

**Book of Abstracts
on
Weekly Technical Lectures**

(May, 2015 - July, 2016)



Organized by



INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

Preface

With the growing concern about the environmental pollution and hazards to the ecology, the entire world is now focussing on sustainable developments. Research and innovations are now mainly centric on natural products.

To understand the spectrum of research and development work going on around the world on natural fibres, new technologies, innovative products, etc. as well as to disseminate the knowledge gathered from published literatures, IJIRA, since May, 2015, has started organizing weekly technical lectures. On the other hand IJIRA has also disseminated noted research findings through these weekly lectures. The lectures are delivered by the Scientists and Technologists of IJIRA and also by the invited guests. From May, 2015 to July, 2016, IJIRA has organized a total of 55 weekly technical lectures. During these weekly technical lectures, IJIRA has received participation from jute mills, academia and also government officials.

This compendium presents the brief details of the presentations made by the speakers during the weekly technical lectures. Those who are interested get full paper may kindly write to the presenter or the undersigned

We are grateful to Dr. Subrata Gupta, IAS, Hon'ble Jute Commissioner for his keen interest in these technical lectures and his advice to publish the abstracts in the form of a compendium for the benefit of stakeholders.

Dr. U. S. Sarma
Director, IJIRA

Weekly Lecture – 1

Topic: Development of Flax Non-oven for Air Filtration

Presented by : Mr. Palash Paul, Scientist, IJIRA

Date : 6th May, 2015

Abstract : The technical presentation explained the developmental work carried out by Prof. Rajesh D. Anandjiwala and Prof. Lydia Boguslavsky of South Africa, published in Textile Research Journal in 2008. Different types of needle punched nonwovens were prepared from waste Flax fibre by varying machine and process parameters. The effects of various process parameters on air filtration parameters were studied. The researchers found that multilayered flax nonwoven treated in hot calender at 80°C with some pressure provides the best nonwoven for domestic air filtration application.

Weekly Lecture - 2

Topic: Transmigration of Mineral Oil Hydrocarbon (MOH) in Food Items in Packaging

Presented by : Mr. Sakshi Gopal Saha, Scientist, IJIRA

Date : 13th May, 2015

Abstract : The transmigration from jute batching oil treated jute bags to packed food items may result in increased level of MOH in food products. Transmigration of MOH may take place by direct contact and/or vapour migration and condensation. In this regard IJO 98/01 limits the use of mineral oil for processing of jute goods meant for food item packaging. IJIRA is undertaking a study to quantify the extent of transmigration from jute bags to food items, if any, in association with Indian Institute of Toxicological Research, Lucknow. IJIRA has developed a rice bran oil based eco-alternative lubricant for jute processing. Currently 17 jute mills are using this technology for manufacturing of food grade jute bags.

Weekly Lecture - 3

Topic: Dyeing of Textiles with Natural Dyes from Plants of NE Region

Presented by: Mr. Ritwik Chakraborty, Scientist, IJIRA

Date: 20th May, 2015

Abstract : The content of the lecture was the sources and chemistry of natural colorants along with benefits and limitations of natural dyes for textile applications. The presentation also elucidated details of R&D work carried out at IJIRA on selected natural dyes of North - Eastern Region. These included identification of dye-yielding natural resources, extraction of dyes, coloration of textiles with extracted dyes and characterization of dyed materials.

Weekly Lecture - 4

Topic : Nanofinishing of Jute with Titania

Presented by : Dr. Sandip Basu, Scientist, IJIRA

Date : 29th May, 2015

Abstract : Nanofinishing jute with titanium dioxide helps to impart multiple functional properties like ultra-violet protection, superhydrophobicity, antibacterial property, soil repellent property and photo-oxidative self cleaning property. Sol-gel synthesis of titania, application method of in-situ nanoparticle formation, mechanism of action of nanoparticle and functional property characterisation was discussed in the presentation.

Weekly Lecture - 5

Topic: All Cellulose Composites (ACC) - its development & future prospect.

Presented by : Mr. Debkumar Biswas, Scientist, IJIRA

Date : 3rd June, 2015

Abstract : The lecture enlightened about All Cellulose Composite (ACC) which is a new class of biocomposites having improved tensile strength, tensile modulus and other functionalities. Being a monocomponent composite derived from cellulosic source, ACC represents interfaceless composites ensuring 100% biodegradability. The background of ACC development, the relevant methods of preparation and its prospective applications for lignocellulosic fibre have been discussed in the presentation.

