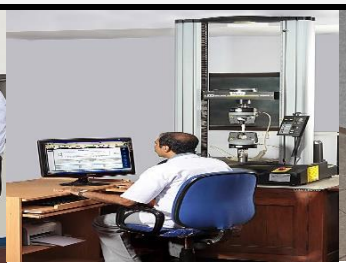

CALIBRATION COTTON


DIFFERENTIAL SCANNING CALORIMETRY


INSTRON


COMPACT SPINNING

A Monthly Insight into the ICAR-CIRCOT

e - News Letter

October 2015, Vol.2. No.7

In this Issue >>

Published by:

Director, ICAR-CIRCOT

Director's Desk…

Nanocellulose, a novel nano-sized cellulosic material exhibits very high strength, extremely large surface area, viscosity modifying capability and entirely different optical properties. It has proven applications as (a) reinforcing agents in biocomposites, (b) additives in high-end papers, (c) scratch resistant coating additives, (d) additives in paints, (e) transparent display for electronics and (f) drug delivery agents. With the generous support from National Agricultural Innovation Project (NAIP) of ICAR, in 2008, Institute ventured into the preparation of nanocellulose from cotton linters and cotton wastes. With four years of concerted efforts by multidisciplinary scientists, three novel energy-efficient protocols for production of nanocellulose namely, chemo-mechanical, bio-mechanical and microbial processes were evolved and patented. Throughout the World, only few pilot plants are engaged in production of nanocellulose from wood pulp- Innventia in Stockholm, Sweden (first plant established in Feb 2011); Forest Products Laboratory, USDA; Maine's Process Development Centre and Verso Paper, USA; CelluForce Inc. and FP Innovations, Canada; DaiCel and Nippon Paper, Japan; Stora Enso and UPM-Kymmene, Finland; Borregaard, Norway; and, J. Rettenmaier & Sohne Gmbh, Germany.

The ICAR-CIRCOT has established a first of its kind in India unique nanocellulose pilot plant that can produce nanocellulose from cotton linters, cotton wastes and bagasse at the rate of 10 kg per 8h shift. Besides the production system, safety aspects, material handling system and effluent handling are also taken care of in the pilot plant. For validation and commercialization of this technology, MoUs have been signed with M/s Avantha Centre for Industrial Research & Development [formerly Thapar], Yamuna Nagar, Haryana, M/s Godavari Biorefineries Ltd., Mumbai, M/s Clean Cotton Impex, Tirupur, Tamil Nadu and M/s Kanakadhara Agricultural Innovations Pvt Ltd., Bangaluru. These firms are evaluating the nanocellulose for their potential use as coating/additives in high-end paper, as rheology modifiers in paints and for pharmaceutical applications. This pilot plant is also established to demonstrate the nanocellulose production technology to various stakeholders and technology licensing; to act as an incubation unit for entrepreneurs/industrialists to develop efficient methodologies for custom-designed nanocellulose and to support researchers, entrepreneurs and industrialists for development of nanocellulose based products.

P.G. Patil

Nanocellulose Products Exhibition Centre: Inaugurated by Honourable Director General, ICAR

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR inaugurated the Nanocellulose Products Exhibition Centre at ICAR-Central Institute for Research on Cotton Technology, Mumbai on October 3, 2015. Established with the financial support from ICAR/NAIP, a nanocellulose pilot plant has a capacity of 10 kg per shift of 8 hours. The applications of nanocellulose as reinforcing agent in paper, cement, natural rubber and plastic films for packaging are being demonstrated to various stakeholders at the exhibition centre. Dr S Ayyappan lauded the efforts taken by the scientific team led by Dr. P. G. Patil, Director, ICAR-CIRCOT and past directors, Dr. S. Sreenivasan and Dr. A.J. Shaikh who were also present on the occasion.

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR, inaugurated the Nanocellulose Products Exhibition Centre at ICAR-CIRCOT Technology, Mumbai

Technology Insight

Low Salt Dyeing Process for Cotton using Saline Water

Dyeing of cotton using reactive dyes requires addition of large amounts of salt for exhaustion. To reduce the salt requirement, a novel process has been developed for dyeing of cotton using saline water. In a new process, dyeing was carried out on cotton fabric using pre-treated saline water with five reactive high exhaust (HE) dyes. While conventional exhaust dyeing of cotton with reactive dyes uses 60 gpl sodium chloride as an electrolyte, for the pretreated saline water only 20 gpl of sodium chloride is sufficient. Dyeing performance and washing fastness properties of the dyed fabrics showed that the dyeing performance in terms of uniformity was satisfactory in pretreated saline water and comparable with conventional dyeing. The process requires only one third amount of salt compared to the conventional exhaust dyeing process.

