CSIR-CLRI
Setting stage for technology led Solutions for the Leather Sector

Workshop on “Environmental Sustainability of Ethiopian Tanning Sector”
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 March 2019 edition of The LEATHER POST.

CLRI’s home-grown Waterless Chrome Tanning Technology (WCTT) has re-gained international attention and the Ethiopian government has finalised a $1mn deal for technology transfer. Talks are on with Sri Lanka, Vietnam, South Africa, Kenya and Romania.

Colleagues have been winning awards and appreciation for their work at the Institute and on behalf of all staff and on my own behalf, I wish to extend my heartiest congratulations to the Award Winners.

The process for the preparation of the Business Plan (BP) for the departments which are engaged in operational processes and for the Institute for the forthcoming fiscal year 2019-20 has been initiated. Setting the strategic directions and preparation of the business plan will enable the institute to conspicuously understand the goals at different levels namely individual, team, project and department so as to ensure the overall performance of the institute.

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.

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<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Pg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Best Women Engineer Award in Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Environmental Sustainability of Ethiopian Tanning Sector</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>National Science Day celebrations</td>
<td>6</td>
</tr>
<tr>
<td>4.</td>
<td>Karigars Congress</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Design and Development of Innovative leather lifestyle products</td>
<td>9</td>
</tr>
<tr>
<td>6.</td>
<td>51st Management Council Meeting of CSIR-CLRI</td>
<td>10</td>
</tr>
<tr>
<td>7.</td>
<td>Presentation on ‘Design &amp; Development’ at Government College of Engineering</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>and Leather Technology, Kolkata</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Udayam Samaagam and Industrial Exhibition at MSME, Kanpur</td>
<td>12</td>
</tr>
<tr>
<td>9.</td>
<td>CAD for Garments: short term course</td>
<td>13</td>
</tr>
<tr>
<td>11.</td>
<td>Business Plan (BP) Debriefing Meeting</td>
<td>17</td>
</tr>
<tr>
<td>12.</td>
<td>CSIR-CLRI and MoEFCC - Workshop on Molecular Microbial Systematics</td>
<td>18</td>
</tr>
<tr>
<td>13.</td>
<td>Trade delegation from Niger</td>
<td>20</td>
</tr>
<tr>
<td>14.</td>
<td>SNIPPETS</td>
<td>21</td>
</tr>
</tbody>
</table>
Dr K Sri Bala Kameswari has received “Best Women Engineer Award in Environmental Engineering Division” from Institution of Engineers (India), Tamil Nadu Centre on 11th March 2019.
Leather Industry Development Institute (LIDI), Addis Ababa, Ethiopia in association with CSIR-CLRI has organized a workshop on “Environmental Sustainability of Ethiopian Tanning Sector” as part of the Twinning II programme undertaken by CSIR-CLRI for LIDI. The workshop was held on 28th February 2019 from 9 am to 1 pm at the Nega Bonger Hotel, Addis Ababa, Ethiopia.

The objective of the workshop is to sensitize the Ethiopian tanners on various cleaner processes and technological options available for enabling the Ethiopian Tanning sector to become Environmentally Sustainable. More than 75 stakeholders from Ethiopian tanning industry, EPA and LIDI participated in the workshop. The workshop started with welcome address by Mr Bogale Feleke, Director General, LIDI and opening remarks by Dr B Chandrasekaran, Director, CSIR-CLRI.

The technical presentations include ‘Ethiopian Tanning Sector - Current Scenario of Environmental Compliance’ by Mr. Anteneh Muheye, Environmental Technology Directorate, LIDI; ‘Technological Options for Sustainable Wastewater Management’ by Dr. J. Raghava Rao, CSIR-CLRI; ‘Waterless Chrome Tanning Technology’ by Dr. P. Thanikaivelan, CSIR-CLRI; ‘Electro-oxidation Technology’ by Dr. B. Madhan, CSIR-CLRI and ‘Roadmap for Sustainability of Ethiopian Tanneries’ by Dr. P. Saravanan, CSIR-CLRI. Finally, DG, LIDI and Director, CLRI moderated the discussions.

