

# NITRA NEWS

...with industry always

Issue: Jan. – Mar. 2021

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## Editorial Structure

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### FROM DIRECTOR GENERAL'S DESK



Dear Patrons,

This time let me begin with a hope that with the vaccination process in full swing, it is only a matter of time that we all be in good health and would manage to stay protected from the outbreak of Covid-19 despite the second wave which is being witnessed in some of the states.

We are also happy to see the signs of economic recovery following which the country's GDP is also taking an upward surge beginning the later part of the year gone by. Hope this trend will continue and it will not be a long time to restore complete normalcy again as far as India's industrial activities are concerned.

It is a matter of great satisfaction that even during this trying period NITRA has been acknowledged again for contributing to the Indian textile industry. The organization has been sanctioned the patent for extraction of fibres from pine needles during this quarter. This is the result of a research project "Development of value added products from different fibres in Himalayan region", sponsored by MoT, Gol. Shri Ajay Tamta, presently the hon'ble Member of Parliament, Almora, and the then Union Minister of State for Textiles had shown keen interest in this project and encouraged NITRA to work on this area. In addition, another patent "A short manufacturing process for semi-finished and/or finished products using a loom" is also sanctioned during the reported period. With having two patents within a quarter, I feel proud that this success is the fruit of incredible efforts put in by the team of dedicated NITRA scientists.

I am also very happy to inform you that again, in spite of the highly-shrunk job-market condition post pandemic, our placement team kept working very hard and could manage to provide placement to a good number of students till March 2021. Renowned companies such as RSWM Ltd., TCS, Reliance Retails, Kusumgar Corporates, Quickclean, Innobit Systems (P) Ltd. and many more have hired talented youngsters from our academic wing NITRA Technical Campus.

To conclude, I once more remind and request you all to take every protection to avoid the Covid-19 second wave. I also hope that you will be enjoying reading **NITRA News** as usual.

Regards,

**Dr. Arindam Basu**  
Director General

**Northern India Textile Research Association**

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## R&D SPECTRUM

Presently, NITRA is working on eight Government and Industry sponsored projects.

### Government Sponsored Projects - On-going:

- New Approaches to Reduce Water Consumption in Textile Wet Processing
- Development of Value Added Products from different fibres produced in Himalayan Region
- Development of Air Cleaner Home Textiles to Reduce Indoor Air Pollution
- Setting up of Common Effluent Treatment Plant (CETP) -150 KLD at Ajrakhpur, Bhuj
- Development of regenerated cellulosic fibres from Indian bamboo

### Industry Sponsored Projects - On-going:

- Development of coat combat disruptive
- Development of Antibacterial and anti fungal properties in cotton and lotus fabric
- Development of FR knitted fabric for anti-flash hood for Indian Navy

### Proposed Projects - Submitted to Government Agencies for Financial Support

- To develop protective work-wear for sewage and sanitary workers.
- Development of low cost and handy indigenous device for textile fiber and small irregular shape density measurement.
- Socio-economic development of SC/ST by providing training, technology and market to convert local resources to industrial products
- Development of Manhole Cover & Drainage Cover Slab using agriculture waste
- Development of indigenous bacterial filtration efficiency tester for surgical face mask
- Development of NCI (Natural compression imprint) Machine for textile substrate

## RESEARCH PAPERS PUBLISHED/PRESENTED

S. No.	Title	Author(s)	Publication/Place	Date
1	Analysis of dust resistance property of coated and laminated fabrics using newly developed instrument	M.S. Parmar, Shweta Saxena, Sangita Saini and Durgesh Raj Maurya	Colourage, Pg. 36-43	February 2021
2	Development of a unique stab and impact resistant material for anti-riot body protector	M. S. Parmar, Neha Kapil, and Nidhi Sisodia	Book: Functional Textiles and Clothing-2020, ISBN 978-981-15-9376-5, Springer Pub: Springer Nature Singapore Pte Ltd, Pg. 55-66	January 2021
3	Study to analyze and improve anti riot body protector	M. S. Parmar, Neha Kapil, and Sangita Saini	Man Made Textiles in India, XLIX No.1(Jan. 2021):7-11	January 2021
4	Work wear fabric for cement workers	Shweta Saxena, Durgesh Raj Maurya, Sangita Saini, M.S. Parmar	Asian Textile Journal, p 46 to 51	January-February 2021

5	Creating dyeing effect on cotton fabric with disperse dyes	M.S. Parmar, Durgesh Raj Maurya, Girendra Pal Singh and Saurabh Jain	Journal of the Textile Association, Vol 81 No 5, p 269-273	January-February 2021
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## CONSULTANCY CORNER