Training

Training Program on Advances in Applications of Nanotechnology

A five-day training program on "Advances in Applications of Nanotechnology" was organized during October 5-9, 2015. The course curriculum included synthesis of nanomaterials by mechanical, chemical and biological processes, their characterization, applications of nanomaterials in textiles, composites, filtration, sensors and agriculture. Also it covered life cycle analysis of nanocellulose and safety, toxicology & regulatory issues related to nanotechnology. Hands-on practical sessions were conducted on synthesis, characterization & applications. Total seventeen participants from diversified fields that included researchers, scientists, professors, students and people from industry took part in the programme.

Addressing the valedictory session, Dr. P. G. Patil, Director, ICAR-CIRCOT emphasized on the need for networking of nanotechnology professionals working in various organizations for meaningful process / product development for serving diversified stakeholders and responsible innovations in the field of nanotechnology in improvement of agriculture and allied sectors for better tomorrow.

Dr. P. G. Patil, Director, CIRCOT, distributing certificates during the valedictory function

Group Photo: Training Program on Advances in Applications of Nanotechnology

International Training Programme

Skill Development *cum* Training Programme on Post-harvest Management and Value Addition of Crop Residue at Chad (West Africa)

An In-country training programme on Post-Harvest Management and Value Addition of Crop Residue was conducted at Moundou, Chad, West Africa under Cotton Technical Assistance Programme for Africa (Cotton TAP) during October 12 – 15, 2015. It was implemented as per Second India - Africa Forum Summit (IAFS) with the objectives to strengthen the human resource from government R&D, production and extension professionals and entrepreneurs from private sectors in the areas of ginning, cotton quality evaluation and utilization of cotton by-products viz., cottonseed and crop residues. Twenty professionals engaged in development of cotton sector viz., ginneries, government and private sector, policy makers, production technologists, scientists and entrepreneurs from different organizations in Chad attended the training programme. Dr. S. K. Shukla, Senior Scientist and Er. V. G. Arude, Scientist conducted the programme and interacted with the policy makers including the Secretary General, Director General and Director (Training), Ministry of Agriculture, Chad for planning, and implementation of future programmes under the Cotton TAP.

Dr. S. K. Shukla, Senior Scientist and Er. V. G. Arude, Scientist distributing certificates to the participant during the valedictory function in Chad

Dr. S. K. Shukla, Senior Scientist and Er. V. G. Arude, Scientist visited ginning Industry along with the participant's (Chad)

Dr. S. K. Shukla, Senior Scientist and Er. V. G. Arude, Scientist visited cotton field along with the trainee's (Chad)

Training on "Quality Evaluation of Cotton"

A training course on "Quality Evaluation of Cotton" was conducted during October 13-15, 2015 for the sixth batch for 2015-16 which was attended by 15 participants from Agricultural Market Committee, Telangana at the behest of The Cotton Corporation of India Ltd. The training course was specially designed as per their requirement. More emphasis was given on demonstrations and practicals.

During the training period participants were acquainted with every aspect of cotton testing so as to build in them confidence to deal with their day-to-day work in the field. Feedbacks and suggestions from the participants were collected during the valedictory function. Dr. P. G. Patil, Director, ICAR-CIRCOT inaugurated the training course and interacted with participants.

Group Photo: Training on Quality Evaluation of Cotton

Meeting

Industry Interface Meet

The ICAR-CIRCOT - Industry Interface Meet was organized on October 7, 2015 at Dr. V. Sundaram Committee Room under the Chairmanship of Dr. P. G. Patil, Director. The participants from the institute included former Directors Dr. S. Sreenivasan and Dr. A. J. Shaikh, Heads of the Divisions Dr. S. K. Chattopadhyay, Dr. Sujata Saxena, Dr. N. Shanmugam, PME In-charge Er. V. G. Arude and scientists Dr. A. S. M. Raja, Dr. N. Vigneshwaran, Er. A. K. Bharimalla, and Dr. Virendra Prasad. The Industry was represented by eminent personalities like Mr. Suresh Kotak Chairman, Kotak Ginning and Pressing Industries Ltd, Mumbai, Mr. M. L. Jhunjhunwala, President, RSWM Ltd., Mumbai, Mr. J. B. Soma, Publisher of Journal of the Textile Association, Mumbai, Mr. Shiv Kanodia, Ex. Honorary Secretary, Bharat Merchants' Mumbai, Mr. Manish Daga, Managing Director, Lesha Impex Pvt. Ltd., Mumbai and Ms. Jigna Shah Editor & Publisher, Textile Value Chain Magazine, Innovative Media and Information Company, Mumbai.

