https://clri.org/

अंक Volume No: 11, संस्करण Edition No: 1; अगस्त August 2025

दि लेदर पोस्ट
The Leather Post

सीएसआईआर–केन्द्रीय चर्म अनुसंधान संस्थान
CSIR-Central Leather Research Institute

CSIR-CLRI signed an MoU with the Leather Sector and Skill Development Council

79 Independence Day Celebrations

Director's Message

Dr K J Sreeram
Director, CSIR-CLRI

Greetings and Namaskar to the Stakeholders of the leather sector

लेदर पोस्ट के प्रिय पाठको,

हम सीएसआईआर–सीएलआरआई में उल्लेखनीय गतिविधियों और उपलब्धियों को दर्शाते हुए अपने लेदर पोस्ट के अगस्त संस्करण को आपके समक्ष सहर्ष प्रस्तुत करते हैं। इस संस्करण में, आपको हमारे हाल के प्रकाशनों, महत्वपूर्ण घटनाओं और संस्थागत गतिविधियों का विस्तृत अवलोकन मिलेगा, जो चमड़े और संबद्ध क्षेत्रों में अनुसंधान और नवाचार के प्रति हमारी प्रतिबद्धता को उजागर करते हैं।

विश्व जल दिवस मनाने से लेकर हर घर तिरंगा 2025 अभियान में हमारी भागीदारी तक, हम स्थिरता के लिए विज्ञान और प्रौद्योगिकी को बढ़ावा देने के लिए समर्पित हैं। इसके अतिरिक्त, हमने सीमा शुल्क अधिकारियों के लिए कार्यकारी प्रशिक्षण कार्यक्रम और स्वतंत्रता दिवस समारोह पर अपडेट दिए हैं।

हम आपको प्रौद्योगिकी और ज्ञान साझाकरण में प्रेरक परिणामों की खोज करने के लिए आमंत्रित करते हैं, जो हमारे उद्योग में अंतर ला रहे हैं। हमारी पहलों में आपके निरंतर समर्थन और अभिरुचि के लिए आपका धन्यवाद। पढ़ने का आनंद लें!

We are excited to present to you the August edition of our LeatherPost, showcasing the remarkable activities and achievements at CSIR-CLRI. In this issue, you will find a detailed overview of our recent publications, significant events, and institutional activities that highlight our commitment to research and innovation in the leather and allied sectors.

From the observance of World Water Day to our participation in the Har Ghar Tiranga 2025 Campaign, we are dedicated to promoting science and technology for sustainability. Additionally, we have updates on our Executive Training Program for Customs Officials and celebrations of Independence Day. We invite you to explore the inspiring advancements in technology and knowledge sharing that are making a difference in our industry. Thank you for your continued support and interest in our initiatives.

Happy Reading!

