TEAM CSIR HAS REDEDICATED ITSELF TO CARVE OUT NICHES AND ACHIEVE GLOBAL BENCHMARKS IN RESEARCH, INNOVATION AND ENTREPRENEURSHIP SO AS TO ACCELERATE INDIA’S MARCH TOWARDS ACHIEVING SOCIO-ECONOMIC TRANSFORMATION.
Dear Doyens and Members of the Indian Leather Fraternity; Colleagues from CSIR; Mentors and Teachers, Colleagues and Friends! It gives us great pleasure in sending you our February 2019 edition of The LEATHER POST.

It was a hectic LEATHER WEEK 2019 and it is learnt from all sources that there is a great sense of optimism prevailing in the sector. CLE too has forecasted a 5.6% growth for the current financial year.

CSIR-CLRI actively participated in LEATHERWEEK 2019 events and we have some very interesting reports for our readers.

During 8-9 February 2019, CSIR Director’s Conference was held in Dhanbad wherein Team CSIR has rededicated itself to carve out niches and achieve global bench-marks in research, innovation and entrepreneurship so as to accelerate India’s march towards achieving socio-economic transformation.

CSIR-CLRI has been reaching out to the Industry in every sphere with its technologies and services. We hope to live up to the expectations of the Indian Leather Sector at all times.

25th February 2019

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Prof. Ashok Jhunjhunwala gave the Nayudamma lecture on “Electric Vehicles in India”. He pointed out the necessity of electric vehicles in India in the imminent future. In his lecture, he clearly explained the difference between electric vehicles that are currently deployed in developed countries and the type of electric vehicles that are required to be produced in India. He gave a glimpse of the statistical data pertaining to vehicles that are presently used in India and explained about the various challenges involved in making the electric vehicles affordable in our country.

He further added that the involvement of start-ups is of great significance in solving various challenges that could arise while manufacturing electric vehicles in the Indian scenario. He also emphasized the importance of tie-ups between start-ups and various industries.

He explained that start-ups have great potential to innovate and their tie-up with industry can help them to scale up considerably. He then explained about a pilot project of electric vehicle that was built in IIT-M incorporating innovative ideas. He emphasized the need for innovative approach within India to ensure sustainability in the transport sector. He concluded by saying that more focus is to be laid on implementing “Make in India” program with the help of R&D Institutes, which can in turn lead to improving our country’s GDP and generating more number of jobs. Post the Nayudamma Lecture, Dr.B.Chandrasekaran read out the citation and presented the same along with a memento to the speaker. Dr. Santosh Kapuria presented the plaque to the speaker.

Following the Nayudamma Lecture was the grand inauguration of the LERIG 2019. The inauguration ceremony commenced with the invocation song.

Dr. Sanjeev Gupta, Chief Scientist, CSIR-CLRI and Co-ordinating Convener of LERIG 2019 welcomed the Guests of Honour and the gathering. The Guests of Honour were Shri P.R.Aqeel Ahmed, Chairman, Council for Leather Exports (CLE), Padma Shri M.Rafeeqe Ahmed, Chairman, All India Skins and Hides Tanners and Merchants Association (AISHTMA), Mr.Bogale Feleke, Director General (DG) - Leather Industry development Institute (LIDI) and Shri K.R.Vijayan, President, Indian Shoe Federation (ISF). Post the welcome address, Dr.B.Chandrasekaran, Director, CSIR-CLRI presented Anga Vashtrams to the Guests of Honour symbolizing the traditional system of welcome. The LERIG 2019 was inaugurated traditionally by lighting of the kuthuvilaku by the dignitaries.
Dr. B. Chandrasekaran addressed the gathering and extended a hearty welcome to all the members. He expressed that CSIR-CLRI has been receiving enormous support from various Institutes till date, with the greatest support being received from the Council for Leather Exports (CLE). He stated that the Indian leather sector has received sufficient funding for implementing various measures including effluent treatment systems and Human Resource Development initiatives. He expressed that CSIR-CLRI and CLE have exhibited their solidarity in all respects including implementation of the above measures. He conveyed that LERIG 2019 is witnessing considerable number of participants from the Industry-Academia-Institute which stands as a strong evidence of the tripartite model the Institute basks upon.

The inaugural ceremony of LERIG 2019 witnessed presentation of various awards. One such award was the CLE’s MODEUROP 2019 & Fashion Trend Pool 2019 Awards coordinated by the India Fashion Studio, CSIR-CLRI.

Shri P.R. Aqeel Ahmed, Chairman, CLE was invited to deliver the Chief Guest address. In his address, Shri P.R. Aqeel Ahmed, conveyed that countries around the world look upon India as a potential opportunity to invest and set up business ventures. He expressed his immense happiness about the CLE MODEUROP & Fashion Trend Pool awards and CLE Design awards presented to business people and students. He highlighted the three watchwords - Fashion, Quality and Design that are of great significance in the industry today. He quoted that the mid-term foreign trade policy has placed leather sector next to that of textile sector which is highly appreciable. He emphasized that our efforts should be focussed towards improving the productivity of the leather and leather products sector in India, thereby leading to atleast 10% increase in exports in the next 2 years. Shri P.R. Aqeel Ahmed showcased the brochure of India Leather Week 2019 to the audience.

Next speaker was Mr. Bogale Feleke, DG – LIDI who commenced his speech about the role of leather products as important consumer products. He also quoted about the issues of increasing labour cost and
the need for design capabilities in the leather industry. He conveyed that Ethiopia is one of the fastest growing economies in Africa with a growth rate of 10%. He also conveyed that by virtue of Government initiative, leather industry in Ethiopia is supported by strict value addition policies. Ethiopia has undergone a major transition from exporting raw hides and skins to exporting only finished products. He said that this transition can be attributed to the twinning arrangement between CSIR-CLRI and LIDI. Many members from LIDI are currently undergoing their higher education at CSIR-CLRI. He also quoted about the various contemporary challenges to manufacturing in the leather industry which include reduction in energy, reduction in material consumption and reduced wastage. Support from Government and networking of the best minds in the industry are the key solutions to implementing cleaner technologies in the leather industry.