Dr. P. G. Patil, Director ICAR-CIRCOT welcomed the dignitaries with floral bouquets. On behalf of industry delegates Mr. Suresh Kotak invited the CIRCOT scientists to elaborate on their areas of work so that industry partners get familiarized with the institute expertise. In response, the scientists along with the former Directors elucidated various technologies developed at the Institute, on-going research activities, future scope and potential of the developed technologies. Dr. S. Sreenivasan urged the industrialists to move towards polyesterization for hydrophobization of cotton fibers to enhance the scope of its application in diversified areas. Later, Er. A. K. Bharimalla described the energy-efficient protocols developed for the production of nanocellulose from cotton linters / comber noils to the Industrialists during their visit to nanocellulose pilot plant. Dr. N. Vigneshwaran explained about the application potential of nanocellulose with the help of the samples in the exhibition room adjacent to the pilot plant. The action points that emerged out of this meeting are being considered for deciding future course.

The ICAR-CIRCOT - Industry Interface meeting along with CIRCOT Scientists and Eminent Personalities from Industries

Eminent Personalities from Industries visited Nanocellulose Pilot Plant at CIRCOT

Extra-Mural Project Funding

A meeting was convened on 20th October, 2015 to discuss and refine the project proposals seeking funds under the Extra Mural Funding Scheme launched by the Agricultural Engineering Division. The former Directors Dr. S. Sreenivasan and Dr. A. J. Shaikh were called in as experts for scrutinizing the projects. Dr. P.G. Patil, Director (Acting) chaired the meeting attended by the the HODs and all the scientists.

Nanocellulose Pilot Plant Expert Committee Review Meeting

The seventh Nanocellulose Expert Committee Review Meeting on was held on October 30, 2015 at the institute under the chairmanship of Dr. P.G. Patil, Director, ICAR-CIRCOT. The meeting was attended by the committee members including Dr. R.P. Kachru, Former ADG, ICAR, Dr. S. Sreenivasan, Former Director, ICAR-CIRCOT; Dr. A.J. Shaikh, Former Director, ICAR-CIRCOT; Dr. M.S. Banerji, Former Director, IRMRA; Dr. S.P. Deshmukh, Assoc. Prof, ICT and Er. A.K. Bharimalla, Sr. Scientist, TTD & Member-Secretary.

In his welcome address, Dr. P. G. Patil, Director, ICAR-CIRCOT expressed sincere gratitude to the committee members for their constant support & encouragement for establishment of the pilot plant. Giving initial remarks, Dr. Kachru congratulated the Director and his team for successful commissioning of the pilot plant which was inaugurated at the hands of Padma Vibhushan Dr. R. A. Mashelkar. He termed this as the third generation technology of CIRCOT, first generation being fibre quality and second on particle board development. He also suggested an in-depth analysis of nanocellulose & its behaviour to exploit its fullest potential in application. Dr. S. Sreenivasan added to in-depth research in application areas with a right mix of pre-treatments so that the process became economically viable with a proven application. He further suggested to have participatory research with private players. Dr. Banerji insisted to focus on polymer / rubber applications of nanocellulose and urged to try dispersing NCC in latex form instead of solid rubber form. Dr. Deshmukh recommended NCC based product validation in diversified fields.

Dr. R. P. Kachru addressing during Nanocellulose Pilot Plant Expert Committee Review Meeting

Dr. Vigneshwaran presented the research progress since 21st August 2015 after the pilot plant inauguration. He elaborated on the results obtained out of NCC applications in rubber, cement concrete, plastics and paper. This was followed by a presentation from Dr. Wayal, VJTI on potential applications of nanocellulose in cement concrete. Later, Er. Bharimalla presented progress on the business activities.

Event

Vigilance Awareness Week Celebration

Vigilance Awareness Week was celebrated at the institute during October 26 - 31, 2015. The staff were administered Vigilance Oath on the first day. On the concluding day, Dr. A.S.M. Raja delivered a talk on Preventive Vigilance as a Tool of Good Governance.

Dr. A.S.M. Raja delivered a presentation on Preventive Vigilance as a Tool of Good Governance.

Dr. P.G. Patil, Director administered the oath to CIRCOT staff take pledge to maintain the unity and integrity of the country.

