Ecofriendly dyeing of cotton fabric

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RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled, “Ecofriendly dyeing of cotton fabric” has been carried out and completed by **Fatima Ahmad, ID: 15005140025**. The quantum and the quality of the work contained in this thesis is adequate for the award of Degree of MS/M.Phil.

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I**Fatima Ahmad** D/O**Ubaid Ahmad** ID:**15005140025,** Session **2015-2017** hereby declare that the matter printed in the thesis titled**"Ecofriendly dyeing of cotton fabric"** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research institution etc. in Pakistan or Abroad.

Dated: _____ _____

(Fatima Ahmad)

DEDICATED

Dedicated to Our Most Loving

PROPHET MUHAMMAD (P.B.U.H.)

My Loving Mother

A strong and gentle soul who taught me to trust in ALLAH, believe in hard work and that so much could be done with little. Who always prays for my success, prosperity and under her feet is my Paradise.

My Gracious Father

Who is the source of strength, inspiration and proud for me and does not let the life harder on me. May God bless them with health and prosperity.

My Baba Jaani

Always with mewho have been a constant source of support and encouragement during my MS without his prayers I would not be able to done my MS

My Loving Brothers

For their prayers and constant support every time

And

Loving Sister

Tahreen Ahmad

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It's been a long road, but here I am at the end,

But there are so many peoples to whom thanks extend!

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All respects for **Holly Prophet (P.B.U.H.)** who set before humanity a practical example of life as investigated by Holly Quran and enabled us to recognize oneness of our creator.

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ABSTRACT

Exhaust method was used for the eco-friendly dyeing of cotton fabrics by using biodegradable salts such as sodium citrate along with soda ash. The experimental work carried out in the ratio of sodium citrate 2g, soda ash 3g, and reactive dye namely Blue R-Spenial 150% (Synozol), Red 6BN (Synozol), Ultra black G (Synozol) and Ultra wine DS (Synozol)0.4g with 100 ml of water. Soda ash was used to make the pH alkaline and for completion of reaction. The color fastness to laundering, crocking and light of all the dyed fabric specimen was found at good level by using biodegradable salt such as sodium citrate. The total dissolved of the effluent showed the better result with the lower value as compared to the non-biodegradable salt sodium chloride for the each reactive dyes. In the effluent the unfixed dye ratio is reduced by the use of biodegradable salt sodium citrate. So,in substitution of sodium chloride sodium citrate have been successfully employed to make the process ecofriendly

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATION

SCi	Sodium Citrate
SC	Sodium Chloride
TDS	Total Dissolve Solid
CI	Color Index
K/S	Color Strength Value
e.g.	Example
g/l	Gram per liter
H_2O	Molecular formula of water
Mins	Minutes
***λ*max**	Maximum absorption wavelength
Vs	Versus
Mg^{2+}	magnesium ion
Na^{+}	Sodium ion

Chapter 1

INTRODUCTION

1.1Dyeing

Coloring of fabric with the use of dyes and other chemical pigments is called dyeing. The dye normally contains chromophores and auxochromes which actually impart color to the fabric. There is a variety of fabrics (Cotton, wool jute, hemp, flex, ramie silk etc.) which have been dyed and utilized in the history for many years.