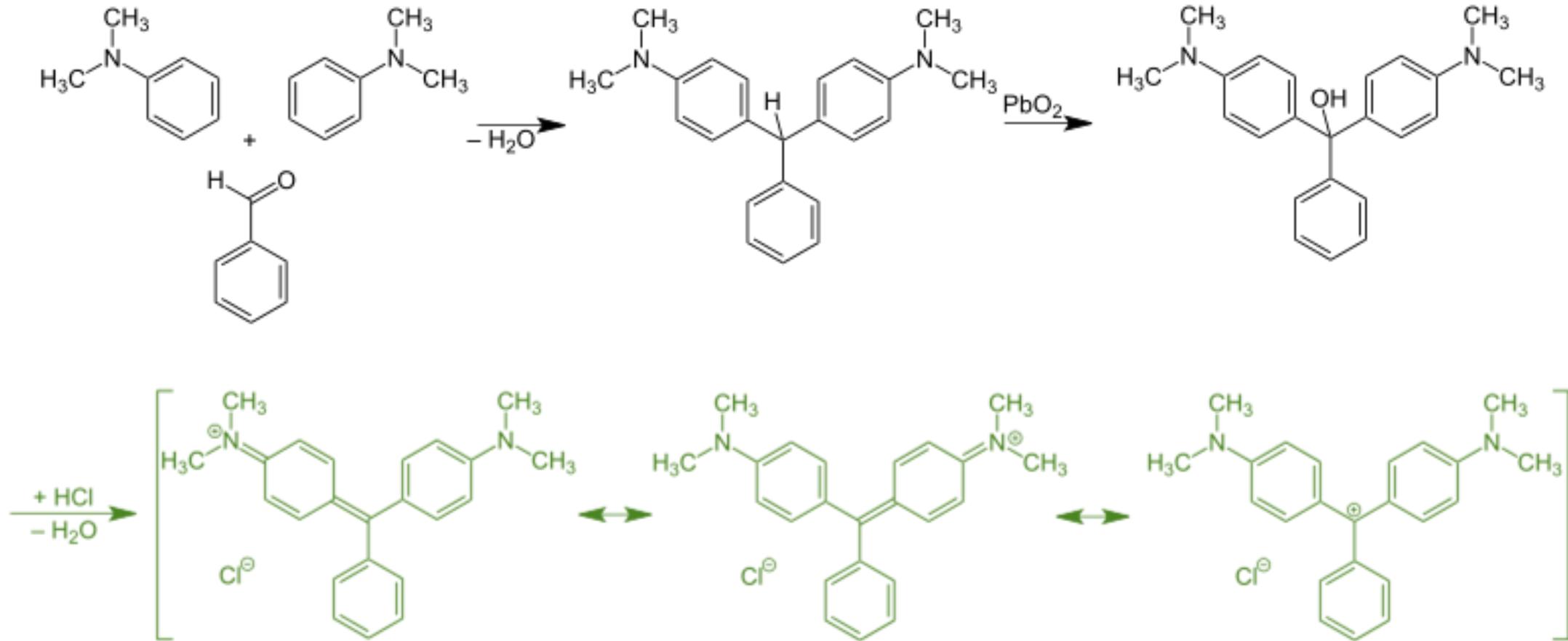


Rosaniline



Crystal Violet

Malachite Green



Malachite green (first transition) ([pH indicator](#))

below pH
0.2

above pH
1.8

0.2

⇌

1.8

Malachite green (second transition) ([pH indicator](#))