National Unity Day

National Unity Day was observed on October 31, 2015 to mark the birth centenary of Shri Sardar Vallabhbhai Jhaverbhai Patel, one of the founding fathers of the Republic of India. On this day, Dr. P.G. Patil, Director administered the oath and the staff took pledge to maintain the unity and integrity of the country.

Deputation Report – Visit to Chad under Cotton TAP for Africa

On October 30, 2015, Er. V. G. Arude, Scientist, presented the report of on deputation to Chad under Cotton Technical Assistance Programme for Africa (Cotton TAP). The visit was aimed at conducting in-country training programme on "Post-Harvest Management of Cotton and Value Addition of Crop Residue". The presentation was attended by all staff members of CIRCOT.

Er. V. G. Arude, Scientist, presented the report of on deputation to Chad under Cotton TAP

Mera Goan Mera Gourav

A group of scientists from, ICAR-CIRCOT, i.e., Dr. S. V. Ghadge, Senior Scientist, Dr. T. Senthilkumar, Scientist, Er. P. Jagajanantha, Scientist visited villages Selukate, Bhiwapur, Waigoan, Sirasgoan and Bhugaon in Wardha District, Nagpur from 12th October to 17th October 2015 under Mera Goan Mera Gourav scheme. During the visit of scientist, collected the baseline information about the villages from the respective village punchayat office, Assistant Agricultural officers, Village thalaties and farmers.

Student Visit

As part of the course curriculum, an educational tour comprising of 57 students from the College of Agricultural Engineering, University of Agricultural Sciences, Raichur visited the Institute on 30th October 2015.

Collection of baseline information at Waigoan village, Wardha Taluk, Nagpur

Group photo: Student from College of Agricultural Engineering, Raichur

Visit of the Dignitaries

Dr. S. Ayyappan, Secretary DARE and Direct General, ICAR, New Delhi visited Nanocellulose Products Exhibition Centre at ICAR-CIRCOT on October 3, 2015

Group Photo: Dr. S. Ayyappan, Secretary DARE and Direct General, ICAR, along with ICAR-CIRCOT Staffs

Dr. T. Prabhushanker, IAS, Assistant Secretary, DARE, Ministry of Agriculture and Farmers Welfare visited the ICAR-CIRCOT on 20th October 2015

Swachh Bharat Mission

Dr. P. G. Patil, Director, CIRCOT welcoming Mr.Ghag, Team leader of Sangam Pratishtan, Thane

Sangam Pratishtan, Thane put up a stage show at Jubilee Hall emphasizing the importance of Clean India. The same show was later also staged at five gardens for awareness of the general public about the Clean India programme. The stage show gave a strong message to clean Mumbai. The Director, CIRCOT administered "The Swachh Oath" to all the CIRCOT employees.

Swachh Oath taken by all ICAR-CIRCOT staffs

Clean India awareness programme for general public were conducted at five garden, Matunga

Workshop

Dr. Hamid Hasan, Officer in-charge, QEU, Sirsa, participated in a workshop for Developing a Road Map for Technological Support, Extension and Demonstration Services to the Farmers in Trans-Gangetic Plains Region (Agro-Climatic Zone-VI) organised by ICAR at ICAR-Central Soil Salinity Research Institute (CSSRI), Haryana on 5th October, 2015.

Upcoming Event

1) ICAR–CIRCOT and IFS jointly organizing "National Seminar on Recent Advances in Textile Finishing" on 13th February 2016 at CIRCOT Mumbai. For more details regarding registration, paper presentation please visit www.circot.res.in

2) Training Course on "Quality Evaluation of Cotton" at ICAR-CIRCOT, Mumbai

Training Calendar for 2015 -16

S.No.	From	To
1.	14-12-2015	18-12-2015
2.	11-01-2016	15-01-2016
3.	08-02-2016	12-02-2016

COURSE CONTENTS

- Advances in Ginning Technologies
- Introduction and Practical in Cotton Grading
- Cotton Crop By-products
- Fiber Length Measurement using Conventional Instruments
- Demonstration in Fibre Fineness and Maturity
- Cotton fibre Testing using High Volume Instrument (HVI) and Advanced Fibre Information System (AFIS)
- Mechanical Processing of Cotton
- Contamination in Cotton and Marketing & Commercial aspect of Cotton
- Techno Entrepreneurial Activities and Business Planning Development
- Visit to Cotton Association of India, Cotton Green

Course Fee: Rs. 5618/- (Inclusive of taxes)

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Bharat Ratna Shri. Atal Bihari Vajpayee, the former Prime Minister of India, visited the Institute which at that time was known as Central Technological Research Laboratory, Mumbai on 29th September, 1988 for review of activities related to implementation of Rajbhasha

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