The tanners were highly appreciative of the technologies presented by CLRI and they were looking forward for a Road Map for the Environmental Sustainability of the Ethiopian Leather Sector.
During the presentation it was highlighted that Waterless Chrome Tanning technology had been demonstrated successfully at commercial scale in about 8 tanneries for about 13 bulk lots. Similarly, enzyme assisted unhairing was carried out at commercial scale in about 3 tanneries. Electro Oxidation technology at semi-commercial scale was successfully carried out in two tanneries. Ethiopian tanners requested expediting the implementation of the cleaner technologies particularly waterless chrome tanning technology, in order to comply with the chromium discharge. Production manager from M/s Colba tannery commended highly the Waterless Chrome tanning technology and successful demonstration of enzymatic unhairing and Electro Oxidation technology in their tanneries, and he requested immediate implementation of Waterless chrome tanning, enzymatic unhairing and EO technology in their tannery. Leathers processed following the integrated process of enzymatic unhairing and waterless chrome tanning technology was presented to the Ethiopian tanners. Salt recovered after solar evaporation of soak liquor treated by Electro Oxidation was also placed for display.
National Science Day Celebrations in CSIR-CLRI
28th February 2019, CLRI Campus

National science day was celebrated in CLRI on 28th February, 2019. Along with staffs and students from CLRI, a number of students from Stella Maris College, MGR Janaki College of Arts and Science for Woman and KV CLRI participated. The inauguration programme was started with the welcome address by Dr. C. Muralidharan, Chief Scientist, CLRI. He particularly highlighted the significance of National Science Day. Chief guest of the programme, Professor G. Krishnamoorthy, FASC, FNA, INSA Professor, Anna University stressed the importance of basic science in research. Guest of Honor, Professor P. Karthe, eminent biologist from Madras University stressed the importance of young minds in future Scientific development of our country.

The second part of the programme was the Science seminar by the eminent researchers in chemistry and biology. Dr. V. Subramanian, Chief scientist, CLRI, chaired the session and introduced the speakers. First, Professor Krishnamoorthy talked about the chemistry in biology to stress the importance of molecular motion in life. He particularly highlighted how molecular spectroscopy in general and fluorescence spectroscopy in particular has become very powerful in providing solutions to intricate problems in physical biochemistry. He has also presented an important discovery from his own research group in TIFR, Mumbai, which aimed to find a single mismatch in DNA base pair by fluorescence spectroscopy. After the presentation, several school students interacted with the speakers to clarify their doubts.
The next speaker was the eminent crystallographer Professor Karthe. He delivered a talk with a title “Protein Structural Biology” which covered basic information about protein structure, crystallization, x-ray data collection, structure determination and validation. In this particular field of research, he emphasized the contributions of Professor G Ramachandran, who was incidentally the student of Professor C V Raman, the great scientist behind the National Science Day celebrations. Finally, the audience was thrilled to know the contribution of the speaker in solving the structure of a protein which was unsolved for eighty-five long years.

“The programme ended with the vote of thanks by Dr N. Ayyadurai, one of the organizers. He highlighted the contributions of Dr. Subramanian, Dr. Narasimhaswamy, Dr. Debasish Samanta, Dr R Srinivasan, personnel from PRO section, canteen, hindi section, all other administrative and engineering sections and student volunteers in organizing the programme”
The Director General, MPCST requested Shri. S. Mathivanan, Senior Principal Scientist, SPDC, CLRI to participate as an invited expert under Leather Crafts theme at 8th Karigars congress held between 6th and 7th March 2019 at Bhopal, Madhya Pradesh. The primary objective of this congress is to invite the karigars hailing from various themes and to provide them the knowledge that necessitates for improving their profession as well as their socio-economic status. Around 300 karigars drawn across the state of Madhya Pradesh had participated in this congress. The congress was inaugurated on 6th March 2019 with the presence of eminent people.

The major themes were Metal Crafts, Pottery, Bamboo Crafts and Leather Crafts. The experts specializing on these crafts were advised to handle classroom sessions wherein the exchange of knowledge between karigars and experts took place effectively. The existing status of karigars was understood through discussion and experts devised a road-map for improvising the capabilities of karigars to fetch higher value returns for betterment of their livelihood. This congress creates a platform especially for karigars to look for promising opportunities in their respective field of interest. The participation of youth from karigars community adds value and importance for the organization of the congress and further, it signifies meaningful solution for empowering karigars to become entrepreneurs of the future.