below pH
11.5

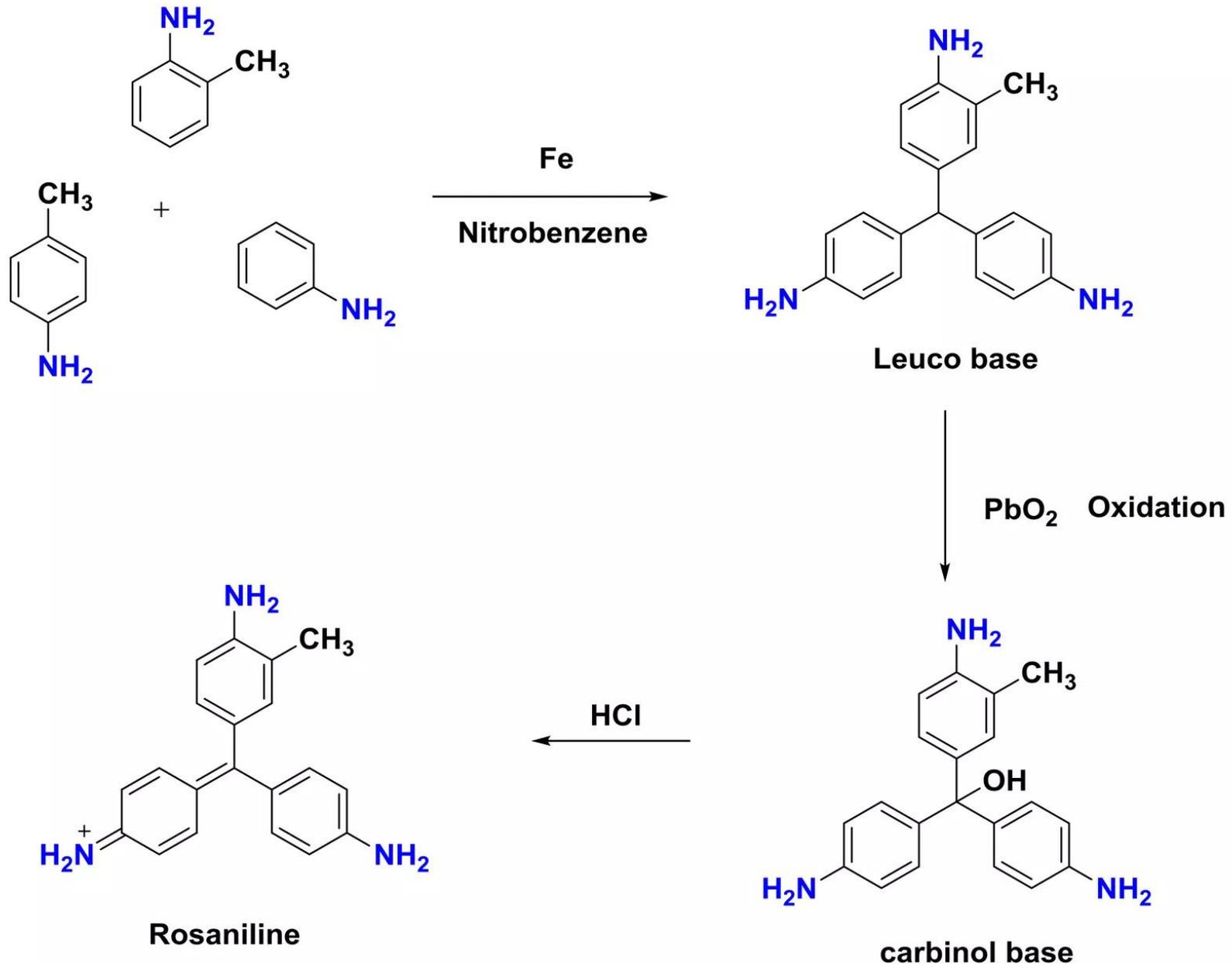
above pH
13.2

11.5

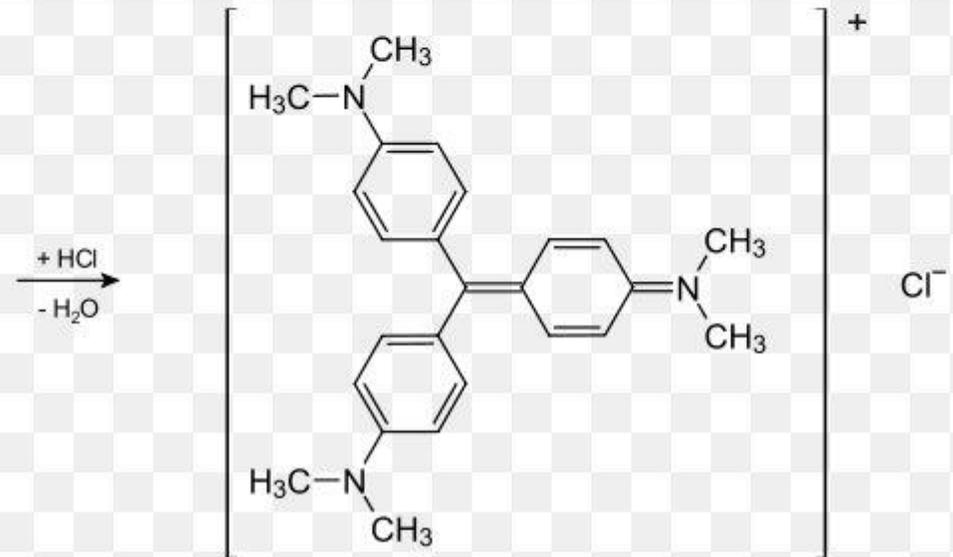
