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# FEASIBILITY STUDY ON THE UTILIZATION OF LOTUS FIBRES AS A TEXTILE RAW MATERIAL

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Thesis submitted in partial fulfillment of the requirement for the degree Master  
of Science

MSc in Textile & Clothing Mgmt.

Department of Textile and Clothing Technology

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Sri Lanka

March 2012

University of Moratuwa



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## ABSTRACT

Lotus (*Nelumbo nucifera*) is an aquatic plant and grows abundantly in Sri Lanka. Stalks and roots of this plant contain fine silky fibres. To utilize this fibre as a textile raw material, properties of locally available fibres have to be analyzed to ascertain whether the properties of these fibres meet the end use requirement of textile material. Analyzing the properties of lotus fibre is a prime requirement to determine the feasibility of utilizing of Lotus fibres as a textile raw material.

In order to study the physical and chemical properties of lotus fibres, the fibres were extracted by manual method and subjected to relevant testing in order to confirm their suitability in textile applications. Fibre identification methods such as microscopical analysis, chemical resistance properties and fibre density were tested and found the results were similar to other cellulosic fibres.

In addition to that, major physical properties such as fibre length, tensile strength, fibre diameter, water absorbent property and moisture regain were tested and found that the test results are superior to cotton fibres such as moisture regain 12.3% and fibre fineness 4.39  $\mu\text{m}$ .

Fibres were pretreated by scouring and bleaching processes and the properties of water absorbance, dyeability and colour fastness were compared with cotton fibres and found to be similar. It was identified that the properties of lotus fibre is suitable to use as a textile raw material and the textile materials produced from lotus fibre will satisfy the end user requirements.

Keywords: *Nelumbo nucifera*, Natural cellulosic fibre, Standard test method, Tensile strength, Dyeability.



## ACKNOWLEDGEMENT

First and foremost, I wish to express my thanks to my supervisor Dr.U.S.W.Gunasekera for his guidance, encouragement and assistance given in numerous ways throughout the research project.

My heartfelt gratitude to the M.Sc. course coordinator Dr.T.S.S.Jayawardene for his guidance, encouragement and the numerous support given me in various ways to complete this research project within the given time period.

I am also immensely grateful to the Head of the Department, Textile and Clothing Technology, university of Moratuwa, Dr.G.L.D.Wickramasinghe, for granting permission me to use the equipments in Textile Department testing Laboratory to do my experiments.

Also special thanks go to Dr.Nirmali de Silva and Mr.S.N.Niles for their valuable contributions and suggestions made in progress review which were useful to make this research project as a successful one within the timeframe.

Sincere appreciations to the review panel members for their proposals, valuable comments and constructive suggestions which will be a substantial value for this study.

Further, I would like to express to Director General, Sri Lanka Institute of Textile and Apparel, Mr.Y.L.S.Hameed, Technical Director, SLITA Mr.D.P.L.P.Jayaweera, technical staffs of SLITA Textile Testing laboratory and my colleague for their valuable contribution to conduct the testing work of my project in their laboratory which leads to complete my project as a successful one.

My special thanks go to Mr.Jayantha De. Silva, for his tremendous help and support extended to complete the final report of this project.

K.Jegatheesan

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
UOM	University of Moratuwa
SLITA	Sri Lanka Institute of Textile & Apparel
ISO	The International Organization for Standardization
AATCC	American Association of Textile Chemists and Colourists
ASTM	American Society for Testing and Materials
JIS	Japanese Industrial Standard
RH	Relative Humidity
MLR	Material to liquor ratio

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