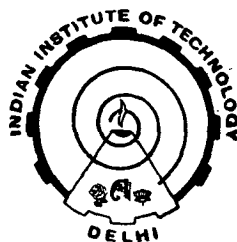


**STUDIES ON THE DYEING OF COTTON WITH REACTIVE
DYES FROM NON-AQUEOUS MEDIUM**

**BY
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A Thesis Submitted
Indian Institute of Technology, Delhi
for the award of the Degree of
DOCTOR OF PHILOSOPHY



**Department of Textile Technology
INDIAN INSTITUTE OF TECHNOLOGY, DELHI
DECEMBER 1983**

IN MEMORY OF MY GRANDMOTHER

CERTIFICATE

This is to certify that the thesis entitled "STUDIES ON THE DYEING OF COTTON WITH REACTIVE DYES FROM NON-AQUEOUS MEDIUM" submitted by Mr. A. Subramanian to the Indian Institute of Technology, Delhi, for the award of degree of Doctor of Philosophy is a record of the bonafide research work carried out by Mr. A. Subramanian. Mr. A. Subramanian has worked under my guidance for the submission of this thesis, which to my knowledge has reached the requisite standard.

The thesis or any part thereof, has not been submitted to any other University or Institution for the award of any degree or diploma.

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(A. Subramanian)

ABSTRACT

The aim of the study was on the application of reactive dyes on cellulose to obtain higher exhaustion and fixation using solvent-non-solvent method. For this purpose, various solvent mixtures were used and the dyes used were C.I. Reactive Red-31, C.I. Reactive Orange-13 and C.I. Reactive Blue-5. The solvent-non-solvent and their proportions in the mixture for high dye-bath exhaustion and fixation depend upon the dielectric constant of the solvent mixtures, exhaustion of the non-solvent in the internal liquid phase of the fibre, the imbibition of the solvent and the dye solubility in the external dye-bath. To understand the mode of adsorption, the adsorption isotherms were analysed. The dyeing process was explained by the use of solubility parameter concept. A new method has been suggested to determine the density of the anionic dyes. The low dye uptake of viscose rayon was attributed to skin-core structure which was eliminated by treatment with sodium-zincate. Sodium zincate treated cellophane showed higher lightfastness. To understand the state of dye in solution, the aggregation behaviour was also studied.

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