Dr M. Rafeeqe Ahmed, delivered the felicitation address where he quoted that in today’s scenario many materials are available as substitute for leather and people tend to go for such products whenever the purchasing power comes down. He quoted that our total exports of leather industry have come down compared to previous years and expressed that India should come out with suitable strategies to bring in more business into the country. He suggested that India should take needful measures to scale up its production in leather and leather products. He concluded by saying that the industry and institutes like CSIR-CLRI should take initiative to put India on top of the world roadmap with respect to leather sector.

Followed by this, Shri K R Vijayan, President, ISF and Managing Director, Good Leather Company addressed the gathering; he spoke about the close ties of CLE with CSIR-CLRI. He said that CSIR-CLRI has created an impact on the global as well as Indian leather industry. He expressed his appreciation and admiration for CSIR-CRI and how the Institute has gone hand-in-hand with the Indian leather industry at all stages. The role played by the Institute at every stage of development of the Indian leather industry is significant – right from implementing vegetable tanning, chrome tanning systems to modernization of the industry, setting up effluent treatment plants and incorporating design intelligence in leather and leather product industries.
AWARDS presented at LERIG 2019 included:

Sujatha Venkateswara Rao Excellence Awards have been instituted to honour student achievers and Scientists/ Technologists/ Engineers for their innovation that create a positive impact on the leather industry and recognize their achievements. CSIR-CLRI received the award under Technologist category for the path-breaking technology on “Waterless Chrome Tanning”.

Mecca Haji Abdul Majid Sahib Endowment Award was instituted in the name of Mecca Haji Abdul Majid Sahib, founder of the Farida Group in order to encourage the Leather Technology and Footwear Science and Engineering students of Anna University Dr M. Rafeeqe Ahmed in the year 1995. The award was presented to six B.Tech. students and two M.Tech. students for their excellence in their final year academic project dissertation during 2018.

Leather Chemical Manufacturers Association (LCMA) has instituted best project awards to encourage talented students of the Department of Leather Technology, Anna University- CSIR-CLRI. The award was presented to three B.Tech. students for the year 2018.

The B. D. Bhaiya Award was instituted by Mr. Manoj Bhaiya to encourage talented minds at the Department of Leather Technology of Anna University-CSIR-CLRI. The award was instituted in 2016 to award the best project thesis of the students of leather technology. The award for the year 2018, was presented to three B. Tech students and one M. Tech student for their exemplary project work.

The Nagappan Memorial trust has instituted “Nagappan Entrepreneur Award” during the 49th LERIG. This year the Nagappan Foundation’s “Outstanding Entrepreneur Award” was presented by Shri Chella Nagappan, Trustee, Nagappan Foundation to Mr. M.A.M Balachander, Partner, Winner Overseas for his significant contribution to leather sector.

Technical Session on “Futureist Manufacturing”
Manufacturing sector occupies a prominent position in developed as well as developing economies. Futuristic manufacturing plays an important role in global growth and innovation. The theme of the Technical session I of LERIG 2019 was “Futureist Manufacturing”. The Chairman of the session was Dr. B. Chandrasekaran, Director, CSIR-Central Leather Research Institute (CLRI) and the Co-Chairman of the session was Shri. N. Shafeeq Ahmed, Chairman, Indian Finished Leather Manufacturers and Exporters Association (IFLMEA).

The first presentation was given by Shri M. Raja Chidambaram, Director, URs Productively on “Industry 4.0 - Impact on Leather Sector”.

The next presentation was delivered by Shri Ashfaq Ahmed, Managing Director, Farida Group. His presentation was titled “Industry 4.0: Preparation for Sustenance”.

Shri Md. Sadiq, Chief Scientist, CSIR-CLRI made a presentation on “Mass Personalization Production – Tiny until you turn it on”.

Technical Session on “Energy Management”
A country’s progress from technological perspective largely depends upon energy. Efficient use of energy plays a critical role in sustainable development. The process of energy saving is referred to as energy management. Thus the next theme of the Technical session II of LERIG 2019 was “Energy Management”. The Chairman and Co-chairman of the session are Mr. Ato Wondu Legesse, National Co-ordinator, UNIDO and Shri K. R. Vijayan, President, Indian Shoe Federation (ISF) respectively.

The first presentation of this session was given by Prof. S. Iniyan, Institute for Energy Studies, Anna University on “Indian Energy Scenario”.

The second presentation of the session was delivered by Mr. Milind Chittawar, CEO, SEE-Tech Solutions Private Limited on “Energy Cost Saving Opportunities in Leather Industries”.

Mr. Prasanna Kumar Maduri, Campus Manager, Stahl India spoke on “Sustainability Initiatives in Leather Industry”.

The final technical presentation of the session was delivered by Dr. R C Panda, Senior Principal Scientist, CSIR-CLRI on “Role of Artificial Intelligence in Industry 4.0 – Application to Indian Leather Industry”.

Technical Session on “Energy Management”
Yet another important aspect of sustainable development is water management. Water is one of the important resources that is required for almost all process steps involved in leather manufacture. Thus the technical session III embarks on the theme Water management and Compliance, which was chaired and co-chaired by Dr. S. Sundaramoorthy, Former Engineering Director, Chennai Metro Water Supply and Sewage Board (CMWSSB) and Dr. Sajiv Anand, Senior Advisor, Solidaridad respectively.

Mr. Jochen Rudolph, Technical Director, Asia Pacific Lanxess delivered his speech on “Novel Tanning Technology – Deliming, Pickling, Basification free and Water Saving Technology”.

The next technical lecture was given by Mr. Silvana Storti, CEO, Europrogetti, Italy, on “Trending ZLD Technologies in Leather for future”.

