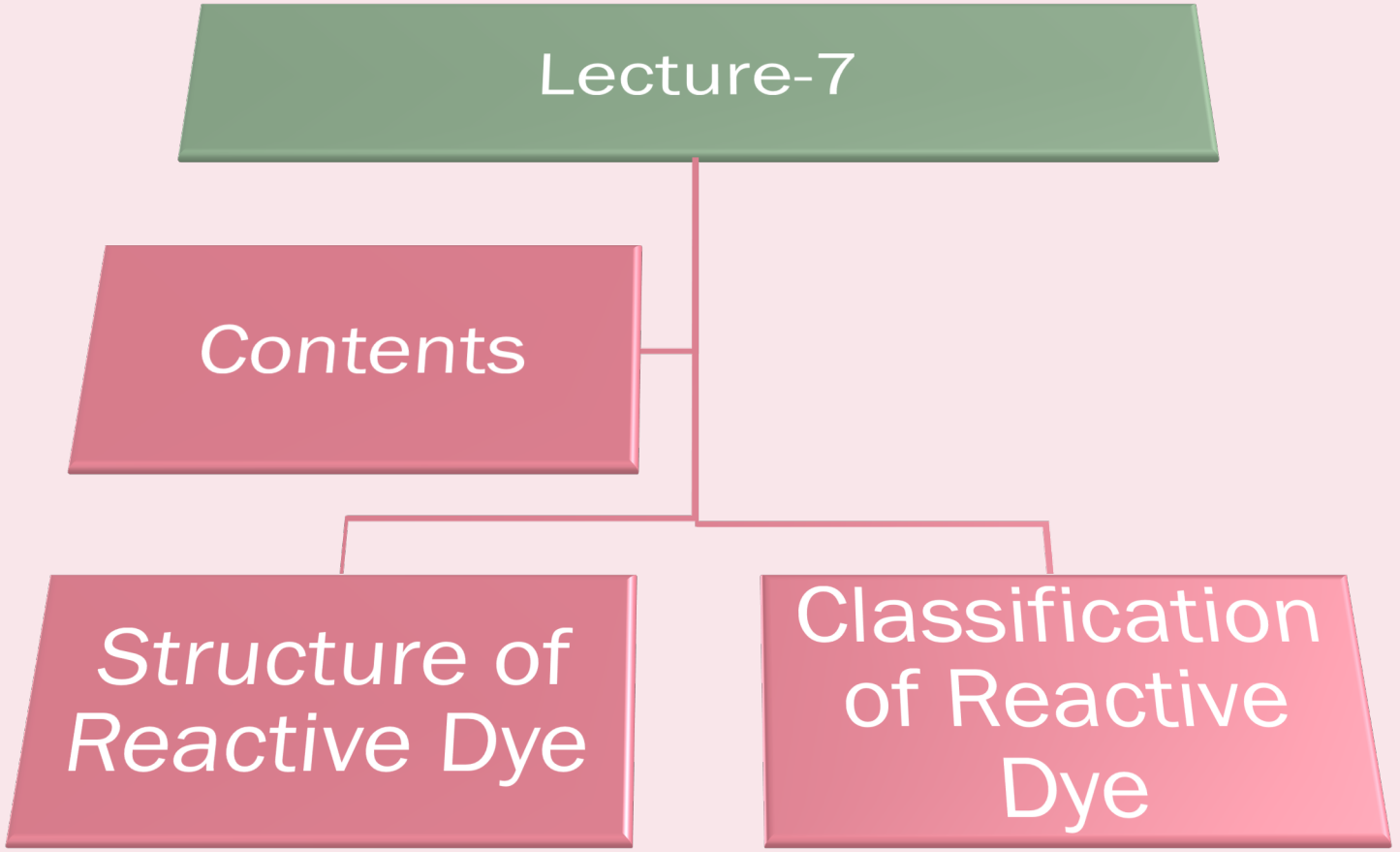

Lecture-7
Contents
Structure of Reactive Dye
Classification of Reactive Dye

Structure & Classification of Reactive Dye

General structure of Reactive dye

The general structure of reactive dye is W-D–B–R–X.

Here, W= Water solubilizing group

D = Dye part or Chromogen (colour producing part)

B = Bridging part

R = Reactive group bearing part.

X = Reactive group.

