Seminar at IILF - 2016, Chennai

Glimpses of Inauguration of IILF 2016: the Hon'ble Governor of Tamilnadu in the middle, alongwith the other industry people

Mr. Susanta Mallick, G S , ILTA, acted as the Master of the ceremony

Dignitaries on the dias Dr. Buddhadeb Chattopadhyay, Guest of Honour, Dr. B. Chandrasekaran, V.P., Southern Region Committee of ILTA and Director of CLRI, Dr. Sanjoy Chakraborty, Speaker of the day, Dr. J. Raghava Rao, another speaker of the day, Mr. P. Gopalakrishnan, the Chief Guest and Mr. Arnab Jha, President, ILTA

Welcome address by Dr. B. Chhandrasekaran

Welcome to the Speakers with bouquet

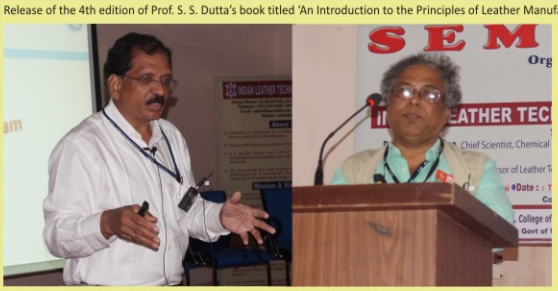
Welcome to the Guests of Honour with bouquet

Address by the Chief Guest

Address by the Guests of Honour

A part view of the audience

Release of the 4th edition of Prof. S. S. Dutta's book titled 'An Introduction to the Principles of Leather Manufacture' & JILTA special issue (February, 2016) by the dignitaries along with the Editor, Dr. Goutam Mukherjee



Dr. Raghava Rao delivered the lecture titled 'Futuristic Technologies : Waterless Leather Processing'

Dr. Sanjoy Chakraborty delivered another lecture titled 'Environmental Emission'

Memento and Certificate offered by Mr. Tapan Nandi to Dr. Raghava Rao and Mr. P. Gopalakrishnan to Dr. Sanjoy Chakraborty

Dr. K. J. Sreeram, Vice-President of ILTA offered Vote of Thanks

A part view of the audience

The stall of ILTA shared with the Indian Leather in the Fair campus

5th Moni Banerjee Memorial Lecture

The 5th Moni Banerjee Memorial Lecture titled 'Paradigm of Tannery and Leather House Waste Pollution Problems and its Abatement'

A part view of the audience

On the dias (R to L) Mr. Tapan Nandi & Mr. Mukund Kulkarni - the Guests of Honour, Prof. Somenath Mukherjee, the Chief Guest and Mr. Susanta Mallick, General Secretary, ILTA; Mr. Arnab Jha, President, ILTA delivered the Welcome Address

Garlanding to the portrait of Late Moni Banerjee by the dignitaries from different institutions, organisations and industries

Welcome to the Speaker and the Guests of Honour with bouquet

Address by the Guests of Honour

Awarding to the toppers with Moni Banerjee Memorial Medals

Awardees delivered a short presentation on their projects

Felicitation to the Speaker with a Memento by Mr. Mallick

Mr. Mallick offered the Vote of Thanks

A part view of the audience

LEXPO - SILIGURI XXIII

Dignitaries on the dias (from L to R) Sri B. C. Jana ,Sri Mrinal Chakraborty, Sri Anshuman Chakraborty, Swami Akshayananda Maharaj and Sri Jiban Dasgupta

Addressing the gathering by dignitaries

Inauguration of the Fair by lighting the Inaugural Lamp

IULTCS 2017
INDIA

XXXIV IULTCS CONGRESS

5-8 February 2017, CSIR-CLRI, Chennai, India

www.iultcs2017.org

"Science and Technology for Sustainability of Leather"

IULTCS — International Union of Leather Technologists and Chemists Societies

ORGANIZERS

CSIR-Central Leather Research Institute (CSIR-CLRI)

Indian Leather Technologists' Association (ILTA)