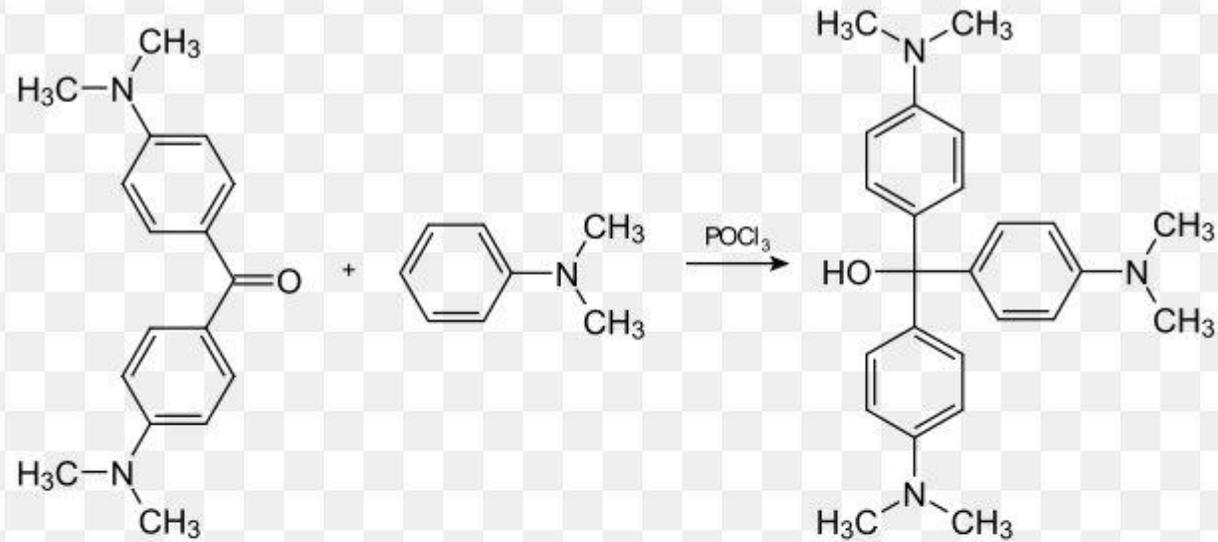
⇌

13.2

Synthesis of Rosaniline



Crystal Violet



Uses:

Malachite Green

-dyeing silk, wool, biological staining, antibiotics

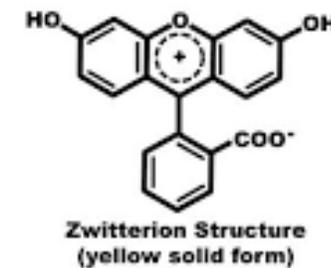
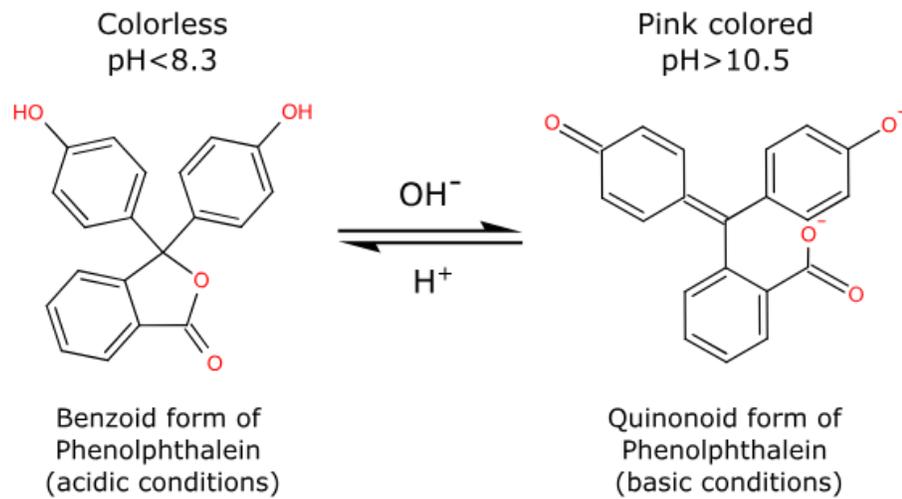
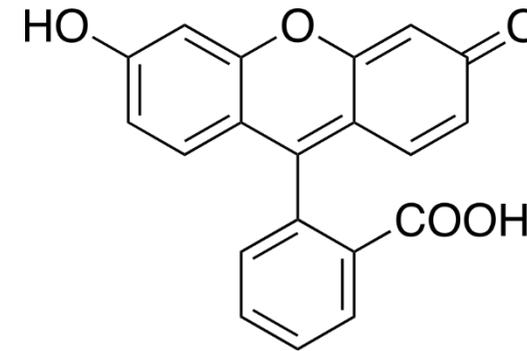
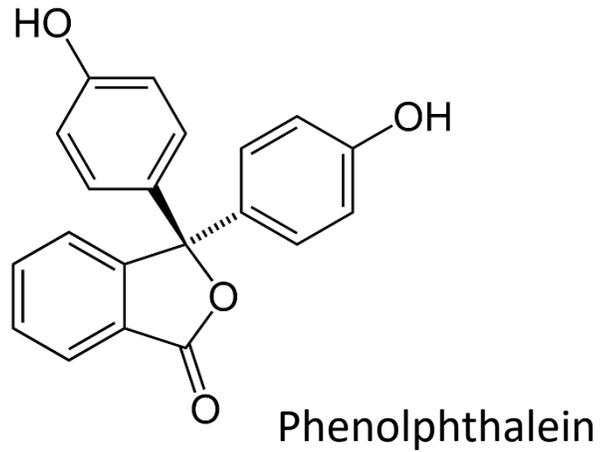
Rosaniline

-Fungicide, fabric Dye, and Ink colorant

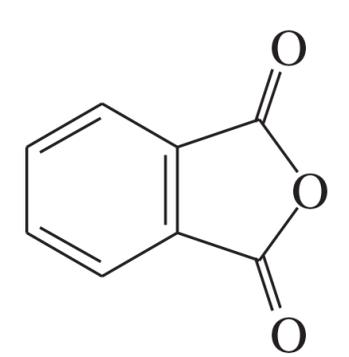
Crystal Violet

-textile and paper dye, and is a component of navy blue and black inks for printing, ball-point pens, and inkjet printers

Phthalein and Xanthen Dyes

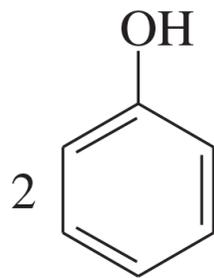


Synthesis of Phenolphthalein

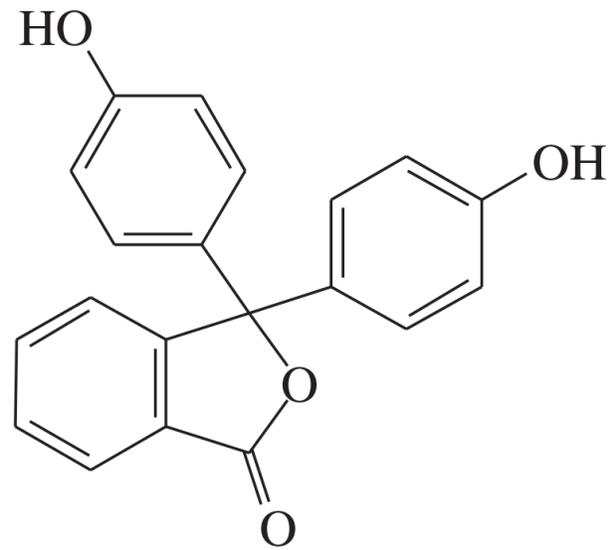
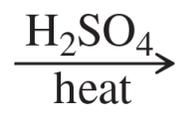