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Dr. P. Saravanan, Chief Scientist, CSIR-CLRI spoke on "Compliance and Beyond Sustainability". Following the array of informative technical presentations, was the Panel discussion on the theme “Focus on Leather Sector for future”. Dr. B Chandrasekaran, Director CSIR-CLRI, welcomed all members for panel discussion. The following were the members who took part in the panel discussion – Dr. B. Chandrasekaran, Director, CSIR-CLRI, Shri. N. Shafeeq Ahmed, Chairman – IFLMEA, Mr. Ato Wondu Legesse, National Co-ordinator, UNIDO, Dr. S. Sundaramoorthy, Former Engineering Director, CMWSSB, Mr. Ramjee Yogasundaram, MD, Ramjee Leather, Mr. K. R. Vijayan, President, ISF and Shri R Selvam, IAS, ED, CLE.

The panel discussion started with Mr. Ato Wondu Legesse, talking about how leather and allied sectors are contributing to the economy of African countries. He also mentioned that the growth of leather and allied industries would be basically dependent on latest technologies.

Second speaker of the panel discussion was Dr. S. Sundaramoorthy who spoke about the importance of the minimum discharge of water and COD to minimize the environmental impact during leather processing. He stated the use of advance chemical technology which can reduce the sludge from dye effluent, which can in turn give a lead to the leather tanneries for effluent treatment. He concluded his speech emphasizing the need of improved technologies from the leather research fraternity.

The third speaker was Mr. Ramjee Yogasundaram. He spoke about International trade and its importance towards the economy of the country. He mentioned about the trade factor and its scope towards the dynamic implementation of trade practices. He explained about the interconnectivity between social compatibility, human safety parameters and human ethical values and the impact of the same on the society.

Mr. K. R. Vijayan was the next speaker and he emphasized on issues related to leather products and the dependency of the leather industry on foreign countries. He stated how new technologies can prove to be path-breaking for the issues faced by the industries and how academic system can participate in the process. He spoke about the advancement of academic syllabus to keep the students abreast with latest developments and knowledge.

Shri R Selvam spoke about three factors - Expansion in term of enlargement of knowledge of leather fraternity, Innovation in terms of research activity and Sustainability in term of revenue generation. These factors will result in the trinity of Academic-Research- Industry which can in turn contribute to the total GDP of the country. He emphasized on individual initiative, Government policies and social promptness for holistic development.

At last Dr. B. Chandrasekaran, Director CSIR-CLRI thanked everyone for their active participation in the panel discussion and sharing their valuable insights towards the theme.
As part of the JGYASA-2018-19, “Visit of CSIR-CLRI Scientists to Schools” was held at KV-No.2, Puducherry in Pondicherry University Campus on 1st February 2019. About 135 students from three schools viz., KV-No.1 Puducherry, KV-No.2 Puducherry and KV-Neyveli attended the program along with 6 escort teachers. The program started with an inauguration in the Auditorium, Bioinformatics Department, Pondicherry University. In his address, Chief Guest Shri. C. Mani, Deputy Commissioner, KVS-Chennai highlighted the importance of Jigyasa and opportunity for school children to interact with scientists with an objective to enhance their interest in science and appealed them to take advantage of this programme. The Principal KV No. 2 Puducherry, Shri Udayasooriyan thanked the CSIR-CLRI scientists for giving the students an opportunity to interact with them. Dr. T. Narsimhaswamy, Senior Principal Scientist, CSIR-CLRI thanked Shri C. Mani and Shri Udayasooriyan for all their help and support.

The programme was conducted in Bioinformatics Auditorium and Biotechnology Lecture Hall of Pondicherry University as parallel sessions. The event consisted of eight science and technology lecture demonstrations by CSIR-CLRI scientists encompassing leather, biology, chemistry and physics. The first science demo was by Mr. V. Karthik on Leather Processing and Products. He explained that the Leather processing is classified into four categories: 1) Pre-tanning, 2) Tanning, 3) Post-tanning and 4) Finishing and highlighted on all of these aspects. He explained each stage using bench model leather processing drum. He said that the unique property of leather is breathability, softness and durability. During the explanation he also highlighted the property of putrefaction. In contrast to hides and skins, leather is a permanently preserved material. The processing was followed by explanation on the products. He demonstrated the various leather products with the stitching of valet assisted by Mr. Arun Raj. He concluded his lecture by answering questions posed by the students in the class room.

Dr. Yasmin Khambhaty started her demonstration by explaining the need to isolate different kinds of bacteria and fungi. In addition to other areas, she also explained the need to isolate them from leather. The concept of isolating them by serial dilution was well explained by her. This was followed by an explanation of principle and procedure of Gram staining bacteria. She explained the results by demonstrating the procedure live by microscopic examination. Further, she also explained the concept of secondary metabolites and their extraction from bacteria. Dr. Yasmin showed the various pigment producing bacteria and the antimicrobial property exhibited on bacteria and fungi.
She also described the characteristics of antibiotics and testing of antibiotics and explained about the zone of inhibition. The students were quite excited and the demo concluded with answering their queries.

Dr. T. Narasimhaswamy explained about Polymerization and polymers, also known as plastics are defined as high-molecular weight materials (giant molecules). The polymers are made from low-molecular weight materials known as monomers. He called a few students and asked them to perform the experiment. The etymological meaning of polymer is many units and the monomer is single unit (poly- many; mer- unit; mono – single; mer-unit). Monomers usually consist of reactive functional groups like double bonds, triple bonds, hydroxyl, carboxyl, isocyanate etc. (functional groups). Students were excited to perform the experiments on their own and amazed to see the polymerization process.

The parallel demonstrations were held at Biotechnology Lecture Hall. Here the first demonstration was started by Dr. N. Ayyadurai. He showed the students a Foldscope - A portable, versatile and water proof paper microscope with magnification and resolution sufficient for imaging live individual cells, cellular organelles, embryos, swimming bacteria and much more. He explained that the Foldscope is so affordable and can be used anywhere to bring microscopy out of science laboratories and into the hands of people around the world. It is a result of merging principles of optical design and origami and can survive harsh field conditions, providing a diversity of imaging capabilities, thus serving wide-ranging applications.

