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Conference Report

Innovations in Textiles

Sadhan Chandra Ray[a]

Department of Jute and Fibre Technology, University of Calcutta,
35 B C Road, Kolkata 700 019, India

The Textile Association (India), West Bengal Unit has organised one day Technological Conference on "Innovations in Textiles" on 28th March 2015 at Kennedy Hall, Department of Jute and Fibre Technology, University of Calcutta. The conference was intended to bring senior as well young researchers and students working in the different areas of textiles together for mutual exchange of ideas and presentation of their latest research findings. Mr. Jiwraj Sethia, President of TAI, in his hearty and warm welcome address, mentioned the impact of innovations in textiles to our life style. He also mentioned that further innovations in textile can increase the share of India in export market. Mr. A K Roy, Chairman of the TAI, while explaining the theme of the conference, repeatedly mentioned that the search and research are continuous processes and those should be carried out in spite of many obstacles and hazards. In this perspective, microbial biotechnology, nanotechnology, genetic engineering and fashion designing are the need of the hour and researchers are already engaged in the process to bring out innovations in textiles. He also mentioned that the application of modern technology leads to the generation of environment friendly and cost effective processes which will strengthen the future of textile industry. The conference was inaugurated by the Chief Guest, Prof. Dhrubajyoti Chattopadhyay, Pro-Vice-Chancellor (Academic) of the University of Calcutta by lighting the lamp. In the inaugural address, he emphasized the needs and scopes of innovations in textiles taking the help of other branches of sciences and technologies, and urged the textile technologists and scientists to carry out research works in team having members from the different branches. Special Chief Guest of the occasion, Mr. Subhash Bhargava, Managing Director, Colorant Limited, Ahmedabad, stressed on the need and scope of the innovations in textiles in our country. He elaborated the differences in existing definitions of innovation depending upon the product and technology as well as the field of application taking simultaneously the examples of large industrial houses and small scale industries. Dr. N N Mahapatra, Guest of Honour of the programme and Vice-Chairman of the TAI discussed the role of industrialists, senior textile technologists and scientists, teachers and students of the different textile institutes in the innovations of textiles for their sustainable growth for the better life style of human being. He also spoke on the principles and methodologies of self cleaning textiles. Now it is no more a dream that textile clothing coated with titanium di-oxide nano-crystals will automatically remove food, grime, and even red wine stains when exposed to sunlight without any change in feel and look.

The key-note address was given by Prof. A K Samanta, Head, Department of Jute and Fibre Technology, University of Calcutta. Prof. Samanta presented the stages of innovations related to nanotechnologyas well as the scope of its applicationin textiles. He also highlighted the recent trends in functional finishing using nanoparticles in the development of technical textiles. Dr. D Nag, Director, National Institute for Research on Jute and Allied Fibre Technology (NIRJAFT), Kolkata, in his short lecture, mentioned the schemes and facilities available with various Government Departments for encouraging innovation and developments in textiles and introduced Dr. Kartick Kumar Samanta, Scientist of ICAR-NIRJAFT, Kolkata who has been selected as one of the top 50 (fifty) innovators in 2015 in "DST-Lockheed Martin India Innovation Growth

[a]E-mail: sadhan53@yahoo.co.in

Programme"for the promising technology on water-free sustainable colouration and functionalizationof white and dyed textiles, and garments. Mr. A K Mukherjee, the Hony. Secretary of TAI, while extending the vote of thanks to the honourable guests, could not restrain himself to utter some buzz words like electronic textiles, U.V. protected textiles, etc. in the context of innovations in textiles.