INDIA PARTNERS

Council for Leather Exports (CLE)

IFLMEA — Indian Finished Leather Manufacturers & Exporters Association (IFLMEA)

For further details please contact: Congress Secretariat, CSIR-CLRI, Chennai, India, Email: iultcs2017@clri.res.in

XXXIV IULTCS 2017

Launched on the occasion of the 69th Foundation Day celebrations of CSIR-Central Leather Research Institute (CSIR-CLRI)

22nd April 2016, Triple Helix Auditorium, CSIR-CLRI, Chennai, India

In picture (from R to L): Dr NK Chandrababu, Convenor, XXXIV IULTCS Congress; Mr N Shafeeq Ahmed, Chairman, Indian Finished Leather Manufacturers & Exporters Association (IFLMEA); Mr PR Aqeel Ahmed, Regional Chairman (South), Council for Leather Exports (CLE); Dr B Chandrasekaran, Director, CSIR-CLRI: Mr Arnab Jha, President, Indian Leather Technologists' Association (ILTA) and Dr S Chandrasekaran, Director, CSIR-IICT launching the XXXIV IULTCS Congress on 22nd April 2016 at the Triple Helix Auditorium, CSIR-CLRI, Chennai.

There can be no other better day than the Earth Day to launch the journey of the XXXIV IULTCS Congress.

The President ILTA, **Mr Arnab Jha,** highlighted the role of IULTCS and need for Indian leather industry to surge forward for a sustainable future. He emphasized that the XXXIV IULTCS would see experts from more than 20 countries presenting over 200 papers in the theme of the Congress: S&T for sustainability of leather. **Dr NK Chandrababu**, the convener of the congress, highlighted the efforts taken towards the smooth organization of the congress. He urged the leather industry to come forward and sponsor the congress. President IFLMEA, **Mr. N Shafeeq Ahmed** in his address at the 69th Foundation Day Celebrations of CSIR-CLRI, urged the research community to present papers relating to sustainable processing. Compliance to eco-norms that are laid to ensure clean and green world for our future would give value to our processes. The congress should also highlight applicable technologies for reducing, recovering and recycling of its wastes, he said. In his remarks, the Regional Chairman (South) CLE, **Mr PR Aqeel Ahmed** said that voluntary compliance to eco-norms was the key for the future. Every company should ensure that their processes are clean and green. He also touched upon the efforts taken at his company in this direction.

Indian Leather Technologists' Association

[A Member Society of International Union of Leather Technologists' and Chemists Societies (IULTCS)]

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Mission & Vision

- An Association with over 600 members from India and abroad working since last 64 years for the growth and development of Leather and its allied industries.
- Organize seminars, symposiums, workshops in order to share information, knowledge & latest development and interactions for the benefit of all concerned.
- Organize Human Resource Development programmes on regular basis.
- Publish for over 60 years, a technical monthly journal namely "Journal of Indian Leather Technologists' Association" (JILTA), widely circulated through out the World.
- Publish books for the benefit of the students at various levels of study, for the Research Scholar and the Industry.
- Work as interface between Industry and the Government.
- Assist Planning Commission, various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies for the growth of the Industry.
- Assist small and tiny leather goods manufacturers in marketing their products by organizing LEXPOs in Kolkata and different parts of India.

Since 1950

Portfolio

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION [JILTA]

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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(Member Society of International Union of Leather Technologists and Chemists Societies GENEVA)

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION [JILTA]

Depleting Ground water and our concern

"It" is groundwater — the water found underground in the cracks and spaces in soil, sand, and rock, stored in and moving slowly through geologic formations of soil, sand, and rocks called aquifers matters a lot to us and our successors and it's under threat. Groundwater depletion, a term often defined as "long-term water-level declines caused by sustained groundwater pumping," is a vital issue associated with groundwater use. Groundwater depletion is recognized by measuring the lowering of the water table — the point below which the ground is saturated with water. The effects of depleted groundwater include the following:

Lowering of the water table

The lowering of the water table is the most severe consequence of groundwater depletion. For water to be withdrawn from the ground, it must be pumped from a well that reaches down below the water table. If groundwater levels decline too far, the well owner might have to deepen the well, drill a new well, or, at least, attempt to lower the pump. As water levels decline, the rate of water the well can yield may decline as well.