- Third party inspection of textile manufacturing units for Woolen Jersey (2 units), Gabardine (3 units), T-Shirt (7 units), Sleeping bag (2 units), Angola shirting (5 units), Coat Combat (4 units), Full Body Protector (2 units), Cloth disruptive (2 units), Terry Towel (1 unit), Fabric serge dress (1 unit), Balaclava cap (1 unit), Water-proof nylon fabric (1 unit) and Cloth serge olive khaki (1 unit)
- Manpower rationalization study of Dye House and Engineering section (1 unit)
- Technical consultancy to examine the existing HVAC system (1 unit)
- Technical consultancy for Civil Structural Verification (1 unit)
- Energy audit of dairy firm (3 units)

## TESTING ZONE

During the period, total 1998 samples were tested in all the labs as per following table:

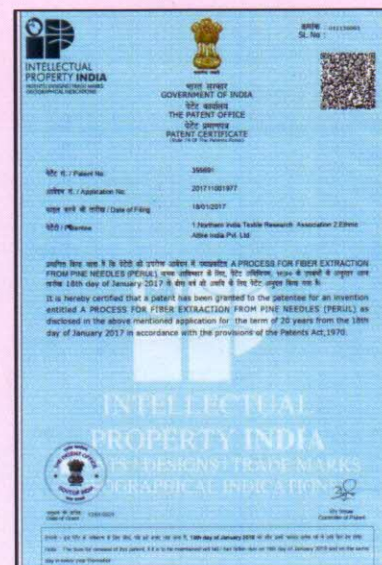
S.No.	Lab Name	No. of Sample Tested
1	Physical Quality Evaluation Lab	741
2	Chemical Quality Evaluation Lab	935
3	Heat & Flame/Microbiology Lab	
4	Polymer & technical Textiles Lab	
5	Eco Lab	65
6	Environment Lab	

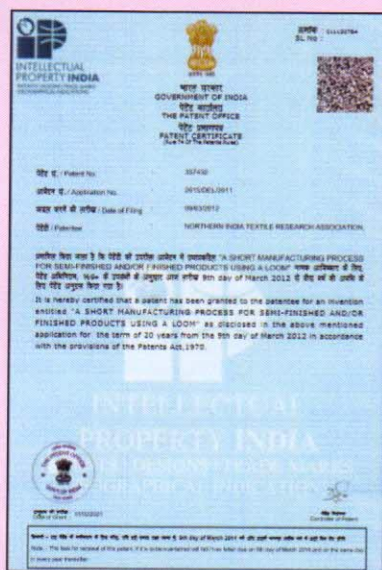
Apart from this, NITRA also analyzed one sample for fabric defects.

## GLIMPSES

### NITRA Receives Patent for Extraction of Fibres from Pine Needles

NITRA is happy to announce that the patent for “A process for fibre extraction from pine needle (Perul)” has been sanctioned for NITRA. This is the result of a research project “Development of Value added products from different fibres in Himalayan region”, sponsored by Ministry of Textiles, Govt. of India. Presently M.P. Almora, then Union Minister of State for Textiles, Shri Ajay Tamta shown his interest in this project and encouraged NITRA to work on these areas. The inventors include Shri Ajay Tamta, Ms. Shweta Chauhan and Dr. Arindam Basu.





## Another Patent for Inventing a Unique Short Manufacturing Process

It is again a matter of great satisfaction that in addition to above, NITRA received another patent for “A short manufacturing process for semi-finished and/or finished products using a loom”. This patent has resulted in research project “Development of technology to produce seamless low cost jute carry bags using modified power loom” sponsored by National Jute Board, Ministry of Textiles, Govt. of India. The inventors include Dr. J.V. Rao and Shri A.K. Pandey.

## Training Program/Workshop/Seminar Attended by Staff

- Mr. Vineet Tyagi and Ms. Neha Kapil on 21<sup>st</sup> January, 2021, attended a workshop on Vendor Development and Procurement Process. Program organized by Alstom Transport India Limited on CII Digital Platform (Cisco WEBEX).
- Ms. Neha Kapil during 22-26 February, 2021, attended a seminar on WGM for Review and Finalization of Student Textbooks. Program organized by PSS Central Institute of Vocational Education, Bhopal.
- Dr. Arindam Basu, Dr. M.S. Parmar, Ms. Neha Kapil and Mr. Vineet Tyagi attended TECHNOTEX 2021. A seminar on “Technical Textiles: Emerging Opportunities and Investments.” The event is prompted by the Production Linked Incentive Scheme and National Technical Textiles at ITC Maurya, New Delhi on 17<sup>th</sup> March, 2021.