MPCST organized a brain-storm session on the second day of the congress with the participation of higher officials of the council and the experts specialized on various themes. Under the theme of Leather crafts, the appropriate technology for the progress and empowerment of karigars of Madhya Pradesh has been deliberated. It was emphasized that the karigars should not be advised to engage in the produce of general type of footwear ideal for common people. Since the common footwear demands stiffer competition, the karigars may not be capable enough to challenge with the existing manufacturers and the present market trends. The strength of karigars is their accomplished skills on crafting the products and it is the common phenomenon for any traditional products emerging from the artisanal clusters in our country.

An idea of “Think out of box concept” has been felt as the need of hour for transforming karigars with high level of confidence and competence to face the challenges of the future. It is imperative to explore the strength and capabilities of karigars of Bamboo Crafts blending with leather crafts. The new products may be developed using the composition of bamboo and leather with creativity for new marketing avenues. The leather composing with textile fabrics for interior furnishings has also been stressed in the meeting. The products being emerged from clusters of karigars should be solely new and innovative and these products should draw the attention of customers with inspiration and energy. Besides, the karigars should be imparted skills to design and develop “Customized Footwear” with the technical support and guidance of SPDC, CLRI. These ideas were welcomed by the attendees including the experts from other domains like Metal crafts, Bamboo Crafts and Pottery.

MPCST officials are overwhelmed with CLRI’s presentation and also assured of joint-venture collaboration with CLRI to seek for all technical consultancy services and thus, empowering the karigars to technologically as well as socio-economically forward in the state of Madhya Pradesh.
Council for Scientific and Industrial Research (CSIR), Department of Science and Technology (DST) Govt. of India, had jointly organised seminars focused at local population and industries to take up technology developed by CSIR. As part of this, CSIR-Central Leather Research Institute (CLRI) had initiated a workshop cum inauguration of the Common Facility Centre for the project titled “Design and Development of Innovative leather lifestyle products in combination with ethnic textile material and natural fibres of north eastern part of India for the self-sustainability and socio economic development of local population and MSME sector”. The seminar focus was to create awareness among the MSME’s, self-help groups and local people about the value addition to the ethnic textile materials and potential available for the combination products. The event was conducted on 08th March 2019 at Skill Development training centre, CSIR-NEIST, Branch Laboratory, Imphal, Manipur.

Inauguration & Lighting of Lamp as traditional mark of inaugurating the event by the dignitaries.

- Mr.K.Karthikeyan, CSIR-CLRI delivered the Inaugural address at the workshop.
- Prof.N.Mohendro Singh, Former Member, Steering Committee, NER Vision 2020, Chief Guest of this seminar addressed the gathering on the importance of setting up new industries in the region and the upliftment would be achieved only by the empowering of women in NE Region. Role of science and technology would play a major part by conducting such kind of workshops. Creativity of Manipur should be tapped with new technology in product development sector.
- Prof.N.Mohendro Singh, dedicating the sewing machines at the Common Facility Center.
- Dr.Nimai Singh Former IAS, Govt. of Manipur stated that fashion products are high in demand and ministry is also helping in supporting the setting up factories. Strategy need to be planned in development of manufacturing sector in the region. Industrialisation plays a major role in upliftment of the society.
- Dr.H.B.Singh, In-Charge, CSIR-NEIST, Brach Laboratory, Imphal, Manipur, in his talk discussed about the common facility centre for training cum production at the establishment. He requested the participants to make use of the facility. The facility was for the local residents to use for the various product development activity.

Participants having hands on experience on the sewing machine.
**Workshop on Product Design**

The second session of the day was on the workshop was about understanding the trainees and also the market in the Imphal. Details about the training programme were explained to the participants as well the products were displayed for them to better understand. The various factors on the costing of products and their marketability were also discussed to the participants. Tailor made course on the stitching and product making was requested by the participants.

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**51st Management Council Meeting of CSIR-CLRI held on 7th March 2019**

The 51st Meeting of the Management Council was held in CLRI on 7th March 2019. It was voiced that MC agenda is to facilitate Science. Director CLRI welcomed the members. Remarks were offered by Dr Santosh Kapuria and Shri AK Goel. Member Secretary, Shri DVS Sastry presented the agenda for the MC meeting.
Government College of Engineering and Leather Technology celebrated its centenary year on 11-03-2019. On this occasion a three-day seminar was conducted staring from 09-03-2019 to 11-03-2019 at Eastern Zone Cultural Centre, Salt Lake, Kolkata, West Bengal.