Solar Active Nanocomposites for Removing Dyes and Microbes from Wastewater

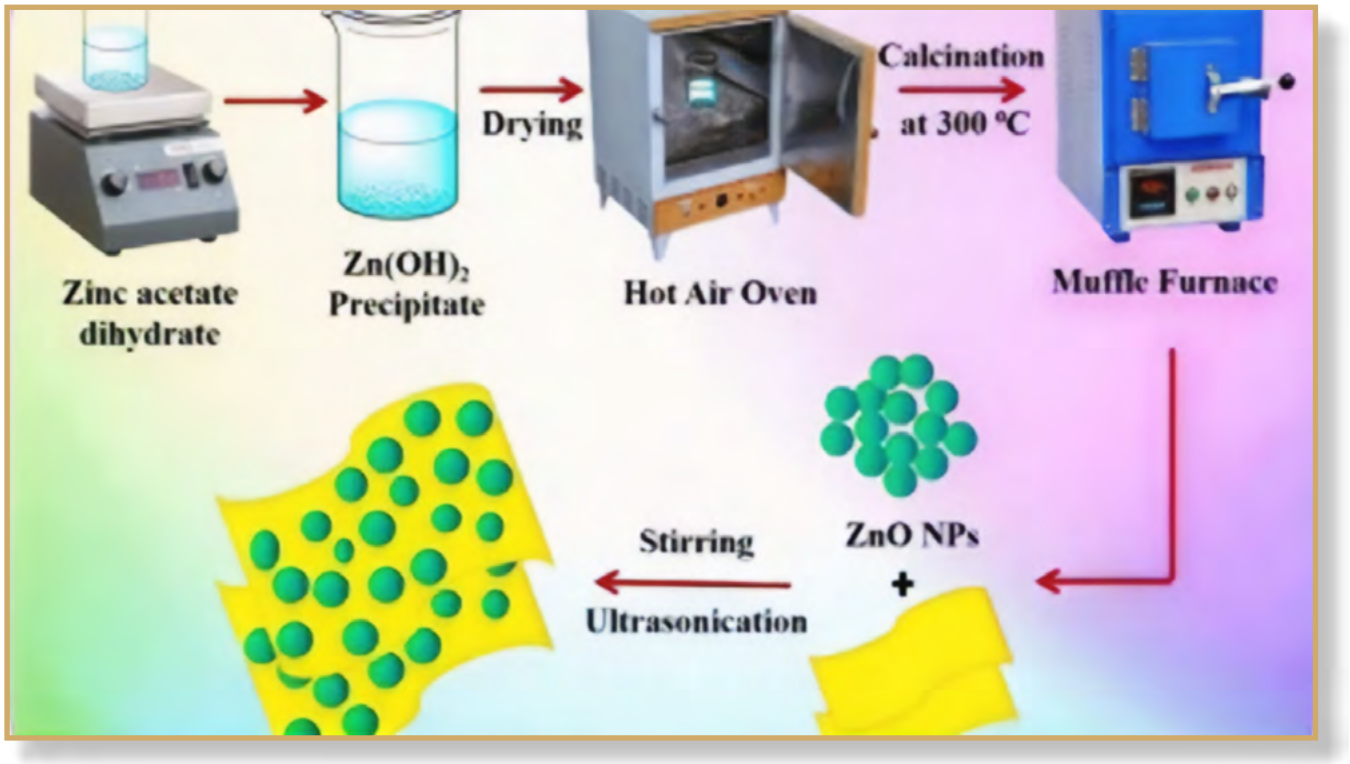
Use of dyes in industrial processes ends up in wastewater. Dyes that are persistent and toxic in nature are difficult to degrade using conventional wastewater treatment. There are sustained research efforts to develop efficient technologies for degrading dyes.

To address this critical area, researchers at CSIR-CLRI developed a nanocomposite containing zinc oxide and graphitic carbon nitride. Researchers have shown that this nanocomposite has simultaneously degraded dyes and microbes in wastewater in the presence of sunlight. Experimental results have confirmed that the degradation of methylene blue (MB), rhodamine B (RhB), and malachite green (MG) dyes in water under direct sunlight irradiation showed higher efficiency at pH 9. The synthesised nanocomposites also showed excellent antibacterial activity against gram-positive (Staphylococcus aureus and Bacillus cereus) and gram-negative (Vibrio alginolyticus and Klebsiella pneumonia) bacteria. The findings of the research are very encouraging as the nanocomposite has the potential to degrade organic dyes also with significant antimicrobial activity.

Narayanan Kanagaraj, Krishnan Senthil Murugan*, Murugan Sutharsan, Molly Thomas, and Thillai Sivakumar Natarajan*

Solar light-activated ZnO/g-C_3N_4 nanocomposites with improved water pollutant treatment and antibacterial efficiency.