The first technical session of the day was chaired by Prof. Sumanta Bhattacharyya, Professor-in-Charge, Govt. College of Engineering and Textile Technology, Serampore. The first paper of the session on "Ayurvastra – a step ahead in wellness industry" was presented by Ms. Sreenanda Palit, Course Coordinator of Fashion Communication, NIFT, Kolkata. She described with attractive diagrams the innovations made in the wellness industry comprising alternative therapy, lifestyle changes and regimes for healthy life, nutrition supplements which originate from nature and medicine infused clothing – Ayurvastra. The concept of Ayurvastra or Ayurvedic clothing is to provide alternative clothing processed in natural, environment-friendly way without synthetic chemical. There are abundant herbs and medicinal plants available in India. Ayurvastras are generally handloom woven fabrics infused, dyed and processed with such medicinally rich herbs without using any power driven machinery. An intensive and innovative work on "Study of strength of jute fabric with special relevance on fabric assistance" was presented by Dr. Asis Mukhopadhyay, Department of Jute and Fibre Technology, University of Calcutta (Co-author: Dr. Samir Kumar Neogi). Strength of jute fabric is the most important quality parameter which chiefly depends on the strength of the constituent yarns, count of yarn and thread density. Fabric assistance indicates the rise in breaking strength of the constituent threads of a fabric as a result of interlace. In the third paper of the session, Prof. S K Sett, Department of Jute and Fibre Technology, University of Calcutta (Co-author: Dr. Asis Mukhopadhyay & Mr. Anshuman Banerjee) presented the very preliminary but innovative research work on Nettle fibre which is one type of wild bast fibre grown in the Himalayan range at an altitude of 3000 - 4000 ft. The theme of the paper was to characterise the nettle fibre after degumming through new techniques as well as to develop the scientific background for making suitable small scale machinery for better processing in order to manufacture quality end products from nettle. "Taj Mahal – an inspiration", an interesting as well as innovative paper was presented with colourful slides by Ms. Rafiya Tunnesa Begam, (Co-author: Dr. Sankar Roy Moulik & Mr. Mrinal Kanti Sarkar), Department of Silpa-Sadana, Viswa-Bharati, Sriniketan. As over the last few decades, textile printing sector has redefined itself as the contemporary fashion statement of the industry, this study was aimed at developing block printed home furnishing textiles inspired from the inlay work found on the walls of Taj Mahal. The hand printed home furnishings and saris are not only the value-added products carrying the cultural heritage but also have aesthetic appeal and recreate the peace, serenity and the other emotions in our mind that are awakened by the sight of Taj Mahal.

The post lunch technical session was chaired by Prof. Prabal Majumdar of the Govt. College of Engineering and Textile Technology, Serampore. The first paper of the second session – Application of textiles in agriculture - was presented by Dr. Asok Kumar Majumdar, Principal, Global Institute of Management and Technology. Based on his vast experience on the production and application of technical textiles, he established with data, the techniques of improving the (a) crop/plant growth by maintaining soil temperature and moisture, (b) protection of seeds, fruits and plants from birds, insects, and sun, and (c) higher yield. The most important requirements of textiles for agricultural applications are weather resistance, resistance to microorganism, stable construction and lightweight. Therefore, synthetic fibres like polyester and polypropylene are the better choice over natural fibres for agricultural textiles and the products may be woven, knitted or nonwoven in the form of fabrics, sacks, tarpaulins, hoses, ropes, conveyor belts, containers, pots, filters, etc. "Block printed silk sari inspired by terracotta" was presented by Ms. Arpita Das (Co-author: Dr. Sankar Roy Moulik & Mr. Mrinal Kanti Sarkar), Department of Silpa-Sadana, Viswa-Bharati, Sriniketan. Terracotta (red clay) is one of the most ancient manifestations of human creativity, a traditional art of Bengal. This "red clay" concept is the inspiration of the present research article. Abstract, geometric, floral and different dance forms present in the panels of terracotta temples have been transferred onto the silk sari through block print method for creating modern and vibrant look of the

sari for domestic and export sectors. It has resulted an aesthetic appeal, without compromising the quality and the rich cultural heritage of the country. Ultimately this study would be an attempt to 'economically' protect millions of rural artisans involved in the traditional process of block making and printing. The last paper of the session on innovation was presented by Prof. Sadhan Chandra Ray of the Department of Jute and Fibre Technology, University of Calcutta. Starting with the history of discovery and or invention of textiles since 36,000 B.C., he presented an extensive list of innovations in textiles till date. He also mentioned the effects of innovations on the quality and quantity of production, energy consumption, human life style and ultimately on the environment. According to him, innovations can be divided into six generations:

- upto 5000 B C- historical evidences only
- upto 1780 A D - dealing with natural fibres only (there was no sources of power other than human for running machinery/process)
- up to 1840 A D – power driven machinery using natural fibre only (there was no electrical control devices in the machinery/process)
- up to 1960 A D – introduction of various manmade fibresand high speed machinery (till the introduction of electronics)
- up to 1985 A D – introduction of technical textiles, speciality fibres and products, environment-friendly approach, etc. (till the introduction of CAD & CAM as well as robotics)
- till date (...what's not??) – human body organs out of textiles, fully fashioned garments without cutting and sewing, nanotechnology in textiles, etc.

In the valedictory session, Prof. S K Sett and Prof. P Majumdar made the critical analysis of the different deliberations of the day and encouraged the delegates, particularly the young participants from the Department of Jute and Fibre Technology, University of Calcutta for becoming a part of the innovations in textiles. Finally Prof. Sadhan Chandra Ray summed-up the whole outcome of the conference and extended the vote of thanks to everybody.