Increased costs for the user

As the depth to water increases, the water must be lifted higher to reach the land surface, thereby increasing cost.

Reduction of water in streams and lakes

There is more of an interaction between the water in lakes and rivers and groundwater than most people think. Some, and often a great deal, of the water flowing in rivers come from seepage of groundwater into the streambed. Groundwater pumping can alter how water moves between an aquifer and a stream, lake, or wetland — either by intercepting groundwater flow that discharges into the surface-water body under natural conditions, or by increasing the rate of water movement from the surface-water body into an aquifer. A related effect of groundwater pumping is the lowering of groundwater levels below the depth that streamside or wetland vegetation needs to survive. The overall effect on the environment is a loss of riparian vegetation and wildlife habitat.

Land subsidence

The basic cause of land subsidence is a loss of support below ground. When water is taken out of the soil, the soil can collapse, compact, and drop.

Deterioration of water quality

Compromises to groundwater can impact the quality of the overall water supply itself. One water-quality threat to fresh groundwater supplies is contamination from saltwater — salt water intrusion. Not all of the water in the ground is fresh water; much of the very deep groundwater and water

below oceans is saline. Pumping deep wells can cause saltwater to migrate inland and upward, resulting in saltwater contamination of the water supply.

Ways to replenish ground water:

One high-volume option to replenishment of depleting groundwater is the conversion of sewage to tap water. This process involves treating and recycling wastewater from municipal sewer systems, converting it into drinkable water in a timely period.

Sewage is converted into drinkable water using three processes. The first process uses ultrafiltration to remove the physical solids. The second uses reverse osmosis (RO) to remove the dissolved solids, and the third and final process is disinfection with ultraviolet (UV) light, which kills bacteria that transmit waterborne diseases. The drinkable water is then pumped into the environmental waters to replenish depleting groundwater. And this can be a life-sustaining business model for other communities throughout the U.S. Can we think too!

Other options using artificial methods to replenish groundwater include the following:

Rainwater harvesting

Rainwater harvesting is another method to replenish ground water. But this method can be used only during the rains. In urban and rural areas, the rooftop rainwater can be conserved and used for recharge of groundwater. This approach requires connecting the outlet pipe from the rooftop to divert the water to existing wells/tube-wells/bore-wells or specially designed wells.

Rain-gardens to recharge groundwater

A rain-garden is designed to hold rainwater runoff from rooftops, driveways, patios, or lawns. It contains native shrubs, perennials, plants, etc. Every time it rains, water runs off impermeable surfaces such as roofs or driveways, collecting pollutants like particles of dirt, fertilizer, chemicals, oil, garbage, and bacteria along the way. The pollutant-laden water enters storm drains untreated and flows directly to nearby streams and ponds. Rain-gardens collect rainwater runoff, allowing the water to be filtered by the vegetation and percolate into the soil, thereby recharging groundwater aquifers. This process filters out pollutants.

Advantages offered by rain-gardens include:

- Improvement of water quality by filtering pollutants
- Pleasing appearance to the building
- Preservation of native vegetation
- Storm water and flood control
- Attraction of bees, birds, and insects
- Easy maintenance
- Groundwater recharge

Injection wells

Use of injection wells is a more energy-intensive method of groundwater replenishment, utilizing high-pressure pumps to actively 'push' water into aquifers. Sources of water for injection wells include treated wastewater, storm water, and agricultural runoff. Municipal wastewater and industrial wastewater are suitable sources for replenishing groundwater by pumping through RO process units.