The inaugural session on 10-03-2019 was on Fashion and Forecasting of Leather Products. The session was chaired by Shri. Tapan Nandi, Director & Co-Founder, Munai’s Creation and the Lead speakers included Shri Rajdeep Das, Director, Strong Roots, Kolkata and Shri Shri.K.Karthikeyan, Senior Scientist, Shoe and Product Design Center (SPDC), CSIR-CLRI, Chennai.

Mr.K.Karthikeyan, Senior Scientist during his lecture delivered on topics starting from product development of hand bags and garments, new materials and various consultancy activities at SPDC, CSIR-CLRI.

Highlighted the Design and Development in the following area:

- Chicken Feet Leather Products.
- Ethnic Textile and Leather Combination products.
- Futuristic Leather Lifestyle products.

He emphasized on the role of fashion and Product Development in current scenario especially in the Indian market with respect to leather sector. The new entrepreneurs enrolling in the product development sector is on the high. He discussed in detail about the startups in CSIR-CLRI especially in the area of product development and the facility created in the campus for the development.

He also discussed about the various training programmes being conducted in CSIR-CLRI for the young generations to take up in the area of product development at his center.

Shri Rajdeep Das, highlighted his journey in to the footwear industry and now in role of established entrepreneurs in Kolkata Region. He discussed on the various lifestyle accessories and furniture areas that his company is catering in Indian market.

Shri Tapan Nandi, Concluded the session with his lecture by emphasizing on the role of product design and Development, sustainability of leather goods industries and the new materials in products.
Ministry of MSME in association with State Industry Department, UP organized a three-days Udayam Samaagam and Industrial Exhibition from 6th to 8th March, 2019 at MSME Development Institute, Kanpur. The main theme of the exhibition was on Leather, Leather Products and accessories. Dr R Aravindhan, Senior Scientist and Dr S Sundarapandiyam, Scientist attended Udayam Samaagam and made presentations.

Dr R Aravindhan presented about the CSIR-CLRI’s “Waterless Chrome Tanning Technology”. In the presentation, the advantages of the WCTT and the importance of absorbing this new technology for the benefits of both the tanners as well as society by protecting the environment were highlighted. Dr S Sundarapandiyam presented on the topic Zero Liquid Discharge (ZLD). In the topic, he presented in detail about the ZLD through Electro oxidation technology for treating the tannery wastewaters and discussed about the technical details & possibilities of promoting the technology to Kanpur-Unnao cluster industries in order to eliminate the environmental threat to the tanning clusters.

Apart from the presentations, CSIR-CLRI also had a stall at the venue ground. In the stall, there were display boards on various technologies such as waterless chrome tanning process, solid waste management, leathers from unexplored sources, wastewater treatment, combination products made out of North-East Ethnic textile and leather, etc. Also details of the training and courses offered were also displayed in the stall.
Pattern design/ engineering is a niche element in the apparel design and production. Conventional, manual methods of pattern designing and grading requires skilled personal and time consuming. Use of computer aided design (CAD) systems has rendered much of the above exercises simple and precise. Alterations/modifications, repeated routine operations at the touch of the key, efficient and interactive marker and costing layout, plotting and cutting of the graded patterns are some of the salient features of the CAD systems for apparel design.

The other significant advantages are

- Material optimization
- Lead time minimisation
- Enhanced storage and quick retrieval
- Production planning
- Costing analysis

A new batch of the CAD for Garments short term course commenced at Shoe & Products Design centre, CSIR-CLRI on 6th March 2019. Two candidates (industry sponsored/ freelance) enrolled for this programme.

The curriculum of the programme includes:

- Introduction to computers
- Pattern digitization
- Pattern design using Gerber Garment Technology (GGT) AccuMark software
- Pattern grading
- Marker making, cost lay plan
- Pattern plotting and pattern conversion tools.
Following points are highlighted in the presentation:

Introduction:
The Performance of runners depend on various factors like food, training, physical fitness and the athleisure they wear during the session. The main athleisure that plays a vital role in enhancing the performance are the shoes. There are different types of shoes available for each activity like walking shoes, running shoes, soccer shoes, basketball shoes and so on. Though walking and running pattern are different for each individual most of the participants preferred same shoe model for walking and running in a prospective study where forty-one subjects participated to identify the shoe preferences (Kong and Bagdon, 2010). Thus we have designed our study in such a way that analysing the gait of selected subjects using different running shoes would give us the shoe preference for running activity as well.