Dr. Nitin Lobo on The Meissner Effect: Magnetic Levitation using a Superconductor. He introduced words like conductor, insulator, current, and resistance. Further, he explained about the relationship between resistance versus temperature in normal conductors and superconductors. He described the superconductivity related concepts such as critical temperature (Tc), resistance, persistence of current, effect of magnetic field on super conductor (Meissner effect), BCS theory and high Tc superconductors. Finally, he showed the demo of Meissner effect to the students; where a permanent magnet was levitated above YBa2Co3O7, a high Tc superconductor due to expulsion of a magnetic field from its interiors during its transition to the superconducting state by immersing it in liquid nitrogen bath. The demo evinced much curiosity in the students.

Dr. Sujata Mandal explained about the chromatographic separation that involves two phases, one stationary phase and the other mobile phase. The stationary phase is a porous solid (e.g., glass, silica, or alumina) that is packed into a glass or metal tube called as column. The mobile phase (liquid or gas) flows through the packed column. The sample to be separated is injected at the beginning of the column and is transported through the system by the mobile phase. She demonstrated the sample distribution according to their relative affinity for the two phases and separation of coloured chemical components.

Dr. R. Srinivasan made a demo on Carbohydrates: A Key Component for Growth. He started his lecture by introducing the word carbohydrate and explained about polysaccharide, disaccharide, monosaccharide, identification of them by physical and chemical methods. Starch (polysaccharide), sucrose (disaccharide) and glucose (monosaccharide) were chosen for the demonstration purpose and explained students about the Tollen’s reagent for reducing sugar and specific iodine test for starch. Students were enthusiastically involved to prepare those reagents and use them to differentiate between reducing and non-reducing sugars and identification of starch. A distinct silver mirror was formed by Tollen’s method for reducing sugar (Glucose only). He ended the lecture-cum-demonstration by clarifying the doubts raised by the students.

The event Jigyasa at KV-Puducherry was concluded with valedictory function where participation certificates for students were distributed. Also feedback from students and teachers were sought. Finally, the principal as well as the DC, KVS, Chennai region expressed their satisfaction about the program and thanked CSIR-CLRI for the meticulous planning of the event.
INAUGURAL SESSION

Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) in association with CSIR- Central Leather Research Institute (CLRI) organized an International Training Workshop on “Developing Key Parameters for Sustainability of Leather Sector in Developing Countries” during 28-31 January 2019 at Heritage Hall, CSIR-CLRI. This grand event was co-sponsored by Indian Leather Technologists Association (ILTA) and Leather Research-Industry Get-together (LERIG) Trust.

The workshop brought together various experts and stakeholders of the global leather industry to discuss about sustainability. The event witnessed participants from 13 member countries of the NAM S&T Centre including India, Bhutan, Cambodia, Egypt, Indonesia, Mauritius, Nepal, Nigeria, Sri Lanka, Zambia, Zimbabwe, Palestine and South Africa and students from Ethiopia who are currently a part of various academic programs at CSIR-CLRI. The participants of the workshop also included research associates from NAM S&T Centre and Scientists from CSIR-CLRI.

Dr.B.Chandrasekaran, Director, CSIR-CLRI delivered the welcome address. He extended a warm welcome to the Guests of Honour and all the International/ Indian delegates. Dr.B.Chandrasekaran explained about the transition of CSIR-CLRI from the nascent stage in the 1950s to the current level of having potential to collaborate with International institutes for the purpose of research and knowledge-sharing. CSIR-CLRI has helped various countries like Ethiopia, Kenya, Sudan and South Africa to set up research institutes. Apart from that, CSIR-CLRI has also taken up the task of capacity building and technology delivery (both environmentally and economically sustainable technologies) which showcase the deep-rooted expertise of the Institute in leather research and allied areas.

Prof. Dr. Arun P.Kulshreshtha, Director General, NAM S&T Centre addressed the gathering and commenced his speech by thanking Dr.B.Chandrasekaran, CSIR-CLRI for the cooperation lent by CSIR-CLRI in organizing this workshop. He recalled the long-term association of NAM S & T Centre with CSIR-CLRI and mentioned about the program on “Technologies for Value Realization of Carcass By-products in Developing Countries” organized by CSIR-CLRI and NAM S&T Centre under Leather Technology Mission in 2001. He briefed about the importance and unique properties of leather and stated the contemporary issues related to leather manufacture including pollutants released at every stage of leather processing and energy consumption.

Dr.Amitava Bandhopadhyay, Director General (Designate), NAM S&T Centre, during his address, emphasized that the concept of sustainability is one of the important and contemporary topics and is the need of the hour. He expressed that NAM S&T Centre is looking forward to organize many such events in emerging areas of science and technology. He encouraged the participants to come out with suggestions on the aspects which could be covered in the future workshops. He also expressed that NAM S&T centre wishes to give more importance to technology transfer between the member countries and other developing/developed countries.

Mr.N.R.Jagannathan, President, ILTA (South), spoke about the association of ILTA with CSIR-CLRI and explained about the activities of ILTA. He conveyed that programs like this will serve as eye-openers to members from various technical backgrounds. He shared his valuable experience of visiting various countries and tanneries across the world for procurement of leather. He expressed that a platform for interaction between technologists, members involved in production, marketing and sales is of great importance for knowledge sharing and also for rectifying issues that occur in various stages/ aspects of leather making. He motivated the participants to come out with novel solutions that add value to the various process steps involved in leather production, which could in turn be implemented in their respective countries.

Dr.G.Thyagarajan, Former Director - CSIR-CLRI graced the occasion as a special invitee and addressed the participants. He shared about his journey in CSIR-CLRI with a special mention about his official association with African countries. He spoke about the historical importance of CSIR-CLRI and explained that the Institute plays a vital role with respect to policy making for leather sector. He also enlightened the participants about the role of CSIR-CLRI in the breakthrough discovery of the triple helix structure.

Dr.J.Raghava Rao, Chief Scientist, CSIR-CLRI and Convener of the NAM workshop, delivered the vote of thanks. He expressed his profound gratitude to all the dignitaries, participants and the organizing committee members of CSIR-CLRI for their sheer efforts in organizing the workshop.

