SYNOPSIS

The dissertation entitled, "STUDY OF THE STILBENE BASED BRIGHTENING AGENTS" presented to the Faculty of Science, Shivaji University, Kolhapur, in partial fulfilment of the degree of 'Master of Philosophy' in Chemistry.

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The dissertation consists of three chapters. Chapter-I deals with an introduction to the literature on the fluorescent brightening agents and the scope of the present work. Chapter-II includes experimental part, spectral interpretation and characterisation data of compounds. Chapter-III is on brightening effect on cotton fabric and evaluation of antimicrobial activity of synthesised fluorescent brightening agents, results and discussion.

CHAPTER - I :

I) INTRODUCTION : Definition of fluorescent brightening agents, relationship between UV absorption and fluorescent brightening, fluorescent compounds, requirements of fluorescence. - (a) Electronic considerations, (b) Structural considerations, factors influencing the function of fluorescent brightening agents such as (1) Substrate, (2) Concentration, (3)Temperature, (4) Solvent, (5) pH and (6) Time, etc. Mechanism of fluorescent brightening agents, classification of fluorescent brightening agents and uses of the fluorescent brightening agents.

II) Review of Literature :

Review of literature consists of chemistry of stilbene, 4,4'-diamino-stilbene-2,2'-disulphonic acid and cyanuric chloride.

III) Scope of the Present Work :

The same chapter includes scope of the present work.

CHAPTER - II :

Chapter-II deals with the experimental work. It consists of two parts. Part I - It includes the details of experimental methods used for the synthesis of (a) 4,4'-diaminostilbene-2,2'-disulphonic acid, (b) benzoic acid hydrazide, (c) different fluorescent brighteners. The strategy employed for the synthesis, involved the reaction of p-nitrotoluene sulphonic acid with sodium hydroxide solution, followed by neutralization with the concentrated hydrochloric acid, cooled and salted. Then 4,4'-dinitro-stilbene-2,2'-disulphonic acid was reduced by adding iron fellings etched with hydrochloric acid at $100^{o}C$, product 4,4'-diaminostilbene-2,2'-disulphonic acid was synthesised.

General method of fluorescent brightener in which symmetrical brightener was synthesised. Fluorescent brightening agent was synthesised by using cyanuric chloride (2,4,6-trichloro-5-triazine) and sodium salt of 4,4'-diaminostilbene-2,2'-disulphonic acid.

Three chlorine atoms of cyanuric chloride replaced by three different amines at different temperature, pH and reaction rate.

Part II : Another type of fluorescent brightener was synthesised. Here sodium salt of 4,4'-diaminostilbene-2,2'-disulphonic acid was condensed with benzoyl chloride.

All the compounds reported in Part-I and Part-II were characterised by M.P., elemental analysis, UV, IR and fluorescence spectral studies.

CHAPTER - III :

PART - I : It deals with the brightening effect on the cotton fabric by visual method. Results were noted in the table.

PART II : This part deals with the evaluation of antibacterial activity of the compounds.

Dr. N.P.hilage
Research Guide
Department of Chemistry
Shivaji University, Kolhapur

Miss Kanchan S. Joshi-Kulkarni
Candidate