Manufacturers claim that their domestic brand shoes improve the performance of athletes, but there is no evidence for this claim available in literature so far. So, this study of evaluating the shoes using biomechanical test will be useful for the manufacturers to support their claim and improve their design in future. Once the biomechanical tests are done and then redesigning is proceeded, then the shoe prescription will be evidence based one which is not a current practice.

Methodology
Subjects
Four male subjects who are physically fit and run regularly wearing running shoes are recruited for this study. The mean age of the participants is 40.25 ± 8.04 years with a mean weight of 78.55 ± 8.62 kg and an average height of 175.5 ± 10.29. The mean body mass index of these participants is 25.43 ± 0.83 kg/cm².

Biomechanical Test
All the four subjects underwent physical assessment by a trained physiotherapist followed by a set of biomechanical assessments which includes body composition analysis using IOI 353 Body Composition Analyser (Jawon Medical, Korea) and plantar pressure measurement to diagnose the existence of postural and walking alterations using multiple plates P-Walk system in barefoot condition (BTS Italy). These two tests are done to screen the subjects who are suitable for the study. Then inertial sensor (G-walk, BTS Italy) analysis was done where time and space related parameters will be analysed while walking. G-walk was combined with electromyography (EMG) where muscle activity of selected muscle group will be recorded while walking. The selected muscles are Tibialis anterior, Peroneus longus, Medial gastrocnemius, Rectus femoris and Semitendinosus. The ground reaction force was measured using force platforms by following Digivec protocol. Plantar pressure while wearing shoes was measured using instrumented Treadmill (Zebris, Germany).
Biomechanical analysis are done in four conditions i.e., Barefoot (B), Own Shoes (OS), Indian brand running shoes (INB) and International brand running shoes (ITB) on each subject.

Results and discussion

Inertial Sensor Analysis

The time and space related parameters are measured using the inertial sensor based device. The propulsion index denotes the ability of the footwear to propel the body in the direction of gait. An increase in the propulsion index of the ITB was observed compared to rest of the experimental condition. The double limb support duration of the ITB is the lowest compared to rest of the experimental conditions. The stride duration of the ITB is longer when compared to rest of the experimental condition. There is no much difference between the stance and swing duration between the four experimental conditions. There is a reduction in cadence of the ITB during comfortable own phase walking compared to other three experimental condition. Longer stride duration along with reduced double limb support in ITB is the effectiveness of the ITB.

Force Analysis

The general force profile score is seen lowest in the barefoot followed by a gradual increase in ITB, INB and OS respectively. The Vertical GRF force profile score is seen lowest in the barefoot followed by a gradual increase in ITB, INB and OS. The propulsive force in the anterior posterior direction of Ground Reaction Force is increased in all the three shoes compared to the barefoot due to the known fact that outsole material influences gait.

Electromyography

10 channel EMG data was collected for 5 muscles in both left and right leg from two subjects in four conditions at their own walking speed.

Tibialis anterior (TA)

Barefoot walking shows good activity of tibialis anterior during initial stance in both the subjects. Walking with running shoes shows a reduced TA activation in the initial stance of all the three experimental footwear. Walking with shoes also shows peak activation during the late stance phase of the gait cycle. The INB and ITB shoes showed similar pattern of peak TA activation during late stance in both the subjects. The OS however showed difference in TA activation, Subject-1 showed TA activation in the initial stance similar to barefoot walking, whereas Subject-2 showed activation pattern similar to rest of the experimental shod condition. This is due to difference in brands of own footwear of the participants.

Peroneus Longus (PL)

PL activity of Subject-2 shows a difference between the barefoot walking and shod walking, but among the shod walking there was no difference. PL activity of Subject-1 shows difference between barefoot and OS whereas the ITB and IB shoes show similar pattern of muscle activation.

Medial Gastrocnemius (MGA)

Barefoot walking shows activity of MGA during initial stance phase which is the normal activation pattern. Walking with shoes shows a delay in the MGA activation in both the subjects. The activation occurs at late stance phase. Walking with shoes shows a delay in the muscle activation almost in the late stance phase of INB and ITB shoes. The OS however showed difference in MGA activation, Subject-1 showed MGA activation in the initial stance similar to barefoot walking, whereas Subject-2 showed activation pattern similar to INB and ITB.