Journal of Nanoparticle Research. volume 27, 2025, article no. 244
https://doi.org/10.1007/s11051-025-06419-7



'Village Pharmacy' to 'Outage of Myco-Frenzy' – Neem for Leather

Leather making is the oldest form of up-cycling pinnacled by tanning! On that note, tanning is a phenomenon in itself considering the sustainability quotient it brings to the table while preserving the vulnerable proteinous matrices yet architectural marvels such as skins/hides! However, an unvarnished definition of tanning can be: "*The mere postponement of the inevitable biodegradability of skins/hides from primarily the bacterial degradation*". Yes, barring the activity of collagenase, the chief enzyme secreted by bacteria, tanning does not offset the mycological ecosystem, a subset of microbiology. Although, sparsely biodegradable and more durable, leathers are still vulnerable to the countervailing forces of mycology. Thus, the biodeterioration of leathers never stops but is infinitesimally progressing! Perhaps, that is the bubble of longevity of anything emanating from the womb of the Mother Earth!

The unique breathability of leather products is attributable to their porosity principally. Leather wearables such as footwear, gloving, garments etc., thrive on this behaviour. Alas! The miraculous pores become mischievous abodes of spores of the molds in humid/moist conditions. Picked pelts, wet-blues and vegetable tanned leathers are inherently susceptible for fungal attack due to their 'boundless' bound water or moisture. When it comes to fungus, even chrome-tanned leathers cannot resist the biodeterioration! Furthermore, leather is a biological product which is rich in protein/lipids both naturally and artificially (added as glycerides during fatliquoring). Thus, leather acts as the perfect nutrient media for the fungal spores and hyphae to germinate and grow, especially during storage and shipping. Specific fungi colonies of Mucor and Aspergillus genera are linked with both biodeterioration of leathers as well as pathogenic risks to the wearers.

To fight this inevitability, tanners resort to toxic and non-biodegradable fungicides such as 2-thiocyanomethylthio benzothiazole (TCMTB), dimethylfumarate (DMF), N-OITZ (N-Octylisothiazolinone), OPP (Ortho phenyl phenol), PCMC (p-Chloro-m-cresol), Carbendazim, Merkaptobenzothiazole, TCP (tri-chloro phenol), p-Nitro phenol, etc., These substances can be damaging to both the environment and human health. At this juncture, a team of CLRI researchers propose a fatliquor produced through green route from Azadirachta indica (Neem) seed oil. They literally turned the '*problem*' itself into a '*sustainable solution*'! Yes, fatliquors were adding insult to injury in the traditional leather making. With Neem as a choice, the team rewrote the recipe and killed the problem! Neem, is renowned for its medicinal properties, earning the moniker "*village pharmacy*" due to its antiseptic, antimicrobial, anti-inflammatory, anti-ulcer, anti-malarial, and anticancer benefits. In this research, fatliquor was synthesized from Neem seed oil through sulphation and applied for fatliquoring of leather. The resultant leather was comparable with commercial leathers, showing enhanced lubricity and mechanical properties. High unsaturation (Iodine value often touching 100) and antifungal properties of the Neem oil combined and resulted in a novel, bio-based fatliquor for leather application, eliminating the synthetic and non-sustainable oil variants totally. Intriguing, the '*Village Pharmacy'* plays a '*Pharmacy in Tannage*', cures mold growth and puts fungi at bay in a sustainable manner!

Sivaranjani Venugopal, Yasmin Khambhaty

Greener route towards preparation of plant-based antifungal fatliquor for eco-conscious application during leather making

Journal of Coatings Technology and Research, 22 (3) 1099–1112, 2025;
https://doi.org/10.1007/s11998-024-01036-w