Recharge of ground water with wastewater:

Increasing demand for water, particularly in arid and semi-arid regions of the world, has shown that the extended groundwater reservoirs formed by aquifers are invaluable for water supply and storage. Natural replenishment of this vast supply of groundwater is very slow. Therefore, exploiting groundwater at a rate greater than it can be replenished causes groundwater tables to decline and, if not corrected, eventually leads to mining of groundwater. Artificial recharge as a means to boost the natural supply of groundwater aquifers is becoming increasingly important in groundwater management. Groundwater can have a wide range of beneficial uses. For example, it can be used for irrigation of parks or agricultural land, industrial application, or to provide a potable water supply (i.e. one that is suitable for drinking).

As artificial recharge has increased in popularity, managers have begun to search for additional sources of recharged water. A critical question is whether waters of impaired quality should be used for this purpose, and whether the water recovered from such systems is suitable for potable uses as well as non potable ones. Obviously, water of impaired quality could only be used with appropriate pre and post-treatment, and treatment gained from soil and aquifer processes.

Some factors to consider for Groundwater recharge are;

- Availability of waste water
- Quantity of source water available
- Quality of source water available
- Resultant water quality (after reactions with native water and aquifer materials)
- Clogging potential
- Underground storage space available
- Depth to underground storage space
- Transmission characteristics of the aquifer
- Applicable methods (injection or infiltration)
- Legal / institutional constraints
- Costs
- Cultural / social considerations

Wastewater:

Waste Water is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations.

In the most common usage, it refers to the municipal waste water that contains a broad spectrum of contaminants resulting from the mixing of waste waters from different sources.

Sewage is correctly the subset of waste water that is contaminated with feces or urine, but is often used to mean any waste water. "Sewage" includes domestic, municipal, or industrial liquid waste products disposed of, usually via a pipe or sewer or similar structure, sometimes in a cesspool emptier. The physical infrastructure, including pipes, pumps, and screens, channels etc. used to convey sewage from its origin to the point of eventual treatment or disposal is termed sewerage.

Waste water treatment consists of physical, chemical, and biological processes—either aerobic or anaerobic. The aerobic process is used most frequently. In the activated sludge process, air has to be forced into the liquid in a tank that is used to maintain aerobic microbial activity and to prevent odor. Additionally, temperature and pH must be maintained for the microbial activity. In a municipal system the flow moves as follows: from sanitary sewer to screening and grinding process, to primary clarification, to activated sludge or trickling filter, to secondary clarification, to chlorine treatment, and finally to a water body such as a river or stream. Waste water from the home enters a domestic or sanitary sewer—a system of pipes that collect the waste water. The waste is then transported to a waste water treatment plant. As it enters the plant, it flows through a bar screen, which strains out large materials. It then continues into a grit basin or chamber, where the water is slowed down enough to allow heavy or dense particles to settle out. These particles are then removed and taken to a landfill. The materials that do not settle out are ground up to prepare them to be digested by microorganisms in the treatment plant. The waste water then enters the primary clarifier, which allows materials to settle out.

From the primary clarifier, the waste water enters activated sludge tanks or trickling filters. Trickling filters are large areas of biological decomposition consisting of rocks that host biological organisms on their surfaces. These organisms metabolize most of the suspended solids that did not settle in the primary clarifier. The buildup on these rocks eventually sloughs off. The activated sludge tank is also used to remove waste from the waste water. In this process, water from the primary clarifier is pumped into an aeration tank and combined with a mixture rich in bacterial growth. Pure oxygen is pumped through, allowing the decomposition of the organic materials in the waste water. The remaining water is moved from the top of the tank, leaving sludge at the bottom. Water from the trickling filter moves to a secondary clarifier, which settles any remaining suspended solids. The solids are then pumped into a digester, while the effluent is chlorinated and released back into a water channel, river, or stream.

Aeration: - The process of exposing large surface of water to atmospheric air is called Aeration. It is done for removal of odours & gases, & to absorb more oxygen.

Sedimentation: - It is process of removal of suspended particles of impurities by gravitational setting.

Filtration: - It is process of removing particulate & bacterial impurities which could not be removed in earlier processes, from water by passing through a porous media.

Disinfection of water: - It is process killing bacterial impurities & all pathogens.