Rectus Femoris (RF)

The RF muscle activity pattern for Subject-1 is seen during initial stance and for Subject-2 during late stance phase in both the feet on barefoot condition. Subject-1 shows RF activity during initial stance for both barefoot and OS whereas the peak muscle activity for INB and ITB is seen during late stance. Subject-2 shows RF activity during the late stance in the barefoot condition whereas the muscle activity for the three footwear conditions occurs during the initial stance and initial swing phase.

Semitendinosus (ST)

Subject-1 and Subject-2 exhibited ST activity twice during a gait cycle, one during the mid-stance and second one during the mid-swing. For Subject-1, EMG during barefoot, own shoes and ITB shoes are similar both in patterns and intensity whereas similar pattern of activation with the reduced intensity was observed with INB Shoes. Subject-2 showed a delayed activation of the muscle during mid stance for all the three experimental shoes.

Instrumented Treadmill Analysis

The subjects have undergone treadmill analysis in all the four test conditions at two different speeds of walking i.e., 3.5 kmph and 5 kmph.

Stance Analysis

The force data was mainly analysed during standing on all test conditions. The forefoot force was more in subject 1’s OS whereas minimum force was observed in ITB next to barefoot (Figure 1a). Contrarily, subject 2 had minimum forefoot force while wearing INB and maximum force in OS (Figure 1b). The rear-foot force is just opposite to that of fore-foot force in both the subjects.
Dynamic Analysis
The parameters that depend upon the speed of walking increases in all the test conditions which is given in figure 2. When the speed is increased there is no change in step width as it is the dependant factor for stability. Among the test conditions, the speed related parameters are more in all the shod condition when compared to barefoot during reduced speed whereas during the increased speed, the step length and stride length is more whereas cadence is less in barefoot than other shod condition. This is an odd phenomena observed in this subject. But the cadence also follows the similar strategy as that of stride length and step length in subject 2. It is also found that the percentage of stance and swing phase is also affected with different shoe conditions. While comparing with barefoot, shod conditions showed increased stance phase and decreased swing phase which may be due to the fact that shoe comes in contact with ground earlier than the foot which may be taken as an area to study and work more regarding running performance.

Conclusion:
The increase in propulsion and reduced double limb support during own phase walking in ITB shows its effectiveness. The force was distributed between forefoot and rear foot equally on both INB and ITB during standing. EMG studies indicated the impact of shoe design and materials on activation of lower limb muscles. From this study it is understood that the shoe preference varies for subject to subject based on their physical fitness and training. Also, during controlled speeds, the performance related parameters showed an increase in all the three shod condition. Thus this protocol can be used to analyse the performance of the shoes used by athletes and further recommendation of shoes can be done using these biomechanical analyses.

Figure 2. Spatio-temporal Parameters of Subject 1 at two different walking speed
At the behest of the Director, Project Planning and Business Development (PPBD) Department has initiated the work of preparation of business plan. It was proposed to make the department wise ‘Business Plan’ ready at the outset. Initially preparation of the business plan of the departments which are engaged in operational processes (research and development, technology development, testing, certification, and training) is contemplated. And based on the department-wise BPs, the BP of the Institute will be prepared and made ready by 29th March 2019.

PPBD has prepared a write-up on business plan preparation and also devised a template for the preparation of the BP. In this regard, a debriefing meeting was scheduled on 14th March 2019 for the Heads of Departments and subsequently on 18th March 2019 for all the Group IV personnel of CSIR-CLRI.

During the debriefing meeting held on 14th March, Ms. T Shakila Shobana made the presentation on business plan preparation and then the aspects to be covered for the preparation of BP for various departments of CSIR-CLRI.

Dr. Saravanan explained all the components of business plan - Mandate of the department, functions and outputs, products and services pertaining to the department, the customers of the department (both internal and external) and their needs and expectations, human capital mapping to understand the collective competency of the department, performance of the department in terms of performance metrics such as publications, patents, technologies (developed and transferred), consultancy and sponsored projects undertaken, HRD activities and technical services undertaken during the years 2016-17, 2017-18 and 2018-19 and the target for the year 2019-20 in terms of the same performance metrics, manpower mapping to understand the assignment of roles and responsibilities and the resource requirement details.