Publications from CSIR-CLRI

August 2025

1	Chinnappan, R; Khan, MA; Mohammad, T; Allwaibh, SM; Easwaramoorthi, S; Yaqinuddin, A; Devansan, S; Mir, TA; Hassan, I, A novel fluorescent probe, triphenylamine rhodamine-3-acetic acid (mRA) for the detection of Amyloid-β aggregates in Alzheimer's disease, Frontiers in Neuroscience, 2025, 19, 10.3389/fnins.2025.1653063
2	Vijayalekha, A; Sridhar, H; Srinivasan, S; Anumaiya, V; Anandasadagopan, SK; Pandurangan, AK, Integrative network pharmacology and experimental validation of rutin-infused collagen-hydroxyapatite scaffold for promoting osteochondral regeneration, 3 Biotech, 2025, 15 (9), 10.1007/s13205-025-04461-9
3	Huligujje, S; Duraisamy, DK; Shanmugam, G; Deshpande, AP, Bifunctionalization of Lysine with Aromatic and Aliphatic Moieties Converts It into a Super Organogelator in DMSO, Langmuir, 2025, 41 (32), 21435-21444, 10.1021/acs.langmuir.5c02025
4	Oluba, OM; Muthusamy, S; Subbiah, N; Palanisamy, T, Sustainable packaging using Aloe vera infused mango starch-wool keratin biocomposite films to extend the shelf life of mango, Scientific Reports, 2025, 15 (1), 10.1038/s41598-025-07945-z
5	Jana, S; Stephen, K; Samanta, D; Jaisankar, SN, 3-Phenyl-1H-pyrazole as blocking agent: one-pot synthesis of polyurethane nanocomposites from blocked toluene diisocyanate and single-walled carbon nanotubes, Journal of the Indian Chemical Society, 2025, 102 (8), 10.1016/j.jics.2025.101852
6	Vijayalekha, A; Anandasadagopan, SK; Gopal, T; Durai, S; Anumaiya, V; Pandurangan, AK, Fish Collagen-Based Bilayer Composite Scaffold Functionalized With Fibrin/Hydroxyapatite/Sodium Citrate for Osteochondral Tissue Engineering-In Vitro and In Vivo Studies, Journal of Biomedical Materials Research Part A, 2025, 113 (8), 10.1002/jbm.a.37977

World Water Week 2025 Celebrations at CSIR-CLRI"

CSIR-CLRI Celebrated World Water Day during 24-28th August 2025 on the theme '*Water for Climate Action.*

'During the week long celebrations, the Institute show cased its contribution in the following areas:

- Reduction of water-foot-print in Leather Sector
- Water Pollution control measures
- Namami Gange
- Reduction of water pollution and water foot-print in CLRI

Agreement Signed

MoU signed with National Dairy Development Board (NDDB)

The Memorandum of Understanding between CSIR-CLRI and the National Dairy Development Board (NDDB) was signed and exchanged at the headquarters of NDDB in Anand (Gujarat) on 30 July 2025.CSIR-CLRI will be conducting a baseline survey and prepare a DPR for setting-up of comprehensive centres in Gujarat for sustainable utilization of fallen bovine animals. The objective of this project is to increase revenue for the owners of these bovine animals. The team from CSIR-CLRI also interacted with the Chairman, the Executive Director, and other senior officials of NDDB.

MoU SIGNED WITH LSSC

CSIR-CLRI MoU with the Leather Sector and Skill Development Council (LSSC) CSIR-CLRI signed an MoU with the Leather Sector and Skill Development Council (LSSC) on 12 August 2025, at Kanpur Leather Cluster, Kanpur, for the development of curriculum, skill development, and upskilling for the Leather sector. Dr K J Sreeram, Director, CSIR-CLRI, Mr Mukhtarul Amin, Chairman, LSSC, and Mr Sanjay Kumar, CEO, LSSC, were present during the signing of the agreement. During the event Tanners, particularly Kanpur region participated enthusiastically in large numbers.

CSIR-CLRI 63rd Management Council Meeting

The 63rd CSIR-CLRI Management Council Meeting was held on 7 August 2025.

Dr K J Sreeram, Director, CSIR-CLRI welcomed Dr K Ramesha, Director, CSIR-CECRI and other members of the Management Council. During the meeting, the members had detailed discussions on the agenda and recorded it in the proceedings of the Management Council.

Executive Training Program for Customs Officials

CSIR-CLRI conducted a 3-day Executive Training Program for customs officials from 11 to 13 August 2025, on the subject "*Identification and Examination of Leather and Leather Articles/Products and Procedures during Import and Export*." In the programme 25 officials from the Department of Customs, Govt. of India, participated. This structured programme was aimed at enhancing the technical skills of the officials in distinguishing between leather and non-leather, goods during import and export procedures. The training was imparted by CSIR-CLRI scientists which included interactive discussions, demonstrations, and hands-on sessions. Participants appreciated the practical approach and clarity provided on key issues related to leather identification and export procedures.