Weekly Lecture - 6

Topic : Improved Bleaching using Hydrogen Peroxide Bleach Activators

Presented by : Dr. Sushmita Ghosh, Scientist, IJIRA

Date : 10th June, 2015

Abstract : The presentation discussed the limitations of conventional peroxide bleaching with the introduction of the concept of bleach activators which improve bleach performance. The application of various bleach activators in cotton bleaching with improved bleaching efficiency was highlighted. Also, room temperature bleaching of jute fibre at batching stage with per-acetic acid and other per acids was discussed along with their bleach performances.

Weekly Lecture - 7

Topic : Technology for Manufacturing of best Jute fibre Processing

Presented by : Mr. A. K. Nandi, Scientist, IJIRA

Date : 17th June, 2015

Abstract : The presentation discussed about the merits and demerits of Single Carding System over Double Carding System procedure on quality and productivity prospective. It also covers the limitations of existing processing system on fibre length distribution point of view and demands to re look for the design of Carding for effective spinnable fibre generation.

Weekly Lecture - 8

Topic : Waste Generation in Jute Industry and Its Control (From Batching to Spinning)

Presented by : Mr. Gopal Mukhopadhyay, Technical Officer, IJIRA

Date : 24th June, 2015

Abstract : The conversion of jute fibres into finished products generates wastage at every stages of processing. The working and efficiency of a manufacturing unit can best be judged by the amount of waste it produces, and the extent to which it is utilised subsequently. The aim of this presentation is to review the works done by Indian Jute Industries' Research Association (IJIRA) on the sources and causes of waste generation at different stages of jute processing and proposed remedial measures for control of waste generation.

Weekly Lecture - 9

Topic : A Study on The Relation between Hairiness Index and Hairiness Values of USTER-ZWEIGLE HL 400 Tester

Presented by : Mrs. S. Chowdhury, Scientist, IJIRA

Date : 1st July, 2015

Abstract : The term “hairiness”, is used to express the fibres which protrude from staple or spun yarn body and is an inherent characteristic of staple fibre yarn used yarn body. Two modern hairiness measuring instruments are - Uster tester 3 and Uster –Zweigle HL 400. The principles of measuring hairiness are far apart from each other in these instrument. The first one measures the hairiness value as hairiness index (H), which is defined as the total length of all fibre ends sticking out in cm, related to a yarn section of 1cm in length where as the second one measures the number of protruding fibres from yarn surface at different length zone per 100 meter which is an absolute non cumulative value. Samples are prepared to correlate the hairiness values obtained from these two instruments by varying twist multiplier and yarn linear density and tested parallelly. Finally maximum correlation between hairiness index and hairiness value of Uster –Zweigle HL 400 is obtained at 3 mm length.

Weekly Lecture - 10

Topic : Digital Printing: A New Era for Jute Diversified Printed Products

Presented by : Ms. Sampurna Chatterjee, Technical Officer, IJIRA

Date : 8th July, 2015

Abstract : This presentation highlighted on details of digital printing like technology behind the digital printing, type of the digital printing & method of application, major components & machineries involved with this printing, and types of ink used, the ink & fibre chemistry and the entire process flowchart required for this printing purpose. In the present time, digital printing is growing leaps & bounds & is the most evolving technology which has already been explored on jute at IJIRA & this technology may serve to the jute industry to produce different types of jute diversified printed products.

Weekly Lecture - 11

Topic : Yarn Hairiness: Mechanism of Generation and Approaches to Control.

Presented by : Mr. Palash Paul, Scientist, IJIRA

Date : 15th July, 2015

Abstract : The presentation described in details the mechanisms of hairiness generation during spinning. It also described the effect of fibre properties, yarn parameters and process parameters on hairiness generation. Various methods of hairiness measurement was also discussed. Three compact spinning mechanisms; aerodynamic compacting, magnetic compacting and mechanical compacting were discussed in details. Previous research works on control of jute yarn hairiness by wet spinning and air vortex spinning was discussed. At the end the presenter mentioned that IJIRAwish to work on compact spinning of jute yarn.

Weekly Lecture - 12

Topic : Opportunities of Jute Nonwoven in Baghouse filters

Presented by : Mr. Partha Sanyal, Scientist, IJIRA

Date : 22nd July 2015

Abstract : The presentation has highlighted different mechanism of air filtration and the use of nonwoven in various segments of air filtration. The focus has been given on air filtration for pollution control in large scale industries through Baghouse filters. Detailed components and the mechanism of Baghouse filters have been presented with animated video. The design criteria of Baghouse filter fabric and the required test parameters for the nonwoven Baghouse filter fabric have also been explained during the presentation. The opportunities of jute nonwoven in Baghouse filter fabric have been discussed along with the challenges associated with it.