He presented the various elements of the BP template and said that the BP template would be uploaded in the intranet for seeking inputs from the heads and group IV members.
A Workshop on Molecular Microbial Systematics which focuses on experiencing the importance of preserving microbial diversity through polyphasic approach was organized by Department of Biochemistry & Biotechnology, CSIR-Central Leather Research Institute in association with Ministry of Environment, Forest and Climate Change, Government of India, during 6th to 8th March, 2019. The workshop was a great success with a participation of 46 participants including 13 Assistant Professors from various regions of Tamil Nadu. The workshop was cordially inaugurated by our Director, Dr. B. Chandrasekaran, presided by Dr. M. K. Gowthaman, Senior Principal Scientist, Dr. N. R. Kamini, Principal Scientist and Co-convenor explained the details about the workshop, Dr. N. Ayyadurai, Senior Scientist and Convenor concluded the inaugural session with a brief vote of thanks at B. M. Das Hall of CSIR-CLRI. The workshop included lectures from reputed speakers from various institutes like Dr. N. Ramesh Kumar (Bharathidasan University), Dr. G. S. N. Reddy (CSIR-CCMB), Dr. K. C. Ponnappa (Invitrogen Pvt. Ltd) and Dr. S. Prabhakaran (Bharathiar University). The participants were given hands on training on chemotaxonomic analysis, 16S rRNA sequencing, G+C content analysis and phylogenetic tree construction. The valedictory function was presided by Dr. M. K. Gowthaman, Senior Principal Scientist, CSIR-CLRI and distributed the participation certificates. The participants gave a positive feedback about the workshop and said that the workshop was useful to enumerate the heterogeneity of microbes in various adverse environment by both culture dependent and culture independent approaches and also appreciated and thanked CLRI for providing this opportunity.
WORKSHOP ON
Molecular Microbial Systematics

Sponsored by
CSIR – Central Leather Research Institute
Garden Estate Road, A. S. Rao Nagar, Hyderabad
Tel: 8680597348/49

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

Organised by
Department of Biotechnology and Biotechnology

6th - 8th March, 2019

The Leather Post
A trade delegation from Niger visited CSIR-CLRI on 14th March 2019, comprising the following members:

Mrs. Zada Mariama, Secretary General of Ministry of Trade Niger Republic
Mr. Bonzougou Abdoullahi, Technical Adviser of the Minister of Trade and Private Sector Promotion, Niger Republic
Mr ADAMOU ABDOU, Coordinator of the Unit for integrated framework

The purpose of visit of the Delegation to Chennai is to visit some tanneries and shoe factory units to explore the possibilities of partnership between suppliers of hides and skins of Niger and the manufacturers of India and meeting with CLRI will be for availing technical assistance of CLRI in order to improve their leather quality.
Inspection, installation and Training of Global Positioning System (GPS) at Guntur, Tadepalli, Andhra Pradesh

In picture: Shri G Sathiamoorthy from CSIR-CLRI demonstrates the installation of GPS systems to the Managing Director of LIDCAP, Andhra Pradesh. CSIR-CLRI had designed “Cobbler on Vehicle” for LIDCAP.

Inspection at unloading of Sewing machine at Guntur, Andhra Pradesh

MD, LIDCAP alongside CLRI officials at the godown of Mahindra Automobiles, Vijayawada. Tools/materials & sewing machine being explained by CLRI personnel.
Ms VEDAVALLI S  
Asst Section Officer(Gen)  
ADMINISTRATION - EIII (BILLS SECTION), CSIR-CLRI  
Superannuates on 31st March 2019.  
Director & Staff of CSIR-CLRI wish Ms Vedavalli a Happy Retired Life!

CONGRATULATIONS  
to Dr M S Kiran, CSIR-CLRI  
for the Young Scientist Award

Design & Development of Shoes & Handbags for RAAGAS COLLECTION

Mrs. Savitri from Ragaa’s Collection, Hyderabad, an aspiring entrepreneur visited SPDC to discuss about the samples developed for her range of textile and leather combination products in Footwear and Handbags. The theme for her collection is INTERCHANGE. Shri Mathivanan showcased the range of footwear designed and prototypes that were developed by our team in our workshop. Range of handbags designed and prototype developed by the team were showcased to her by Shri. Karthikeyan.
INDIA DESIGN MARK 2019: Jury Evaluation was held to coincide with the International Engineering Sourcing Show (IESS) during 14-15 March 2019 at the Chennai Trade Centre. India Design Mark is a recognition of GOOD DESIGN under the aegis of India Design Council.
CSIR-CLRI foresees to be the global hub that would transform the Indian Leather Industry into one, which is technology and innovation driven, thus steering India to be the Global Leader in Leather.

Dr B Chandrasekaran, Director, CSIR-CLRI

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