## Placement Activities (B. Tech) at NITRA Technical Campus

S. No.	Recruiting Company	Branch	Student's Name
1.	RSWM	TT	Aditya Kumar Pandey, Mudit Bhargava, Nikhil Jaiswal and Akansha Khare
2.	RSWM	TC	Shubham Mehta
3.	Reliance Retails	TT	Aman Bhardwaj
4.	Quickclean, Delhi	TT	Poonam Chatterji, Shivangi Chaudhary, Soham Singhal and Siddhant Garg
5.	Kusumgar Corporate	TC	Rishabh Pandey
6.	Innobit Systems (P) Ltd.	CSE	Anjali Kumari, Arshi Ansari, Faizan Ahmed Siddiqui, Nikhil Sharma, Priyanshi Chauhan and Priyasha Garg
7.	Western India Railways	CSE	Nikhil Chaudhary
8.	App Squadz Technologies (P) Ltd.	CSE	Amitabh Patel, Avnish Singh and Om Agrahiri
9.	Investor Clinic	CSE	Rakshat Bhati, Vikrant Singh Rana, Nikhil Kr. Giri, Vinod Kumar and Vishal Chaudhary
10.	Dirac ERP Solutions	CSE	Shriya Sharma
11.	Ced Coss Technologies (P) Ltd.	CSE	Abhishek Tyagi

### **Rajasthan Spinning & Weaving Mills Ltd. (RSWM) Recruits Textile Graduates From NITRA Technical Campus, Ghaziabad**

Mr. Ashish Kumar Pandey (Head HR), Mr. Ashok Singh Sengar (DGM Technical), Mr. Sanjeev Singh – (DGM Technical) and Mr. Deepak Ojha (Sr. Executive HR) visited NITRA Technical Campus, Ghaziabad on March 09, 2021 for recruitment of textile graduates. Dr. Arindam Basu, Director General, NITRA presented mementos to the dignitaries of RSWM Ltd. and thanked them for recruiting 5 B. Tech students.



### **Quick Clean Recruits Textile Graduates From NITRA Technical Campus, Ghaziabad**

Officials of Quick Clean visited NITRA Technical Campus, Ghaziabad on March 12, 2021 for recruitment of textile graduates. Sh. A. Pal, Director Academics, NITRA Technical Campus, presented mementos to the dignitaries of Quick Clean and thanked them for recruiting 4 B. Tech students.

### **NEW Books Arrived at NITRA Library**

1. Internet of Things by Dr. Jeeva Jose
2. Mastering Cloud Computing by Raj Kumar Buyya (et al)
3. Block Chain and Crypto Currencies by Anshul Kaushik
4. Kennedy's Electronic Communication Systems by George Kennedy (et al)
5. Text Book of Engineering Mathematics-Sem I by N P Bali & Dr. Manish Goyal
6. Introduction to Engineering Mathematics, 9th ed. Vol.-I, by H K das (et al)
7. Elements of Mechanical Engineering 3rd ed. by Dr. D K Kumar
8. Fluid Mechanics and Hydraulic Machines by Mahesh Kumar
9. Mechanical Measurements & Control by Dr. D S. Kumar
10. Mechatronics : Principles, concepts and application by N P Mahalik
11. Rapidex English Speaking Course by R K Gupta

### **NITRA Developments Commercialized Through Technology Transfer**

- Technology of "Synthetic blood penetration tester" to Asian Test Equipments, Ghaziabad
- Technology of "Development of stab and impact resistant material for anti riots body protector" to Applied Systems Mumbai.
- Technology of "Work wear for Cement Porters" to M/s. Arvind Ltd., Ahmedabad
- Technology of developing "Multi Layered Flame & Thermal Resistance Fabric for Fire Fighter Clothing" to Arvind Ltd. and Aeronav Industrial Safety Appliances.
- Technology of "NITRA Electronic Drape meter" to Dinu Technologies, Coimbatore
- Technology of "NITRA's Fabric Smoothness Tester" to Multiflo Instruments Pvt. Ltd., Navi Mumbai.
- Technology to produce "Seamless low cost jute carry bags" to G. D. Industries, Kolkata
- Study material for "Fabric Defect Analysis" to Textile Sector Skill Council, New Delhi

## TECH-FEATURE

*The aspect of sustainability is the burning area which needs all-round effort to innovate sustainable technologies to save the mankind and nature. Most of the textile manufacturers are now shifting focus to developing innovative eco-friendly textile products. In this backdrop, NITRA is presenting a series of articles on Sustainability to help the industry.*

### Sustainability in Textile & Apparel Industry

#### Part III - Hemp “A Potential Sustainable Bast Fibres”

**Shweta Chauhan**

The sustainability is not a buzz word today. In fact it has become one of the challenges for survival of nature and ultimately the human being. Presently, grave environmental problems are propping up in every sphere and thus leading to focus on using substances that are more environmental friendly. Textile and apparel sector is no exception. Slowly but steadily this sector is putting all efforts to make processes sustainable and encouraging use of sustainable raw materials. Hemp, one of the potential fibres, is produced by a highly sustainable process and has several environmental advantages.