phthalic anhydride

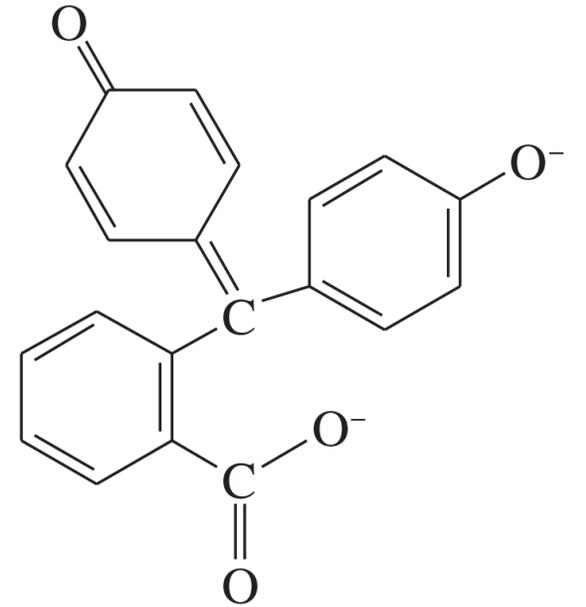
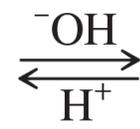
+



2

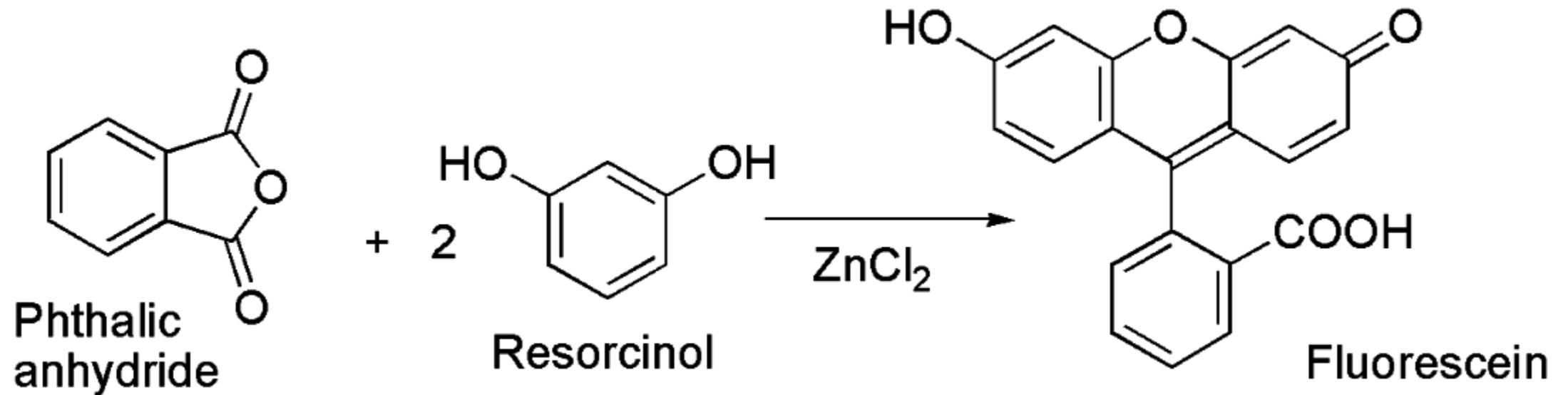


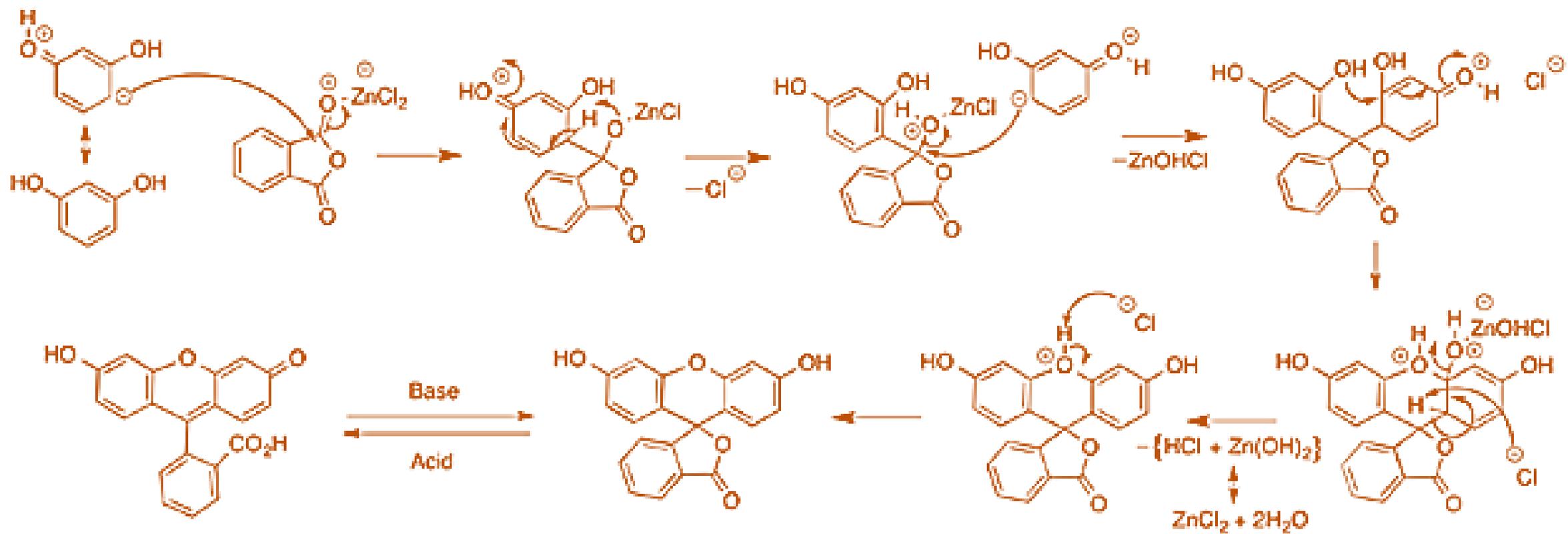
phenolphthalein



red dianion

Synthesis of Fluorescein





Uses:

Phenolphthalein

-pH indicator

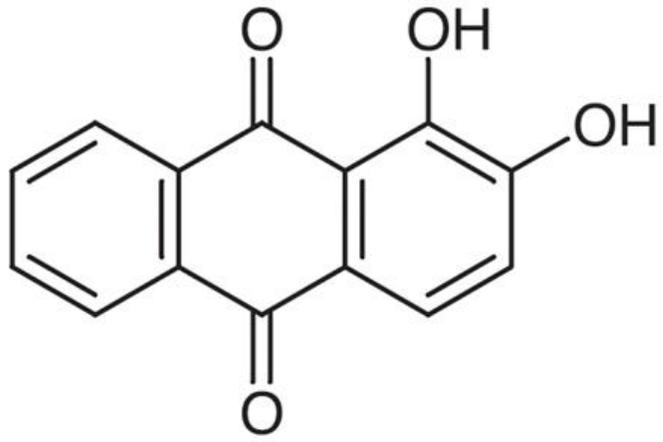
-laxative

Fluorescein

