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The dissertation entitled "STUDY OF CYANURIC BASED FLUORESCENT DYES (BRIGHTENERS)" 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 and embodies accounts of Chapter one, an introduction to the subject, Chapter two, - Chemistry of the fluorescent brightening agents and literature survey along with the discussion about various applications, Chapter three, - an experimental part which includes discussion on syntheses and study of the activity of fluorescent brightening agents on cellulosic fibres and some microorganisms.

CHAPTER ONE :

Chapter-I is an INTRODUCTION which describes the need of perfect white and efforts of the researchers to invent new and good methods to achieve the perfect whiteness. The chapter describes the advantages of use of Fluorescent brightening agents over the use of blue dye and chemical bleaching methods.

The theoretical basis is the phenomenon of FLUORESCENCE. The first agent used such was aesculin from horse-chestnut husk extract, which had some disadvantages.

All fluorescent brighteners absorb invisible light in the ultraviolet region and emit predominantly in the blue region and light thus tinting with bluish or violet shade looks more bright.

This absorption and emission of light is the basis of the application of fluorescent brighteners. The phenomenon of fluorescence is discussed in detail.

At the end Industrial development in this field is discussed. The 'Solium' was marketed after the world war-II. The various leading companies from world such as Ciba, Geigy, Sandoz, Unilever, American Cyanamid, General Aniline, du Pont, and Procter & Gamble and Hoechst etc. involved in the research of new fluorescent brighteners.

Most common fluorescent brightening agents are the derivatives of 4,4' bis-triazinyl amino stilbene 2,2' disulfonic acid. Such brighteners are used to achieve appreciable whiteners.

CHAPTER - II : The chapter includes discussion ~~on~~ CHEMISTRY OF FLUORESCENT BRIGHTENING AGENTS, where the fundamental requirements of a compound to be a useful fluorescent brightening agent are discussed. The compounds with luminophore present in the structure such as aromatic systems as well as fluorogens and fluorophores such as $-\text{CH}=\text{CH}-\text{CO}-$, $-\text{CH}=\text{N}-$, etc. and functional groups such as $-\text{NH}_2$, $-\text{OH}$, $-\text{COOH}$, $-\text{SO}_3\text{H}$ etc. are capable of being useful fluorescent brightening agents.

This discussion is followed by literature survey which includes survey of the fluorescent brightening agents of the types - stilbene derivatives, 4-styryl substitution products, triazole' derivatives, bis-triazinyl substitution products of symmetric and unsymmetric types and also some unclassified examples of compounds which are studied so far. The survey of fluorescent brightening agents completes with the discussion about heterocyclic substitution products of stilbene, coumarin derivatives carbostyryl compounds,

Pyrazolines derivatives. p

The literature survey is followed by the discussion ~~on~~ APPLICATIONS of the fluorescent brightening agents. It is discussed that the natural fibres such as cotton, hair, wool, silk, semisynthetic fibres such as viscose, 2½ acetate, triacetate, and fully semisynthetic fibres such as polyamides,

Polyurathanes, Polyacrylonitrile and also copolymers with vinyl acetate, polypropylene, polyester, paper, plastic compositions can be well brightened with the application of fluorescent brightening agents.

The same part of chapter-II includes discussion on the photosensetizing properties and use of fluorescent brightening agents in photography, and toxicity of fluorescent brightening agents.

CHAPTER - III :

The chapter-III includes, discussion on the scope of the present work, and EXPERIMENTAL WORK where the synthesis of fluorescent brightening agents is discussed in part-I.

The general method is followed by study of a commercial sample of F.B.A. and detail synthesis of brightening agents using glucose, metanilic acid, diethanolamine, with cyanuric chloride and 4,4' diamino stilbene 2,2' disulfonic acid. Each syathesis is followed by elemental analysis and spectral data.

Part-II includes the study of brighteing property of the fluorescent brightening agents under study on cellulosic fibres.

For this the cellulosic fabric is bleached chemically and then dipped in the solutions of the brightening agents of various concentration, and the whiteness is compared under a strong ultraviolet lamp after drying.

PART -III: Consists of the study of the antibacterial activity of the brighteners under study. A cup-plate method was used for this purpose. The micro-organisms such as *Staphylococcus aureus* and *Streptococcus pneumoniae* (Gram positive) and *Salmonella typhi* and *Shigella dysenteriae* (Gram negative) are used for the study of Biological activity. But the fluorescent brightening agents under study are found to be inactive towards these four micro-organisms.