Har Ghar Tiranga 2025 Campaign at CSIR-CLRI

CSIR-CLRI conducted Tiranga Rally 2025 in the institute premises after hoisting Indian tricolour on 15 August 2025 to commemorate Independence Day. Staff members, research scholars, and students actively participated in the Tiranga Rally organized in CLRI Campus. The objective of the rally is to promote unity, fitness, and national pride.

Official Language Workshop @CSIR-CLRI

CSIR-CLRI organized a workshop on the topic "*Raj Language Policy - Raj Language Act and Raj Language Rules*" on 11August 2025. In the workshop constitutional provisions related to Raj Language, Raj Language Act 1963 and Raj Language Rule 1976, Raj Language Sankalp 1968 were discussed. In this context, the annual program 2025-26, issued by the Department of Raj Language, was important in ensuring the effective implementation of Raj Language checkpoints were explained in detail.

Another Workshop on "*Official Language Policy – Official Languages Act and Official Languages Rules*" was conducted on 11 August 2025 AN, wherein constitutional provisions related to Official Language, Official Languages Act 1963 and Official Languages Rules 1976, Official Languages Resolution 1968 were explained to the participants.

Awards & Honours

Ms. Rasmi Morajkar, PhD student of Dr. Amit Ashok Vernekar, Inorganic and Physical Chemistry Laboratory, won the ACS Journal of Physical Chemistry A Best Poster Award at the International Conference on Frontiers and Advances in Chemistry: Theory & Synthesis (FACTS2025). This conference was held at Ashoka University, Sonipat, Haryana, during 1-3August, 2025. She was also selected for a flash presentation talk on her research work..

Indian Leather Technologists' Association (ILTA) Day Celebrations

Indian Leather Technologists' Association (ILTA) - South (A Member Society of IULCTS), in association with the Department of Leather Technology, Anna University, Chennai, and CSIR-CLRI, was organized on 14 August 2025. During the 75th ILTA Foundation Day Celebrations, ILTA Foundation Day Lectures were delivered by Mr. Habib Hussain, Former Chairman, Research Council, CSIR-CLRI and Director, AV Thomas Group, and Dr. Sanjoy Chakraborty, Former Principal, Govt. College of Engineering & Leather Technology, Kolkata. Mr Habib Hussain spoke on the topic "*Leather Technology: Today and Way Forward for Industrial Growth*" and Dr Sanjoy Chakraborty gave a overview on the "*Role of Leather Education in Nation Building*". Dr Sanjoy Chakraborty was felicitated and a Citation was presented on his superannuation by Dr KJ Sreeram, Director, CSIR-CLRI. Dr R Mohan, Secretary, ILTA – Southern Region, proposed the Vote of Thanks.

79th INDIA INDEPENDENCE DAY

CSIR-CLRI celebrated 79 Independence Day on 15 August 2025. Dr K J Sreeram, Director hoisted the National Flag at CLRI Campus, Chennai. To mark the occasion, a series of sports events and cultural activities were organized for the staff and the wards of CSIR-CLRI. Their participation was appreciated, and the winners were awarded the prizes by the Director.









2
1
3


2
1
3


2
1
3








79th Independence Day Celebrations at CSIR-CLRI Regional Centres

Regional Centre-Ahmedabad

Regional Centre--Jalandhar

Regional Centre-Kanpur

Regional Centre-Kolkata

Science lecture on Conducting Polymer Nanocomposites

Science Lecture on Conducting Polymer Nanocomposites by Dr. Sudip Malick, Senior Professor, School of Applied & Interdisciplinary Sciences, Indian Association for the Cultivation of Sciences (IACS) Jadavpur, Kolkata on 1st August 2025.

National Sports Day & FIT INDIA Pledge

Ministry of Youth Affairs & Sports, Department of Sports, GOI is organizing nationwide celebration of National Sports Day between 29th and 31st August, 2025 to commemorate the birth anniversary of Hockey Legend Major Dhyan Chand.