#### Environmental Advantages with Hemp

Hemp, or industrial hemp, is a variety of the Cannabis sativa plant species that is grown specifically for industrial use. Hemp, like bamboo, is one of the fastest growing plants, ready to harvest in two to three months. Hemp production per acre of land is very high in comparison to other natural fibres. It produces 250% more fibres than cotton and 600% more fibres than flax with the same size of land. Harvesting of hemp also takes less amount of water in comparison to other natural fibres. Undoubtedly it is a biodegradable fibre.

One of the greatest advantages in harvesting of hemp is that it does not exhaust the soil. It leaves the soil in excellent condition for any succeeding crop. Where ever, the ground is appropriate and allows, hemp's strong roots go deep in the ground which enables protection of soil from runoff. It builds and preserves the topsoil and subsoil structures similar to those of forests. Hemp plants shed their leaves all through the growing season, enabling rich natural matter to the topsoil and helping it retain moisture.



**Hemp Leaves and Hemp Fibre**

## Properties of Hemp Fibres

The hemp fibre is rich in cellulosic content. High cellulosic content (70%-74%) makes it rich fibre for various applications. Comparison of chemical compositions of hemp & other natural fibres is shown in Table 1 which shows how hemp is having advantages over the other natural fibres.

Table 1:- Comparison of Chemical Compositions of Hemp & other Natural Fibres

Fibres	Cellulose %	Lignin %	Hemicellulose %	Pectin %	Wax %	Ash	Microfibrillar Angles (°)
Hemp (Bast)	70-74	3.5-5.7	15-20	0.8	1.2-6.2	0.8	2-6.2
Jute (Bast)	61-72	12-13	18-22	0.2	0.5	0.5-2	8
Sisal (Leaf)	78	8	10	-	2	1	-
Flax (Bast)	64-72	2-2.2	18-20	1.8-2.3	-	-	5-10
Ramie (Bast)	69-91	0.4-0.7	5-15	1.9	-	-	7.5
Harakeke (Leaf)	56-64	7.8	23-31	-	-	-	-
Coconut Coir (Fruit)	36-43	0.15-0.25	41-45	3-4	-	-	30-49
Kenaf (Bast)	45-57	22	8-13	0.6	0.8	2-5	2-6.2

## Application

Hemp is having special inherent mechanical, thermal, and acoustic properties. Also it is one of the strongest and stiff fibres. Variety of commercial and industrial products are produced out of hemp fibres that includes rope, textiles, clothing, shoes, food, paper, bio plastics, insulation, and biofuel. Hemp can be used to make textile products as 100%, blends with other fibres, such as flax, cotton or silk, as well as virgin and recycled polyester. Mostly hemp is used for making apparel and furnishings. High strength and stiffness of hemp fibres make them a useful material to be used as reinforcement in composite materials.

Not only these useful applications, it has endless other uses. Each and every part of hemp plant represent a valuable source of food and ingredients for nutritional supplements. Hempseed has a pleasant nutty taste and represents a valuable source of essential amino acids and fatty acids, minerals, vitamins, and fibres. Hemp seed oil is a source of healthy polyunsaturated fatty acids, and hemp sprouts are rich in antioxidants. The multiplied application of hemp makes it fibre for future as each part of the plant has a unique use. One has to be careful while using Hemp fibre as in India Hemp plant Tetrahydrocannabinol (THC) value more than 0.3 is not legal. Some companies have started using hemp fibre by importing fibre or producing industrial hemp using imported seeds with THC value less than 0.3 with special permission from different state governments.

## NITRA ESTABLISHES MICROBIOLOGY LAB

Testing Facility at NITRA for Antimicrobial Testing		
S. No.	Test	Test method
1	Antimicrobial Finishes on Textile materials: Assessment - Staphylococcus aureus ATCC No 6538 - Klebsiella pneumonia ATCC No 4352	AATCC 100
2	Antimicrobial Activity Assessment of Textile Materials: Parallel Streak Method	AATCC 147
3	Antimicrobial Activity Assessment of new carpet i) Qualitative assessment ii) Qualitative assessment	AATCC 174
4	Antibacterial activity assessment of textile materials: Agar plate method	AATCC 90
5	Determination of antibacterial activity of textile product	ISO 20743
6	Determination of antibacterial activity of textile product-Agar diffusion plate test	ISO 20645
7	Antimicrobial activity assessment of Textiles against Fungi	AATCC 30, ASTM D 4576, BS EN 14119
8	To evaluate the antibacterial efficacy of antibacterial finished textile product	JIS L 1902
9	To determine the resistance to dry bacterial penetration	IS 16548, ISO 22612



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