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The Technical Session - I of the workshop encompassed presentations on various aspects of sustainability, right from understanding the terminology of sustainability to various methodologies for promoting sustainability. The Lead speaker, Dr. P Saravanan, spoke on Comprehensive Sustainability Performance Index (ICSP) for Leather industry. While speaking about the Sustainability, he emphasized on the triple link between Social, economic and environment which will help in maximizing efficiency and reliability for higher quality of life.

The Technical Session - II witnessed presentation from the lead speaker Dr. N K Chandrababu on “Process Industries” and presentations covering different aspects of value addition in the leather value chain. Dr.N.K.Chandrababu, Chief Scientist (Retd.), CSIR-CLRI talked about three fundamental components to sustainable development: environmental protection, economic growth, and social equity. He focused on environmental protection strategies with special emphasis on 4 Rs, (Reduce, Recycle, Recover and Reuse).

The Technical Session - III hosted a lead presentation on Product Industries with special emphasis on Footwear and an array of presentations covering various aspects of the leather and leather product value chain in countries like India, Cambodia, Indonesia, Nigeria, Zambia and Zimbabwe. The lead presentation was made by Dr.B.N.Das, Chief Scientist (retd.), CSIR-CLRI on “New Technology Trends and Innovations in Footwear”. The presentation covered the concepts of product life cycle and state of the art technologies available at every stage of the product life cycle to deliver quality product. The presentation encompassed several interesting aspects including advanced materials like composites, nanoparticles and biomaterials that could be used for footwear manufacture. He also emphasized about the various resources required - space, manpower and other resources to meet the growing demands of the footwear sector.

The Technical Session IV The day 4 of the workshop witnessed a variety of presentations covering different facets of sustainability of leather sector. The session started with the presentation by the Lead Speaker Dr. S. Rajamani, Chairman, Asian International Union of Environment (AIUE) Commission, on “Sustainable Environmental Technologies Integrated with Cleaner Production–Recent Developments in World Leather Sector”. Initially, he presented statistical data on the availability of hides & skins per year, the average wastewater discharge per day and discharge of tannery solid waste and sludge during leather processing. Owing to the above mentioned issues, tanneries from US, Germany and other developed countries have shifted to Asian, North African and South American countries. He also mentioned that chemical usage, poor process quality and non-compliance to cleaner production are the main factors behind excessive waste generation.

The Technical Session-V Dr. J. Raghava Rao, Chief Scientist, CSIR-CLRI and Convener of the NAM workshop, delivered his speech on ‘Introduction to Best Available Technologies’. Dr. J. Raghava Rao commenced the lecture insisting on the
imminent need, which is, clean and green processing of leather. He mentioned that, out of the several steps involved in leather processing, pre-tanning alone accounts for nearly 65% of waste water and pollution load distribution. He then elaborated on the latest technological needs for the processes involved in leather manufacture to overcome the challenge faced in the current methods taken up.

Dr. K. J. Sreeram, Senior Principal scientist, CSIR-CLRI presented about “Sustainability Metrices – the need for standardization”. He spoke about the various constraints which have a bearing on the leather sector, with tools and equipment, raw materials and financials occupying the top three places. He elucidated about the current value chain of the leather sector and proposed a new value chain for the same which has the following elements in flow: Customer Demand, Competitive Strategy and Management System, New Products and Lifecycle Management, Manufacturing Operations (Inbound and Outbound Logistics), Supply Chain Management and Customer Satisfaction.

Dr. B. Madhan, Principal Scientist CSIR CLRI, gave his presentation on “International Outreach Programmes of CSIR-CLRI”. He commenced his speech by showing how CSIR-CLRI has become the hub of technology providers for the global leather sector. He explained about the role of CSIR-CLRI in UNDP and UNIDO projects in implementation of cleaner technologies and other international collaborations and alliances of CSIR-CLRI.

Technical Session-VI
Dr. T. Ramasami Former Secretary (S&T), Government of India, & Nayudamma-Abdul Wahid Chair Professor, CARE, CLRI delivered his distinguished lecture with redefining the concept of sustainability. The main focus of his lecture was on developing key parameters for ensuring sustainability of leather sector in developing countries which is the central theme of the Workshop. He first defined sustainability in terms of being bearable, viable and equitable. In order to attain sustainability, human actions should be responsible towards society, economy and environment. He spoke about the general principles/values that could attribute to the criteria of bearability, viability and equitability. Further, he connected general sustainability rules to the growth of the leather industry where sustainability is dependent on various challenges like raw material availability, cost of production to per capita income, cost of regulatory compliance to governance, etc.

CONCLUDING SESSION
The concluding session was chaired by Prof. Dr. Arun P. Kulshreshtha, DG, NAM, S&T Centre and co-chaired by Dr. B. Chandrasekaran, Director, CSIR CLRI. The concluding session witnessed the discussion and adoption of the Chennai Resolution of the Workshop where all the delegates actively participated and offered their comments/suggestions for reforming the resolution.
What happened at the THEME PAVILION at the 34th India International Leather Fair 2019 (31st January - 03 February 2019, Chennai Trade Centre)

ITPO, CLE, CSIR-CLRI in association with the Members of the Indian Leather Industry showcased ‘Trends & Technology’ through the GREENING THE LEATHER: Theme Pavilion at IILF 2019. Alongside, the Fashion Trend Pool Colour Trends for the Spring Summer 2020 season were also showcased.

The Theme Pavilion was the ‘gate-way’ to IILF 2019 with discerning visitors and exhibitors pausing at the Pavilion for insights into achieving environmental stipulations for the Indian Leather Industry and also gearing-up with information on the Fashion Trend Pool Colours for the Spring Summer 2020 season.

The Theme Pavilion radiated the dexterity of the Indian expertise in Design & Development of exquisite and high quality LEATHERWARE from Finished Leather through to LEATHER PRODUCTS. Jostling for space in the Pavilion were the ‘Best of Indian Merchandise’ from the crème de la crème manufacturers who cater to the world’s leading brands.