Weekly Lecture - 13

Topic : Studies on relationship between Apparent Opening Size (AOS) and Water Permeability of 627 g/m² Jute Geotextile Fabric

Presented by : Mr. Koushik Das, Scientist, IJIRA

Date : 29th July 2015

Abstract : The presentation started with the introduction of Jute Geotextiles, their potential application areas, fabric engineering, standard specifications and design methodology. The porometry of JGT fabric is one of the most decisive parameters for JGT in different application areas. The presentation described the various samples developed under the study and explained various relationships between the constructional parameters and functional properties through regression equations achieved from the laboratory evaluations of the samples.

Weekly Lecture - 14

Topic : Designing of new Metallic Card Clothing for Jute Cards

Presented by : Mr. Biswarup Nandy, Technical Officer IJIRA

Date : 5th August 2015

Abstract : The presentation is based on one previous exploratory work done by IJIRA himself collaboration with MILTEX ENG Coimbatore in 2006-2009.IJIRA had explored the possibility of introduction of metallic card clothing in Finisher Card. The presenter has highlighted the positive impacts in terms of quality, cost effectiveness by using MCC over conventional card and meta pin and staves. The presenter also discussed what were the various interesting and learning experiences and hurdles were been faced during the work and what could be the future road map for successful introduction of metallic card clothing in jute card.

Weekly Lecture - 15

Topic: De-Lignification of Bamboo By Microorganisms

Presented by: Ms. Ipsita Roy, Research Associate,
IJIRA

Date : 12th Aug. 2015

Abstract : Delignification of bamboo has been carried out by two fungi such as, *Penicillium* sp. and *Pythium* sp. to separate its cellulose nanofibrils. Isolated fungi have been found to secrete delignifying enzymes such as lignin peroxidise, manganese peroxidise and laccase. Such microbial delignification process for biopulping of lignocellulosics is found to have good future potential.

Weekly Lecture - 16

Topic : Application of Jute-LLDPE Composites for Consumer's Product Development

Presented by : Ms. Mamata Sarkar, Technical Officer,
IJIRA

Date: 19th August 2015

Abstract : The presentation is based on an exploratory work done by IJIRA with Patton International, Kolkata. The presentation revealed the advantages and scopes of using jute in LLDPE matrix for consumer's product development. The presenter described the use of Kneader Extruder system and rotational moulding system for producing water tank, which shows property improvement by incorporating jute with LLDPE.

Weekly Lecture - 17

Topic : Synopsis of presentation on “Electrospinning of Cellulosic Nanofibers”

Presented by : Dr. Sandip Bose, Scientist, IJIRA

Date : 26th Aug. 2015

Abstract : The concept of electrospinning as a special fibre spinning technology was introduced firstly. Explaining the unique features of electrospun fibres and its applications the challenges associated with electrospinning lingo-cellulosic fibres were presented. Electrospinning of sisal, a fibre similar to jute in chemical composition, with trifluoroacetic acid and electrospinning of different forms of lignin with PEO as spinning assistant was highlighted. The effect of different parameter on electrospinning was also discussed. A correlation between fibre diameter and power requirement for electrospinning was also drawn.

Weekly Lecture - 18

Topic : IJIRA developed Maintenance Management Information System (MMIS) for Jute Industries

Presented by: Mr. Arindam Das, Technical Officer,
IJIRA

Date : 9th September 2015

Abstract : This system based on maintenance management information system of jute industries, with the help of this system mill can analysis the maintenance data of jute industries.

Weekly Lecture - 19

Topic : Automatic Emulsion Wastage Control System

Presented by : Mr. Joyjit Mukherjee, Technical Officer,
IJIRA

Date : 16th September, 2015

Abstract : The presentation is based on previous development work done by the speaker with his team in 2012. The development is about reduction of emulsion wastage in softener machine by using sensor & solenoid valve. It is found in mill trial that 50% reduction in emulsion wastage can be possible by using the system.

Weekly Lecture - 20

Topic : A comparison between Jute sack and PP/ HDPE sack with respect to Life Cycle Analysis (LCA)

Presented by : Mr. A. C. Deka, Scientist, IJIRA

Date : 23rd September, 2015

Abstract : The presentation is based on two study report made by IIT, Kharagpur (2000) and IIT, Delhi (2002) to compare Jute sack and PP/HDPE sack with respect to Life Cycle Analysis. Though the two studies differ in their opinions on environmental issues of Jute sack vis-à-vis PP/HDPE sack, it is found that the impact on the environment of jute sack is less hazardous than that of PP/HDPE sack.