As part of this campaign, a FIT India Fitness Pledge was organised at CSIR-CLRI on 29.08.2025 at 11:30 a.m. at the Reception Hall of the Main Building.

The pledge was administered by the Director of CSIR-CLRI, and the staff members participated by taking the pledge.

Dr. K.J. Sreeram, Director, CSIR-CLRI, Chennai, participated in the 80th Management Council (MC) meeting of CSIR-CECRI held on 21 August 2025 under the Chairmanship of Dr. K. Ramesha, Director, CSIR-CECRI. The Council deliberated on the significant happenings and the path ahead for the Institute.

Director, CSIR- CLRI @ FDDI 'Institute of National Importance' DAY Celebration

The Footwear Design and Development Institute (FDDI), Chennai, celebrated Institute of National Importance (INI) Day on 5 August 2025. A day-long programme, focused on the theme "*Vision 2030 - Empowering Today, Transforming Tomorrow*," was organized which had participation from industry doyens, academicians, and alumni. Dr K J Sreeram, Director CSIR-CLRI participated in the panel discussion held on the topic of "*Role of FDDI in Industry*."

Launching of Specialty Chemicals by CSIR-CLRI

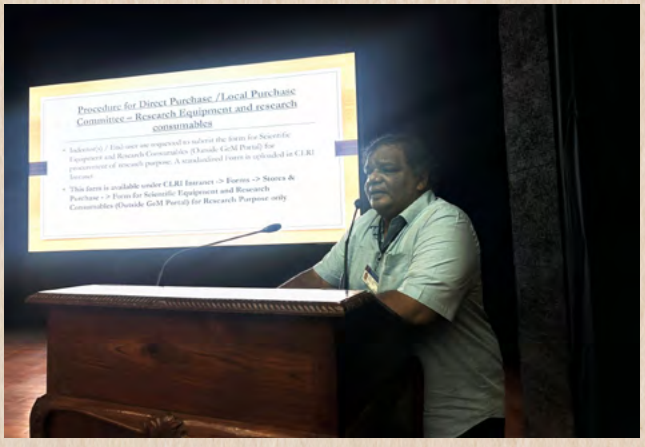
As part of the CSIR Mission Mode Project on Specialty Chemicals, CSIR- CLRI launched two specialty chemicals on 12 August 2025. This was aimed to address the need for flame retardant and cold crack resistance, ecological acceptance, specifically for upholstery leathers- An initiative towards Aathmanirbhar Bharat. The launch attracted a large number of participants from the upholstery capital, the Kanpur Leather Cluster, on 12 August 2025.

Inauguration of New Facility @ Kanpur

CSIR-CLRI, in association with Kanpur Leather Cluster (KLC), has commenced the full-fledged operation of its testing Centre - CLRI-CATERS at KLC, Kanpur, on 12 August 2025. This lab will now be functioning for the testing of safety footwear along with the wastewater analysis, serving the needs of the Kanpur industrial fraternity.

Orientation Programme on ACCESS Software

CSIR-CLRI has implemented Application for Comprehensive CSIR Enterprise for Stores & Supplies- ACCESS (ACCESS)- a web-based application for Supply Chain Management (SCM). ACCESS seeks to automate the business processes and dynamics of SCM, starting from raising Indent, creating Purchase Orders and the Daily Receipts Register to generating Inspection Report, making Stock Entry and Issue of Stores. An orientation programme for the new update: Stores GRIN and other features was showcased to users. Shri.K.P. S Ganapathy, Stores & Purchase Officer (SPO) made a detailed presentation on the new provisions for the users at CSIR-CLRI on 29 August 2025.