The Leather Post
The THEME PAVILION was a feast for the Leather Connoisseur and an eye-opener for the international buyers.
SUNNY SIDE UP!
Here’s a brief report on why IILF 2019 was successful. The success of IILF 2019 is merely because of the high level of INNOVATION in products, processes and components. Walking through a few select stalls:

• There is a high level of innovation in materials that are used to increase the comfort levels in Shoes.

• A ‘new and global innovation’ in a Hybrid PU material that is flexible with good abrasion resistance, resilient and lighter in weight by 25% brought to us by Classic Polymers from Delhi.

• Bonded fabrics and interlinings that are antiperspirant and well suited for school shoes presented by Versatile Enterprises.

• Quality felts from Dolfus Muller that are improved in technology for better sammying, setting, ironing and embossing operations. India is our biggest market confessed Mr Serge Schrembacher.

• Salt-less Tanning System from Sellam Chemicals who have brought in innovation in the wet blue itself through pickle-less chrome tanning.

• H&S (brand of K H Group) who have launched their Spring Summer 2019 collection for the Indian Domestic market with high fashion sports casuals and high heeled shoes for ladies.

• CSIR-CLRI has also demonstrated its Waterless Chrome Tanning Technology to the Brazilian Tanners.

• Artists way of finishing the SHOES.
• Development of colours for the Spring Summer 2020 season by the Chemical companies.
• New machinery for leather upgradation and texture development.
• Services for line balancing for factories.
• Global Testing Services including R & D as demonstrated by TUV Rheinland.

ITPO, CLE, CSIR-CLRI and the synergy partners had done a yeomen job by putting up a very buoyant and fruitful 34th edition of IILF 2019. In his remarks, Mr KR Vijayan, President of Indian Shoe Federation said "I have visited most of the stalls and there is a great sense of optimism everywhere. Exhibitors and Visitors are happy with IILF 2019.

In terms of disappointments, we were saddened to see certain exhibitors using the terminology SYNTHETIC LEATHER, PU Leather, man-made leather and leather coatings. These do not exist. They are mere SYNTHETICS and can never be compared to LEATHER!

THE SUNNY SIDE IS INDEED UP!
POWER & INTENSITY: the combined power of a group of things when they are working together that is greater than the total power achieved by each, working separately.
CSIR-CLRI provides quality testing services for the Indian leather and leather product industries as well as the non-leather footwear industries

The name SATRA has become synonymous with footwear. Through the 100 years, SATRA test methods have addressed the needs of comfort, safety and lasting performance of footwear worldwide. Qualifying the SATRA tests for a given variety of footwear has been seen as a positive sign of commitment to quality, safety and performance. To enable the Indian leather sector which caters to the footwear production markets of the West and also to help Indian footwear manufacturers with their testing needs as per SATRA methods, the CSIR-CLRI had enrolled as a member of SATRA more than a decade ago.

The erstwhile footwear testing laboratory of CSIR-CLRI and now the CATERS has been one of the 207 accredited laboratories of SATRA worldwide. To be in the list of SATRA accredited laboratories requires the laboratories to undergo rigorous auditing process by SATRA, every year. The audit comprises of documentation audit and the ability to test to particular test methods and standards. This year the audit by SATRA was carried out over two days during 7 – 8 February 2019. Mr. Oliver Chandler, Head of Quality Services (Designate) and Mr. Steve Rose, Business Manager, Laboratory Services were the auditors.

Compared to last year, when the audit was carried out as per ISO 17025:2005, this year the audit at CATERS was carried out as per the new method ISO 17025:2017 (General requirements for the competence of testing and calibration laboratories). A total of 298 SATRA (TM), ISO and EN methods figure in the accredited list of methods for CLRI-CATERS now, which includes a large number of those for safety footwear. Staff associated with CATERS were also checked for their competence in performing the tests. The auditors were highly appreciative of the quality of testing and competence of the personnel, which resulted in no corrective actions being recommended this year. SATRA audit also included the assessment of calibration status of the instruments, with the slip rig being calibrated by SATRA itself.

CSIR-CLRI, thus continues to provide quality testing services for the Indian leather and leather product industries as well as the non-leather footwear industries. The accreditation by SATRA also helps CLRI-CATERS to provide third party inspection services for various government bodies, thus enabling them procure quality products for their social welfare activities.

The Leather Post
A report on the visit of Dr G Nageswara Rao, Chairman, Atomic Energy Regulatory Board (AERB), Mumbai and Dr V Balasubramaniam, Director, Safety Research Institute (SRI), Atomic Energy Regulatory Board, Kalpakkam on January 25, 2019.

Dr G Nageswara Rao, Chairman, Atomic Energy Regulatory Board, Mumbai on his scheduled visit to Chennai on January 25, 2019 on various official engagements, expressed his desire to visit CSIR-CLRI to review the recently completed grant-in-aid project and visit the facilities that were employed to successfully complete the project. Dr V Balasubramaniam, Director, SRI, who is also the current Chairman, Committee for Safety Research Projects (CSRP) accompanied the Chairman, AERB along with Dr H Seshadri, Scientist D, one of the co-ordinators of the project and other officials from SRI. Dr C Muralidharan, Senior Most Chief Scientist Welcomed the Chairman, AERB and Chaired the meeting which was held at the Director’s Annex. From CSIR-CLRI side, Mr KC Velappan, Area Leader, Chemical Engineering Department, Dr C Lajapathi Rai, Head, Chemical and Biological Pilot Plants and Research Scholars of Thermochemical Laboratory attended the meeting.