Weekly Lecture - 21

Topic : Environmental Assessment Of Jute Retting Water

Presented by : Md. Atiar Rahaman Dewan, Technical Officer, IJIRA

Date : 30th September, 2015

Abstract : Environmental assessment of jute retting water is necessary to determine the impact of various jute retting processes on the environment. It has also been found that conventional jute retting process causes more pollution than enzymatic retting of jute. The data obtained from the studies have necessitated the formulation of a farmer-friendly and eco-friendly jute retting process.

Weekly Lecture - 22

Topic : Studies on isolation and estimation of Lignin in Jute

Presented by : Mr. Rajkumar Paral, Technical Officer,
IJIRA

Date : 7th October, 2015

Abstract : The morphology of jute and importance of lignin in the structure was discussed. A critical review on the isolation techniques and its drawbacks were related to the developed method of rapid lignin estimation from jute. The method of dewaxing jute and standardization of lignin estimation was reviewed.

Weekly Lecture - 23

Topic : Introduction of An Autolevelling System in Jute Carding Machine

Presented by : Mr. Suvankar Bej, Technical Officer, IJIRA

Date : 14th October, 2015

Abstract : Carding of Bast Fibres (like Jute) is the most complicated stages of fibre processing. The extent of irregularity in Finisher Drawing Sliver are mainly depends on the Carding process. The Concept of new advance Autolevelling technique has illustrated in this presentation.

Weekly Lecture - 24

Topic : Enzymatic Retting Of Jute Ribbons

Presented by : Mr. Samar De, Technical Officer, IJIRA

Date : 30th October, 2015

Abstract : The feasibility study of enzymatic retting of jute ribbons has been presented. It has been observed that appropriate enzymes can ret jute ribbons within 8-10 days depending on doses of enzyme application & retting ambience.

Weekly Lecture - 25

Topic : Wool Textiles and Biobased Materials

Presented by : Dr Arun Ghosh, Scientist, Proteins & Biomaterials, Agresearch, New Zealand

Date : 4th November, 2015

Abstract : The presentation has been made on the following areas :

- i) Super hydrophilicity of Wool.
- ii) Surface hydrophobicity of wool with poss.
- iii) Improving shrink and abrasion resistance of wool
- iv) Canola seed meal based composites
- v) Natural fibre based composites

Weekly Lecture - 26

Topic : Energy Management In Jute Mills

Presented by : Mr. Debabrata Samanta, Technical Officer, IJIRA

Date : 11th November, 2015

Abstract : The study was carried out in four jute mills on the consumption of electrical energy in 4.25" SD (two legged flyer) spinning frames. It has been observed that in place of existing 15HP motor, the spinning frames can be safely run with super efficient 12.5 HP motor which can save 8-10% electrical energy. Schedule of preventive maintenance and overhauling is required to be followed for the long term benefit.

Weekly Lecture - 27

Topic : Transducer & Its Application

Presented by : Shri Utpal Bannerjee, Technical Officer,
IJIRA

Date : 18th November, 2015

Abstract : An awareness program based on the area of major hardware components of any kind of instrumentation project; how the components work; how the energy received by the connected sensors are processed in analogue or digital processing system; what major criteria are to be considered; how electronic sub systems work as input & output device; which transducer or sensor should be chosen for optimum performance and so on.

In order for an electronic circuit or system to perform any useful task or function it needs to be able to communicate with the real world through some device. Since a transducer or sensor receives its input signal from a source of invisible energy like electrical or magnetic field; heat; sound; light etc. it should be able to communicate with the real world through a device called instrument or equipment.

Weekly Lecture - 28

Topic : Process Safety Information: An Integral Part of Process Safety Management.

Presented by : Dr. Mangalya Kar, Senior Manager – PSM, Deepak Nitrite Ltd, Vadodara

Date : 23rd November, 2016.

Abstract : The presentation has been made on the following areas

- i) Different aspects of Chemical hazards
- ii) Different aspects of Toxicity
 - Toxicity-Target
 - Adverse effect of chemical, physical or biological agents on living organisms
 - Ecological Toxicity
 - Toxicity-Exposure Routes & Dose
- iii) Standards of safety

Weekly Lecture - 29

**Topic : Process and Quality control in jute spinning
by using statistical technique**

Presented by : Mr. Debiprasad Gon, Scieentist, IJIRA

Date : 2nd December, 2015

Abstract : Presentation contains various statistical techniques employed to maintain quality of products in a continuous process from Batching to Spinning

Broadly, this involves the application of various techniques and services to optimise the product quality to ensure the connotation of quality as fitness-for-use'. The quality assurance would mean optimisation of quality within given sets of constraints. These constraints, apart from functional limitations, may be related to mechanical capabilities, human skills etc. However, the constraint of cost is almost universally present in this problem of optimisation.