Structure & Classification of Reactive Dye (Continued)

Example : Structure of a Dye

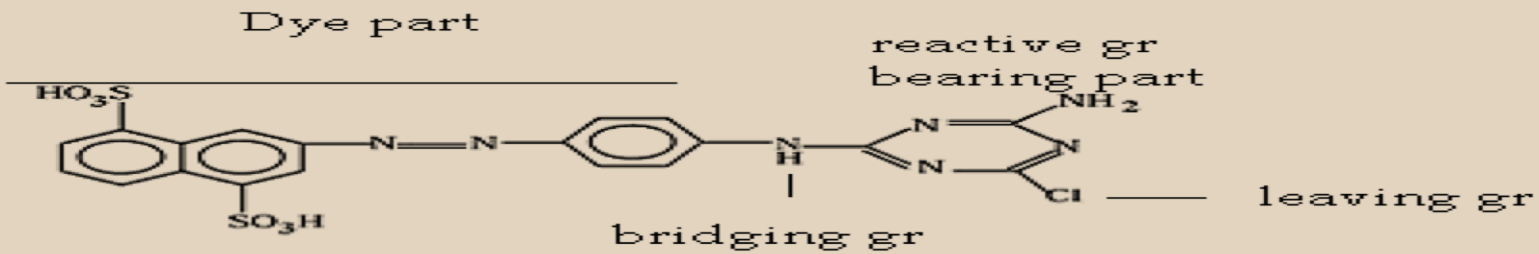


Fig Yellow MCT

Example: Various parts of a Dye

- Water solubilizing groups may be -NH_2, -NH-CH_3, -OH, - NO_3, -COOH, -SO_3Na.
- Bridging groups may be –NH-, -NH-CO-, -NH-CO-NH- .
- Reactive group bearing part may heterocyclic ring.
- Reactive group may be vinyl sulphone, monochlorotriazine, dichlorotriazyne, triazine etc.

Structure & Classification of Reactive Dye (Continued)

Classification of Reactive Dye

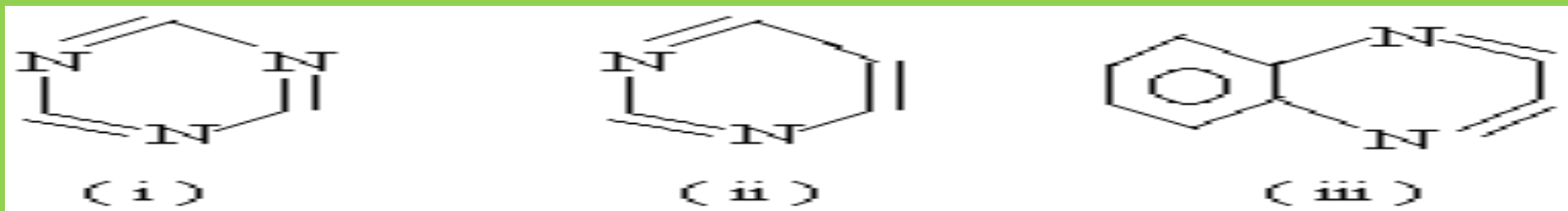
A. On the basis of reactive group present in dye structure:

1) Halogen (commonly chlorine) derivatives of Nitrogen containing heterocyclic.

i) Triazine dyes.

ii) Pyrimidine dyes.

iii) Quinoxaline dyes.



2) Activated vinyl compounds.

i) Vinyl sulphone : $(D - SO_2 - CH_2 - CH_2 -)$

ii) Vinyl acrylamide : $(D - NH - COO - CH_2 - CH_2 -)$

iii) Vinyl sulphonamide : $(D - SO_2 - NH - CH_2 - CH_2 -)$

Structure & Classification of Reactive Dye (Continued)

Classification of Reactive Dye (Continued)

B. <u>On the basis of Reactivity:</u>
On the basis of reactivity reactive dyes are of three types

i) Lower reactive dyes: Reactivity of these dyes is very low. So, highly alkaline condition is required for the fixation of these dyes with the substrate. Here, pH is maintained between 12-12.5 by using NaOH in dye bath.

ii) Medium reactive dye: Reactivity of these dyes is better than the previous class. Here, pH is maintained between 11-12 by using Na_2CO_3 in the dye bath.

iii) Higher reactive dye: These dyes are highly reactive. So, fixation of these dyes are easy and lower alkaline medium is kept in where pH is maintained between 9-11 by using $NaHCO_3$ in the dye bath.

Structure & Classification of Reactive Dye (Continued)

Classification of Reactive Dye (Continued)

C. <u>On the basis of dyeing temperature and method:</u>

i) Cold brand: This type of dye contains reactive groups of high reactivity. So dyeing can be done in lower temperature (32^0–60^0C).

ii) Medium brand: This type of dye contains reactive groups of moderate reactivity. So, dyeing is done in higher temperature (60^0–71^0C) than that of cold brand dyes.

iii) Hot brand: This type of dye contains reactive groups of least reactivity. So, high temperature (72^0–93^0C) is required for dyeing.


Thank
You!