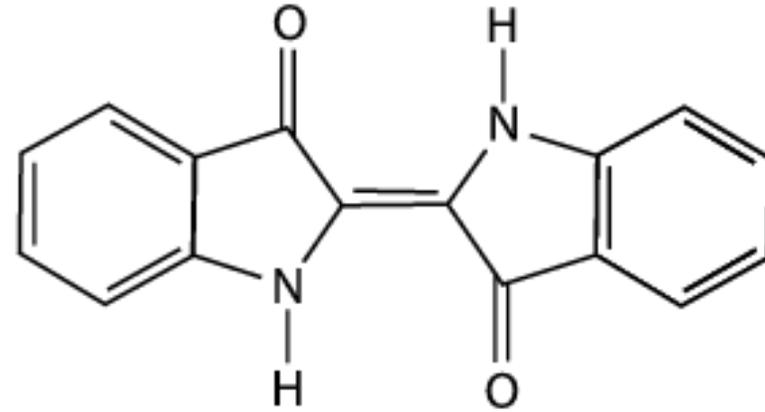
- Ophthalmology as diagnostic tool for corneal abnormalities

Natural Dyes:

- dyes derived from plants, animal and minerals
- The majority of natural dyes are vegetable dyes from plant sources roots, berries, bark, leaves, and wood—and other biological sources such as fungi.
- The two most popular examples of natural dyes are alizarin and indigo