Second part of the presentation includes on assuring quality in yarn production, quality has to be considered with due importance right from the raw material to the finished product i.e. yarn. Basically, each production position can be considered as a potential source of disturbance. The success in preventing the yarn quality

downgrading depends not only on the right selection of raw fibre quality but also much on monitoring of each processing stage to ensure an early recognition of faulty running production process and undertaking of the corrective measures to eliminate the faults or to minimise their intensity.

Weekly Lecture - 30

Topic : Auxetic Textiles: Concept & Applications

Presented by : Dr. Mahuya Ghosh, Scientist, IJIRA

Date : 9th December, 2015

Abstract : Auxetic textiles, a category of new generation textiles, are non-conventional materials having Negative Poisson's Ratio (NPR). Auxetic textiles can be manufactured from auxetic fibres /or auxetic yarns /or adopting normal fabric formation technologies (warp and weft knitting, weaving) employing normal yarns but adopting special constructions. These textile materials have many enhanced properties, e.g., high shear resistance, high indentation resistance, Synclastic curvature, fracture toughness, energy absorption properties, variable permeability, high volume change, etc. Evidently, this group of textiles has diverse and wide spectrum application potential starting from protective textiles, medical textiles up to aerospace applications.

Weekly Lecture - 31

Topic : Biogester Technology

Presented by : Dr. Lokendra Singh, Director, Defence Research & Development Establishment, Gwalior

Date : 16th December, 2015

Abstract : Biogester technology has potential to eliminate wide-spread pollution resulting from untreated human excreta and making India cleaner, fulfilling the aspirations of the nation towards 'Swachh Bharat'. The currently publicized making of pit-toilets in rural setting needs to be looked into from the perspective of wide spread ground water pollution that will result from such toilets in near future. The faecal containing watery matter is likely to percolate further down from the pit and may be drawn in the drinking water through nearby hand pumps or bore wells. It is known that consumption of faecal contaminated water invites a plethora of diseases. Thus, by adopting a time tested sustainable and indigenous technology of biogester, safe "disposal" of human waste is ensured. This will contribute towards a safer and healthy environment of the country.

Weekly Lecture - 32

Topic : Improvement In Productivity And Quality Of Jute Bags

Presented by : Mr. P K Choudhury, Principal Technologist, IJIRA

Date : 23rd December, 2015

Abstract : Importance of Sack Sewing and Finishing Deptt. in the jute mills has been much realized by the industry in 1980. This is a highly labor intensive and low productive area. As desired by the expert committee and requested by jute mills IJIRA undertook the first project of its kind in the same year on improvement of productivity in bag manufacture. IJIRA 's recommended methodology in this regard for replacing overhead sewing system by Herakle was accepted and adopted by the industry which brought revolution to this sector where production was increased by about 500%.

Since then IJIRA has been doing extensive R & D work for this sector and came out with success. Many of them have been implemented by the jute mills. Few of such important works are worth mention like ,improvement of seam strength, methodology of calculating seam strength, development of hemless bag, introduction of combined herakle & safety sewing m/c, conceptualize

on development of automatic bag making machine, development of 50 kg carrying capacity food grain jute bag etc. Various methods were also devised for improving quality and reduction of wastes in sack sewing and finishing sector of jute industry.

Weekly Lecture - 33

Topic : Surface modification of Jute fibre for improvement in interface characteristics of composites

Presented by : Mr. Debkumar Biswas, Scientist, IJIRA

Date : 30th December, 2015

Abstract : Interface characteristics of a composite play vital role in determining the property realization of the ultimate composite products. Natural fibre reinforced both thermoset and thermoplastic composites have often represented issues of incompatibility between matrix and reinforcement due to their dissimilar functional characteristics. Over the years different approaches have been taken to enhance interfacial adhesion among natural fibre based reinforcing materials to polymeric matrix. The presentation envisages a comprehensive summary of developments in this direction.

Weekly Lecture - 34

Topic : Studies on Estimation of Threshold Breaking Strength Required in Warp-way, Weft-way and Seam Direction of Jute Bags of Specific Capacity.

Presented by : Mr. Palash Paul, Scientist, IJIRA

Date : 6th January, 2016

Abstract : A technical presentation was made by Shri Palash Paul, Scientist IJIRA on his recent work on “Studies on Estimation of Threshold Breaking Strength Required in Warp-way, Weft-way and Seam Direction of Jute Bags of Specific Capacity”. The project was jointly sponsored by the National Jute Board and Indian Jute Mills Association. Shri Paul mentioned in his presentation that the project team followed three-way approaches; kinematics, drop test and stress-strain analysis to determine minimum breaking strength required in three major directions of a standard B. Twill jute bag. The study concluded that minimum requirement of warp-way, weft-way and seam direction breaking strength of a standard B. Twill bag is 100 kgf, 100 kgf and 37 kgf respectively with standard specimen size and test parameters.