The title of the project is “Reactive red-oil forming substances in Fuel Reprocessing- Effect of radiolytic products and Metal Nitrates”. The project was carried out in three successive stages of grants from the financial year 2012 onwards until 2017. The final report was submitted to CSRP, AERB in April 2017. Dr M Surianarayanan, Principal Scientist and Principal Investigator presented the salient features and outcomes of the project. The following are the major conclusions of the project: Tri-n-butyl phosphate is the workhorse of the nuclear industry as an extractant of choice for nuclear fuel reprocessing over five decades. One of the problems with the use of TBP is the formation of reactive red oil formation. Five major red oil related accidents were reported worldwide due to the unfavourable condition that has caused widespread damage to the reaction vessels and structures. Knowledge regarding the thermal hazards of TBP and its degradation products under different experimental conditions are scarce in literature. Our studies with the Accelerating Rate Calorimetry coupled with analytical characterization revealed read-oil formation at 75°C with 16 N HNO3. At reactor conditions butanoic acid (Red Oil) is formed via butyl nitrite as intermediate (Temp : 110-120 °C) (denitrator conditions). In presence of concentrated acid, butanoic acid (Red Oil) is formed via oxidation of butyraldehyde as intermediate at temps : 60-75°C. Thus, one of the major conclusions of this study is that the red-oil forming reactions are responsible for triggering accidents than the past understanding that the red-oil triggered the explosions.

The nature of hydrocarbon diluents does not significantly alter the products of the reaction. A comparison of ARC studies on irradiated TBP showed an early onset as to the normal TBP samples. In case of irradiated samples, the lowering of onset can be attributed to the absence of internally bonded water molecules (removed on radiolysis). The presence of metal nitrates did not accelerate the exothermic reaction between TBP and nitric acid for the suggested concentration of zirconyl and uranyl nitrate. The nature of hydrocarbon diluents does not significantly alter the products of the reaction. Batch studies revealed that red oil formation does not occur at room temperature even on prolonged storage.

The results of this investigation has led to seven publications in peer-reviewed journals, including six conference presentations and two Ph.D degrees. A future proposal on biodegradation of radionuclides from waste is proposed.

The Chairman, AERB and other officials appreciated the efforts of CSIR-CLRI. The Chairman, AERB and the team visited the Thermochemical Laboratory in Chemical Engineering Department of CSIR-CLRI.
The Chemical Research Society of India (CRSI) was established in 1999 as part of the 50th anniversary celebrations of the country’s independence. The main objectives of the CRSI are to recognize, promote and foster talent in Chemistry and Chemical Sciences and to improve the quality of Chemical Education at all levels. The CRSI organizes conferences, seminars, workshops, symposia and other related programs to facilitate and promote research in all branches of Chemistry. Currently, CRSI represents more than 2500 lifetime members, who participate in the study, practice, teaching and promotion of chemistry. The prestigious 24th CRSI National Symposium in Chemistry (CRSI NSC-24) was jointly organized by CSIR-Central Leather Research Institute (CLRI) and Indian Institute of Technology (IIT) Madras at CSIR-CLRI during February 8 - 10, 2019 under the auspices of CRSI. This symposium came back to the city of Chennai after 15 years. The objectives of the National Symposium in Chemistry are to provide a forum for the industry, scientists, teachers and students in the country to participate and discuss the recent advances in Chemical Sciences. This also aims to promote exchange of ideas and creates an opportunity for collaborative endeavors in frontier interdisciplinary areas. Dr. V Subramanian, Chief Scientist, CSIR-CLRI was the convener and Prof. G Sekar, IIT Madras was co-convener for the CRSI NSC-24.

Dr C Muralidharan, Chief Scientist, CSIR-CLRI welcomed the delegates while Dr. V Subramanian, convener of CRSI NSC-24 welcomed the delegates on behalf of CRSI NSC-24. Dr T Ramasami, Former Secretary, DST, Govt of India, and Former DG, CSIR, gave felicitation address. The presidential address was given by Prof. N Sathyamurthy, President, CRSI, and Former Director, IISER, Mohali, and he has also read the message from Bharat Ratna Professor, C. N. R. Rao, Founder president of CRSI. In this meeting, a book on “The Periodic Table” written by Prof. C. N. R Rao and Ms. Indumati Rao was released in connection with the celebration of the International Year of the Periodic Table 2019.

Prof. G Sekar proposed a vote of thanks. During the symposium about 35 special lectures including Medal and Invited lectures by eminent scientists and editors of prestigious chemical journals from abroad have also delivered lectures. In addition, 217 posters were presented by students apart from special lectures. Realizing the importance of discovery and innovation in Material Science and Technology, a thematic mini symposium on “Energy Materials” was also been planned during CRSI NSC-24. In this occasion, scientists from various parts of the country delivered lectures on materials science.

In addition to CRSI NSC-24, the 13th CRSI-RSC Joint Symposium was also conducted at IIT Madras, Chennai on February 7, 2019, which was jointly hosted by CRSI and Royal Society of Chemistry (RSC).

Since 2019 is celebrated as the “International Year of Periodic Table”, a special session on the periodic table of elements was organized at IIT Madras, Chennai. In this session, eminent scientists were presented motivating lectures to about 600 students from various schools of Chennai and around on 9th February 2019. Also, Prof. Peter Sadler, University of Warwick, UK delivered a special lecture related to the periodic table at Stella Mary’s College, Chennai on 6th February 2019, as part of CRSI NSC 24 and Jigyasa.
Brief report and Outcome of Visit to Tamil Nadu Physical Education and Sports University

Team from Shoe and Product Design Centre (SPDC), CSIR – Central Leather Research Institute (CLRI) comprised Dr. Saraswathy, Senior Scientist, Mr. R. Sathiyanaraj, Technical Assistant, Mr. Joel, Project Assistant, Mrs. R. Priyadharshini, Research Scholar had meeting with Registrar, Tamil Nadu Physical Education and Sports University (TNPESU), Prof. Grace Helena, Head, Department of Exercise Physiology and Biomechanics, Prof. Rajini Kumar, Department of Biomechanics, Dr. R. Venkatesan and Dr. P.K. Senthil Kumar, Department of exercise physiology and Nutrition, TNPESU to discuss about the proposed collaborative project titled “Design and development of athletic shoes for Indian Athletes” between CSIR-Central Leather Research Institute (CLRI) and Tamil Nadu Physical Education and Sports University (TNPESU) and to prepare the action plan of proposed project on 23rd January 2019 at Seminar Hall, TNPESU, Melakottaiyur, Chennai.