Editor-in-Chief: **Dr KJ Sreeram, Director, CSIR-CLRI**
Editor : **G Chandrasekar**
Editorial Team: **Dr R Srinivasan, Dr S Swarnalatha, M Vinodh Kumar, V Karthik**
Design **: G Sathiamoorthy**
Editorial Assistance **: K Thangarasu**
Visit: **https://clri.org** for the digital version of **The LEATHER POST**
For Feedback and Comments: Editor, The Leather Post; email: chandrag@clri.res.in

School Visit to CSIR-CLRI Regional Centre, Jalandhar

About 40 students and faculty from Marigold Public School, Aliwal, Gurdaspur, visited the CSIR-CLRI Regional Centre, Jalandhar on 21 August 2025. Shri. Abhinandan Kumar, Scientist In-charge, provided an overview of CSIR-CLRI's mandate. Other staff of the Centre made a technical presentation on leather, leather products, testing requirements, and Sustainable Development goals (SDGs). The testing facilities, including a 3D foot scanner, were demonstrated for the students with a focus on their interests in chromatography, spectrophotometer, distillation, fat extraction etc. An industry visit was also arranged to provide a detailed practical insight into leather processing.

Leather Design Department, NIFT, Kolkata, visited the CLRI Regional Centre, Kolkata

A group of 30 students from the Leather Design Department, NIFT, Kolkata, visited the CLRI Regional Centre, Kolkata on 22 August, 2025. Dr. Malathy Jawahar, Scientist-in-Charge, provided an overview of CSIR-CLRI and highlighted its research mandates. The students were also given a demonstration of the various steps involved in leather manufacturing and the different types of leather produced.

CSIR-Central Leather Research Institute

(CSIR Integrated Skill Initiative Training Programme)

CSIR-CLRI announces the commencement of the following placement oriented courses

Leather Processing

- Post Graduate Diploma Programme in Leather Technology
- Diploma in Leather Processing
- Short Term Executive Skill Development Programme in Leather Processing
- Integrated Skill Development on Quality Control Methods in Leather Manufacture
- Computerized colour Matching for Leather manufacturing

Leather and Leather products

- Post Graduate Diploma Programme in Leather Products Technology
- Quality and Visual Inspection of Leather and Leather Products
- Skill Training Programme in Leather and Leather-like materials for Emerging Entrepreneurs
- Short Term Executive Skill Development Programme in Leather Upholstery Manufacture
- Course in Fashion Design and Development for Leather Lifestyle Products

Leather Goods and Garments

- Diploma in Leather Goods Manufacture
- Short Term Executive Skill Development Programme in Leather Goods Manufacture
- Training Programme in Leather Goods Design (Manual and CAD)
- Diploma in Leather Garment Manufacture
- Short Term Executive Skill Development Programme in Leather Garments manufacture
- CAD for Garments

Allied Science courses

- Bioinformatics Associate/ Analyst
- Quality Control Chemist – Microbiology
- QA Chemist Equipment Validation - Life Sciences
- Nuclear Magnetic Resonance (NMR) Spectroscopy Analyst
- Quality Assurance Chemist
- Leather Biotechnologist
- Enzyme Technologist
- Structural Analytical Technologist
- rDNA Technologist

Leather Allied Sectors

- Short Term Executive Training Programme on Occupational Health and Safety for Leather and Allied (Product) Industries
- Short Term Executive Training Programme on Testing and Calibration for Leather Sector
- Repair, restore and maintenance of leather products
- Short Term Executive Training Programme on Waste Management for

Footwear

- Diploma in Footwear Manufacture
- Short Term Executive Skill Development Programme in Footwear manufacture
- Training programme in GAIT Analysis
- CAD for Footwear

Please visit https://clri.org/training.aspx for online / offline submission of duly filled in application

CSIR-CLRI 75

For more info:

Website : https://clri.org/training.aspx

Chennai : +91 44 24437109 / chord@clri.res.in ; Kolkata : +91 33 23292381 / clrikol@clri.res.in ;
Jalandhar : +91 18 12651306 / clrijal@clri.res.in ;
Kanpur : +91 512 2986936 / clrikpr@clri.res.in ; Ahmedabad : +91 79 25840352 / clriahd@clri.res.in

CAMPUS life @ CSIR-CLRI

CSIR-CLRI

Striving for Excellence and
Global Leadership in Leather Technology

https://clri.org