Weekly Lecture - 35

Topic : Root Cause Analysis of Quality Deterioration of Jute Fibre

Presented by : Mr. A. K. Nandi, Scientist, IJIRA

Date : 13th January, 2016

Abstract : The presentation discussed about the present status of Raw Jute production (quality wise), domestic and overseas market scenario. It also covers rice and wheat production trend along with jute to estimate the domestic demand. The focus has been given on retting of jute and inferior quality fibre production due to scarcity of water. In order to grasp the export and jute diversified product market it is essential improve quality retting technique with a lesser amount of water.

Weekly Lecture - 36

Topic : Development of Jute Based Composite Material using Unsaturated Polyester Resin

Presented by : Dr. Md. Safikur Rahman, Deputy Director, IJIRA

Date : 20th January 2016

Abstract : Production procedure of jute fibre reinforced thermoset composite using jute in different forms was presented. Jute in the form of cut jute fibre and non-woven was as reinforced. It was observed that jute non-woven is comparatively appropriate for making composite.

Weekly Lecture - 37

Topic : Banana Fibre - An Overview

Presented by : Mr. Koushik Das, Scientist, IJIRA

Date : 27th January, 2016

Abstract : Banana is a well known horticultural crop grown for fruit all over the world. Banana pseudo-stems are dumped as waste at the farm level in India due to disposal problem. The fibre has similar properties like jute, mesta, coir etc. and also attains some extra advantages like low density, appropriate stiffness, high disposability and bio degradable. It can be processed in jute spinning system to produce various technical and diversified yarn or fabrics. The fibre may provide livelihood to poor farmers by using as a various diversified product like handicrafts.

Weekly Lecture – 37 A

Topic : Geosynthetics In Roads

Presented by : Dr. G. Venkatappa Rao, Former Head,
Dept. of Civil Engineering, IIT Delhi

Date : 17th February, 2016

Abstract : The presentation has been made on the following areas:

1. History of Geosynthetics in road construction
2. The functions and advantages of Geotextile in road construction.
3. Design methodologies for Geotextile based roads.
4. Need of Geotextile as per soil properties
5. The selection of design parameters for Geotextiles for road construction.
6. Governing mechanism and relevant properties of Geotextiles that contribute to the enhanced performance of road
7. Possibilities of Jute Geotextiles and recent developments
8. Scopes of R & D with Jute Geotextiles
9. Field trials with Jute Geotextiles

Weekly Lecture - 38

Topic : Utilisation of Jute and Jute waste to develop industrial absorbents, spill control products and health hygienic products

Presented by : Mr. A. C. Deka, Scientist, IJIRA

Date : 2nd March, 2016

Abstract : Jute is a natural fiber with good absorbency property. Jute stick has also good absorbency property if physically treated. So there is scope to make absorbent product from jute and its waste. The absorbent products that can be developed from jute and jute waste are industrial absorbents to control fluid spill in the mill floor, spill control products to control oil spill in land and water and health hygiene products.

Weekly Lecture - 39

Topic : Geo-synthetics in Water Sector

Presented by : Dr Murari Ratnam, Ex-Director, Central Soil and Materials Research Station, New Delhi

Date : 11th March, 2016

Abstract : The presentation has been made on the following areas:

1. Detail description of Geosynthetics
2. Fibres for Geosynthetics
3. The functions and advantages of Geosynthetics in civil engineering works.
4. Different types of Geosynthetics products.
5. Testing of Geosynthetics
6. Use of geotextiles for river bank and Dam protection – Case studies
7. Scopes of R & D with Jute Geotextiles

An interactive discussion was held on the various geosynthetic products & application possibilities of jute based geotextiles in water sector. And it was concluded that systematic study with jute geotextiles are required to establish and claim its benefits for the application in water sector.

Weekly Lecture - 40

Topic : Applications of Biopolymers - Chitosan and Konjac Glucomannan

Presented by : Dr. Anand Iyer, Global Pharmaceutical/Biotech Executive, Randolph, USA

Date : 16th Mar, 2016

Abstract : Dr. Iyer has given a mesmerizing lecture on applications of two versatile biopolymers namely Chitosan and Konjac Glucomannan in biomedical uses. His lecture highlighted the extraordinary properties of Chitosan and its wide range of prospective applications in agriculture, biomedical, waste treatment and food & beverages. He has also thrown light on the wonder polymer Konjac Glucomannan which has tremendous capacity of liquid absorption and retention. Dr. Iyer categorically mentioned about the prospects of these biopolymers in developing Jute based products for high end uses.