Prof. Grace Helena welcomed the attendees and gave introduction about the proposed project of CSIR- CLRI on Athletic shoe and briefed also about the previous meetings held at TNPESU and CSIR-CLRI regarding the same. She also highlighted that it’s an honor for TNPESU to get involved in this National project.

Dr. Saraswathy explained the objectives of CSIR-CLRI project on Athletic Shoe which involves biomechanical and anthropometric study of Indian athletes and the responsibilities of TNPESU in terms of selecting the suitable candidates for biomechanical study as well as anthropometry study in order to find the crucial biomechanical parameters which are required for designing a running shoe. She also emphasized that “2000 subjects are needed for anthropometric survey for arriving foot morphology of Indian athletes and shoe sizing data exclusively for athletic shoes”.

Registrar commented that at least 1500 samples are needed from each category wise age, gender and region. He committed that the students pursuing Ph. D and M.Sc (Biomechanics/Exercise Physiology) who have taken up the anthropometry training may conduct this survey.

Prof. Rajini Kumar added that working model for the survey can be designed from the pilot study which can be done with students of TNPESU itself and the same procedure can be followed in different regions of the state.

Prof. Grace Helena mentioned that the university can bring runners to the university from the affiliated colleges and also from associations to study the anthropometry.

Registrar expressed his views of extending academic, research and facilities collaboration between two institutes in the present MoU itself. Regarding the work plan, he suggested to get the quality samples, we need to recruit by assessing the level of participation of the athlete. He suggested organizing a tournament for long distant runners at TNPESU to gather them to collect anthropometric data as well.

Prof. Rajini Kumar added his opinion in terms of academic programs of TNPESU involving Scientists from CLRI and student’s internships at CLRI. He suggested classifying the subjects who run minimum of 10 km per week based on their running as professional runner or recreational runner.

Prof. Grace Helena summarized the points discussed and mentioned that according to the availability of Vice Chancellor of TNPESU and Director, CSIR-CLRI, MoU can be signed at the earliest at CSIR-CLRI and concluded the meeting with vote of thanks.

Discussion with Dr. Anup Adhikari, L4 Anthropometrist (ISAK):

Dr. Saraswathy met Dr. Anup Adhikari, during the workshop on Anthropometry which was going on at TNPESU on 23rd Jan 2019 and discussed regarding the anthropometric measurement requirements exclusively for designing a shoe and which highly impacts the kinetics and kinematics of running. After the extensive discussion the following parameters are finalized to be measured in anthropometric survey of Indian Athletes.
Dr N Nishad Fathima received “Tamilnadu Young Scientist award 2017” from Science City, Department of Higher Education, Government of Tamilnadu on 19 February 2019. Shri U Sagayam IAS, Vice Chairman Science City, Dr Mylswamy Annadurai, Vice President, Tamil Nadu State Council for Science and Technology presented the award.

About the award: This award is given in order to encourage and motivate young scientists to take up research in Science and Technology. The Young Scientist award is bestowed on Scientists below the age of 40. The award carried a citation and a cash prize of Rs.20,000/-. Five awards were given under Young scientist category in different disciplines, eight awards were given under Senior Scientist category and one award was given under Life time achievement category for the year 2017.

Dr J Raghava Rao received The Rotary’s Award for Vocational Excellence 2018-19 from The Rotary Club of Madras Midtown, Chennai on 4 February 2019

Visit of Delegates from China Leather Industries Association (CLIA) members

On 1st February 2019, a three-member delegation team had an interaction with CSIR-CLRI on tanning process, chemicals for leather process. The CSIR-CLRI technologies were explained to the visitors in detail.
CSIR-CLRI Shoe & Product Design Centre designed traffic gadgets for Greater Chennai Traffic Police

Mesh and Blue polyester material and full Blue polyester material, E-Challan holding cases in Blue and Tan colour, Breath Analyser holding case in Tan colour, Flash baton holder in Tan colour.

Mr. Shree Abhinav DCP Traffic (extreme right) at Commissioner office offered very positive feedback for the gadgets designed by CSIR-CLRI.

CSIR-CLRI conducted a workshop on “Footwear Pattern Making and Construction” for Customised, Hand Crafted Footwear at NID, Ahmedabad, Gujarat

A total of 17 students participated in the elective workshop training on the redesigning of the Gandhi chappal for the students who have opted Footwear as their elective subject at NID, Ahmedabad.

Delegates from Rwanda visited CSIR-CLRI on 20th Feb 2019

(In picture: Ms. Kampeta Sayinzoga, Director General, NIRDA; Mr. Steven Niyonzima, National Corodinator - Rwanda Resource Efficient & Cleaner Production centre and Mr. Fred Mugabe, Ministry of Trade & Industry, Rwanda with Dr B Chandrasekaran, Director, CSIR-CLRI and Team CSIR-CLRI)
Model survey conducted in connection with the baseline survey in Andhra Pradesh for leather Industries Development Corporation of Andhra Pradesh Limited (LIDCAP) Project

CSIR-CLRI has undertaken a project with LIDCAP for an inclusive growth and development of leather sector in Andhra Pradesh. As part of the project, holistic survey covering the entire spectrum of AP is being carried out by CSIR-CLRI. As part of the survey activity, a model survey was conducted during Jan 2019 to assess the availability of raw material source in Andhra Pradesh. During the survey, the project team interacted with representatives of villages and various stakeholders connected to leather sector in AP in the districts of Srikakulam, Vishakhapatnam, Vizianagaram, Kadapa, Prakasham, Nellore and East Godavari.

COBBLER ON WHEEL

Hon’ble Shri Chandrababu Naidu, Chief Minister of Andhra Pradesh launching the scheme of cobbler on wheel. Van interior designed and facilities arranged by CSIR-CLRI.
CSIR-CLRI

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