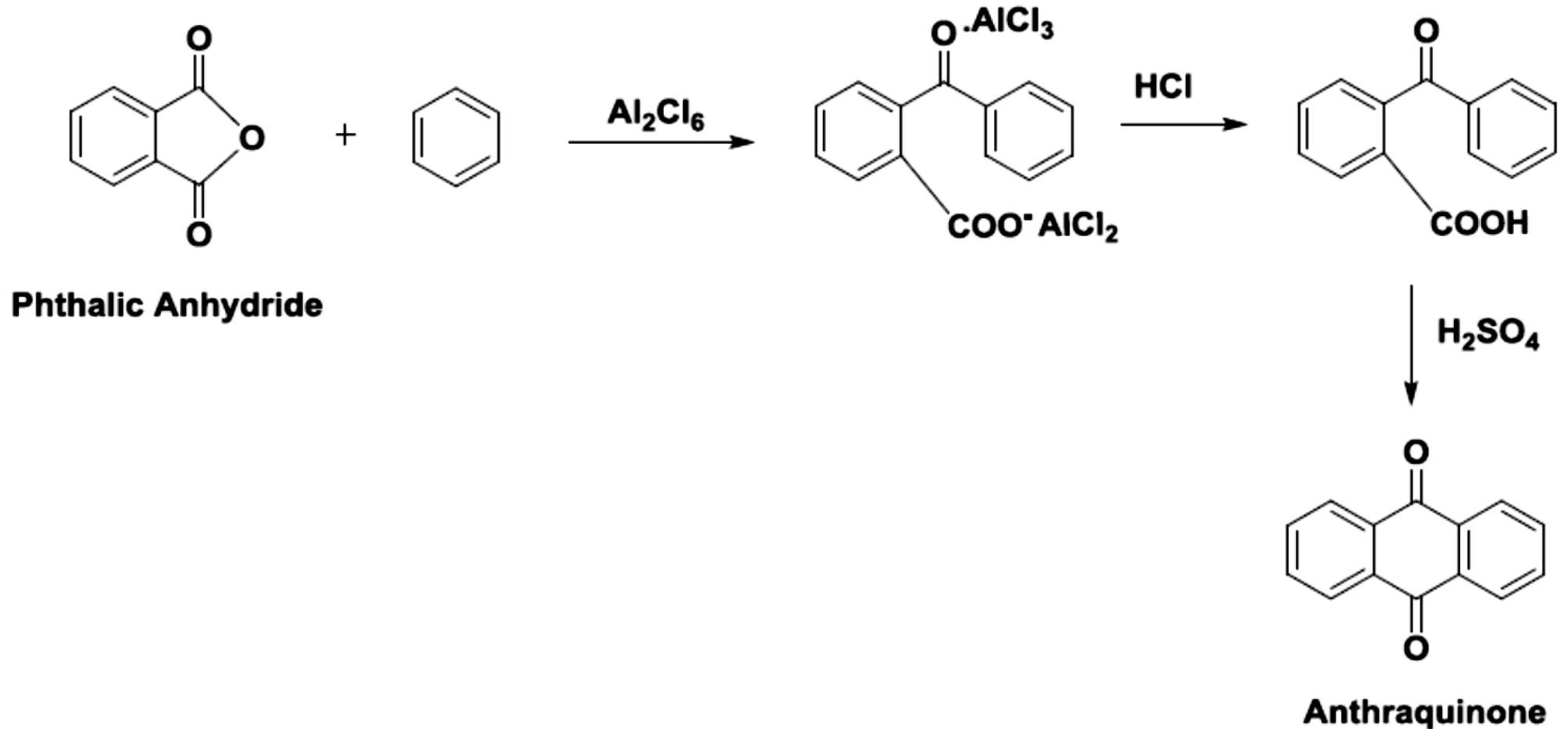


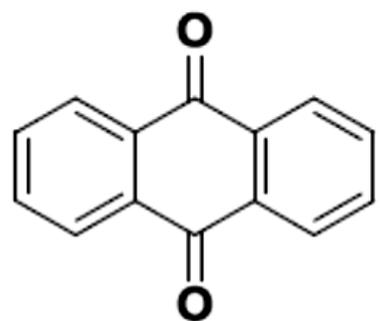
Alizarin



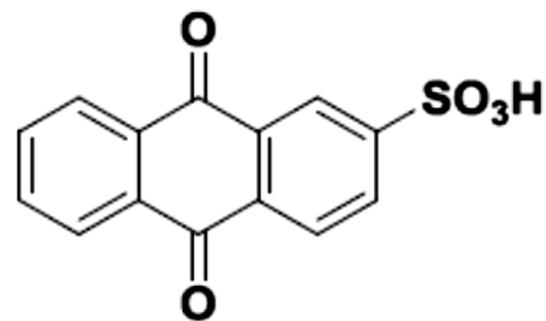
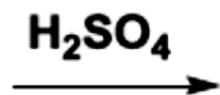
Indigotin