Weekly Lecture - 41

Topic : Development of aroma based home textiles

Presented by : Mr. S. G. Saha, Scientist, IJIRA

Date : 30th March, 2016

Abstract : The lecture dwells on the development of aroma finishing for home textile application on natural and blended textiles including jute. Thetechnology uses microencapsulated aroma oils with binders that can impart durable finishing for 15 home washings. SEM photographs of aroma treated fabrics show the adherence of aroma capsules to the fabrics. The method of application is by pad-dry-cure like other chemical finishing. This aroma finishing technology has potential for commercialization for jute and jute blended fabrics for home textiles.

Weekly Lecture - 42

Topic : Natural Dyeing of Textiles with Natural Resources from NER

Presented by : Mr. Ritwik Chakraborty, Scientist, IJIRA

Date : 8th April, 2016

Abstract : The lecture discussed the chemistry, historical background and merits of natural dyes for application of textile materials. North East Region (NER) of India having ample biodiversity is a potential source of natural dyes. The lecture elaborated the R&D activities carried out by IJIRA using selected natural resources of NER. It mentioned the natural dye extraction and dyeing methods standardized by IJIRA.

Weekly Lecture - 43

Topic : Analysis of yarn irregularity and its relationship to other yarn characteristics

Presented by : Mr. Debi Prasad Gon, Scientist, IJIRA

Date : 13th April, 2016

Abstract : It is well known that an irregular yarn makes a low quality cloth. It also leads to excessive stoppages of spindles, beams and looms on account of which the production efficiency is lowered. A rapid and easy method for the evaluation of yarn irregularity and capable of being used in the industry for routine control purposes is, therefore, very important. In this presentation, published work on the subject of jute yarn evenness is to be reviewed. The presentation divided into five sections, like, the theory, causes, measurement, effects, and reduction of irregularity.

In the presentation, it has been discussed briefly on the practical aspects of the measurement of yarn irregularity and primarily dependents like (i) inherent properties of the raw materials, (2) factors associated with the preparing and the spinning machines, (3) mechanical defects in the machines and (4) external causes.

Apart from the irregularity which is dependent on these factors and produced in the operations of preparing, drawing and spinning, there are other irregularities such as those, introduced in the processes of warping, sizing, weaving and finishing. Since the irregularity imposed in the processes of manufacture of yarn is the fundamental cause of the other irregularities and the most important factor closely related to the quality of yarn and fabric.

Weekly Lecture - 44

Topic : Sound – Absorbing Green Composites from Cellulose Waste Fibre

Presented by : Shri Debkumar Biswas, Scientist,
IJIRA

Date : 22nd April, 2016

Abstract : The presentation was made on technology of sound absorption, sound absorbing materials, prospects of natural fibre based composites as sustainable sound absorbing materials. Different types of sound absorbing natural fibre based composites, their characteristics and comparison with other sound absorbing products were discussed. It was also discussed that there is a good prospect of using jute fibre based composites in developing sound absorbent products.

Weekly Lecture - 45

Topic : Better test method than Dry or Wet Sieving to obtain the Opening Size for Geotextile Filter Design Purposes

Presented by :Mrs Soumita Chowdhury, Scientist, IJIRA

Date : 27th April, 2016

Abstract : The presentation was made on different test methods for the measurement of opening size of geotextiles and comparison of the test methods supported by experimental data. Hydrodynamic Sieving, Wet Sieving, Dry Sieving, Mercury Intrusion Porosimetry, Liquid Extrusion Porosimetry, Capillary Flow Porometry, Suction, Image Analysis, Bubble Point are the various test methods discussed. It had been concluded that Capillary Flow Porometry is the best method for the pore size analysis of geotextiles.

Weekly Lecture - 46

Topic : Waste Management in Jute Industry (Factory Side)

Presented by : Shri Gopal Mukhopadhyay, Technical Officer, IJIRA

Date : 11th May, 2016

Abstract : The presentation was made on different types of waste generated in the factory side, causes of generation, standard percentages of waste generation and remedial measures to reduce the amount of waste. It had been also discussed that proper machine maintenance and awareness among the worker may reduce the waste generation.

Weekly Lecture - 47

Topic : Economical Benefits of River Bank Protection Works with Jute Geotextiles

Presented by : Ms. Rumki Saha

Date : 18th May, 2016

Abstract : The presentation focused on prevailing causes of river bank erosion and its remedial measures. The advantages of using Jute Geotextiles over conventional method for river bank erosion control along with its economical benefits were also discussed.

Weekly Lecture - 48

Topic : An Overview of Reactive Dyes

Presented by : Ms. Sampurna Chatterjee, Technical Officer

Date : 25th May, 2016

Abstract : This presentation highlighted the chemistry of the reactive dyes, its evolution and advantages of using poly functional reactive dyes. It had been also discussed that poly functional reactive dye helps to reduce the water consumption, salt consumption, dyeing cycle time, energy consumption and CO2 emission.

Weekly Lecture - 49

Topic : Manufacturing of Robust Natural Fibre Preforms Using Bacterial Cellulose as Binder

***Presented by : Ms. Ipsita Roy, Research Associate,
IJIRA***

Date : 1st June, 2016

Abstract : Bacterial cellulose (BC), produced by aerobic bacteria received ample of attention due to its unique physiochemical properties compared to plant cellulose. BC finds its application in medical, food and textile industries. BC can be used as a binder in the manufacturing of lignocellulosic natural fibre preforms and composites as it has been proven to increase the tensile properties of the mentioned. Natural fibres like jute, sisal, hemp, etc., can be used along with BC as binder to manufacture better quality Green Composites.

Weekly Lecture - 50

Topic : Sustainable Development and Geotechnical Engineering – where does Jute Geotextile fit in?

Presented by : Dr. Dipanjan Basu, Associate Professor, University of Waterloo, Canada

Date : 10th June, 2016

Abstract : The presentation was delivered on notions of sustainability of Geotextiles and its application to geotechnical engineering. It was also focused on the latest research activities related to sustainability in geotechnical engineering, including utilization of recycled materials and use of alternate materials and construction methods to reduce carbon foot print. The use of Jute geotextiles in geotechnical engineering was described from the perspective of sustainability with examples.

Weekly Lecture - 51

Topic : Hybrid Composite Development by Blending Aramid Fibre with Kenaf & their performance Evaluation

Presented by : Shri Debkumar Biswas, Scientist, IJIRA

Date : 15th June, 2016

Abstract : The presentation was delivered on natural fibre blended high performance composite structure and its applications in human safety products.

Weekly Lecture - 52

Topic : Prospect of Natural Fibre Based Textile Industry of India - An Overview

Presented by : Shri Anup Nandi, Scientist, IJIRA

Date : 22nd June, 2016

Abstract : The presentation focused on global as well as Indian market size and growth rate of natural fibre based textile materials. The scopes of jute based textile materials in new arenas are also discussed.

Weekly Lecture - 53

Topic : Global Energy Crisis: Biofuel A Welcome Alternative

Presented by : Dr. Soumya Mukherjee, Research Associate, IJIRA

Date : 29th June, 2016

Abstract : Finding renewable alternatives to fossil fuel has become a necessity not only due to the continuous depletion of limited fossil fuel stock but also for the safe and better environment. Lignocellulosic biofuel represents promising alternative as they form the major component of any biomass. Jute is a renewable source of biomass. Jute (*C. Camsularis*) is a lignocellulosic composite natural fibre comprising of Alphacellulose [60.0-63.0], Hemicellulose [21.0-24.0], Lignin [12.0-13.0], Fats & Waxes [0.4-1.0], Pectin [0.2-1.5], Proteins or Nitrogenous matter, etc. [0.80-1.9] and Ash [0.7-1.2]. Attempts are being made to utilize this rich hemicellulosic content present in jute sticks as a source for biofuel production using cost effective downstream methods. Ethanol from jute sticks will help in boosting the ethanol production to meet the target for 10% ethanol blending in petrol policy by the end of this year.

Weekly Lecture - 54

Topic : Lubrication and its necessity in Jute Industry

Presented by : Mr. Suvankar Bej, Technical

Date : 13th July, 2016

Abstract: Lubrication is imperative for any kind of machines for their smooth functioning, reduction of wear and tear of moving parts and thereby increasing life of the machines. In order to achieve the desired machine performance it is very essential to use correct type of lubricant with recommended or specified amount. The lecture contained details of types of lubricants, machine-wise requirement of lubricant type and their application schedule and also recommendations for appropriate methodology of application of lubricants.

Weekly Lecture - 55

Topic : Breeding of Jute (Corchorus Olitorius) for better fibre yield

Presented by : Dr. Arundhati Choudhury (Sen), Senior Research Associate, IJIRA

Date : 29th July, 2016

Abstract: The presentation was delivered on breeding of two varieties of jute plant to get a hybrid variety of jute plant with higher fibre yield.

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