Synthesis of Alizarin

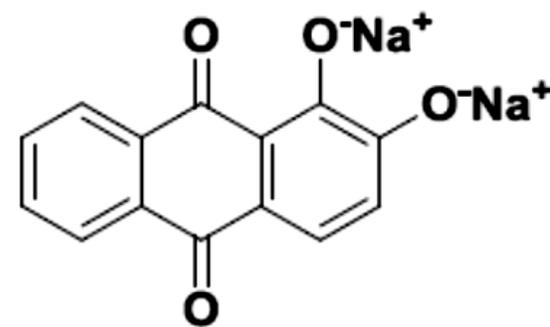
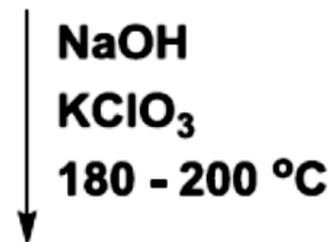
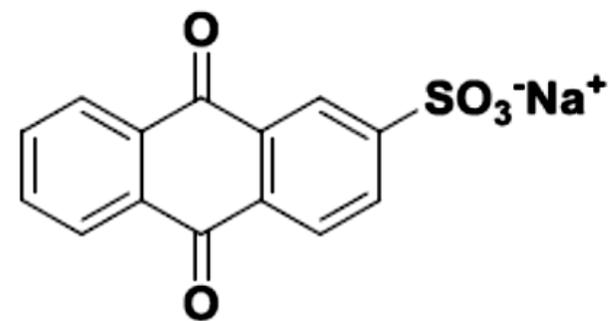
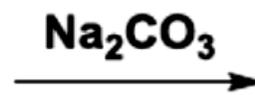




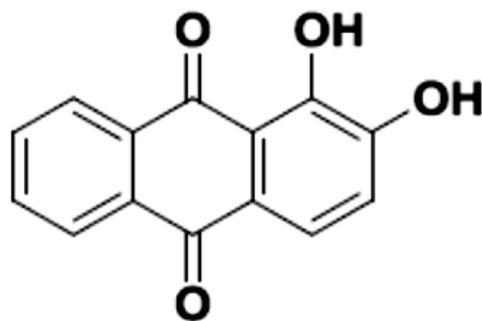
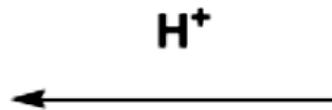
Anthraquinone



**Anthraquinone
β- sulphonic acid**

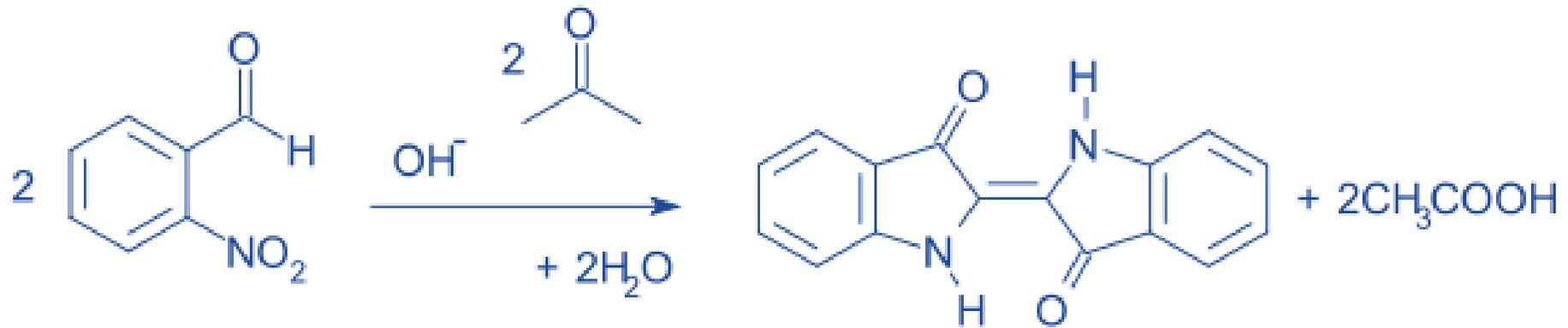


Disodium salt of alizarin



Alizarin

Synthesis of Indigotin



Synthesis of Indigotin