Methods of Groundwater Recharge with wastewater: - Groundwater recharge methods can be classified into two broad groups

Direct Recharge

Spreading method: This method involves surface spreading of water in basins that are excavated in the existing terrain. For effective artificial recharge highly permeable soils are suitable and maintenance of a layer of water over the highly permeable soils is necessary. When direct discharge is practiced the amount of water entering the aquifer depends on three factors – the infiltration rate, the percolation rate, and the capacity for horizontal water movement. In a homogenous aquifer the infiltration rate is equal to the percolation rate. At the surface of the aquifer however, clogging occurs by deposition of particles carried by water in suspension or in solution, by algal growth, colloidal swelling and soil dispersion, microbial activity act. Recharge by spreading basins is most effective where there are no impending layers between the land surface and the aquifer and where clear water is available for recharge; however, more turbid water can be tolerated than with well recharge. The common problem in recharging by surface spreading is clogging of the surface material by suspended sediment in the recharge water or by microbial growth. In coarse grained materials removal of fine suspended sediment is difficult. Playa Lakes or wet weather lakes are depressions that collect water after rainfall or periods of snowmelt. Playa lakes in Texas, New Mexico and Colorado have been used in artificial recharge projects Many Playa lakes have tight clay deposits that restrict leakage of water. Most of the water is lost by evaporation or by non-beneficial growth of vegetation in the lake. Heavy clay soils can be broken up and the lake bottom regraded for maximum recharge. In a demonstration project near Lubbock, Texas, playa lakes were modified by excavating concentration pits and using the excavated soil to raise the elevation of some of the previously flooded lands.

Recharge Pits and Shafts

Conditions that permit surface spreading methods for artificial recharge are relatively rare. Often lenses of low permeability lie between the land surface and water table. In such situations artificial recharge systems such as pits and shafts could be effective penetrate the less permeable strata in order to access the dewatered aquifer. The rate of recharge has been found to increase as the side slopes of the pits increased.

Unfiltered runoff waters leave a thin film of sediment on the sides and bottom of the pits which require maintenance in order to sustain the high recharge rates. Shafts may be circular, rectangular, or of square cross-section and may be backfilled with porous material. Excavation may terminate above the water table level or may be hydraulic connectors and extend below the water table. Recharge rates in both shafts and pits may decrease with time due to accumulation of fine grained materials and the plugging effect brought about by microbial activity.

Ditches

A ditch could be described as a long narrow trench, with its bottom width less than its depth. A ditch system can be designed to suit the topographic and geologic conditions that exist at a given site.

A layout for a ditch and a flooding recharge project could include a series of ditches trending down the topographic slope.The ditches could terminate in a collection ditch designed to carry away the water that does not infiltrate in order to avoid ponding and to reduce the accumulation of fine material

Recharge Wells

Recharge or injection wells are used to directly recharge water into deep water-bearing zones. Recharge wells could be cased through the material overlying the aquifer and if the earth materials are unconsolidated, a screen can be placed in the well in the zone of injection. In some cases, several recharge wells may be installed in the same bore hole. Recharge wells are a suitable only in areas where a thick impervious layer exists between the surface of the soil and the aquifer to be replenished. They are also advantageous where in areas where land is scarce. A relatively high rate of recharge can be attained by this method. Clogging of the well screen or aquifer may lead to excessive buildup of water levels in the recharge well. In ideal conditions a well will accept recharge water at least as readily as it will yield water by pumping. Factors that cause the build up of water levels in a recharge well to be greater than the corresponding draw down in a discharging well may include the following.

1. Suspended sediment in the recharge water, including organic and inorganic matter.
2. Entrained air in the recharge water.
3. Microbial growth in the well.
4. Chemical reactions between the recharge water and the native groundwater, the aquifer material, or both.
5. Ionic reactions that result in dispersion of clay particles and swelling of colloids in a sand- and gravel aquifer.
6. Iron precipitation.
7. Biochemical changes in recharge water and the groundwater involving iron-reducing bacteria or sulfate-reducing organisms.
8. Differences in temperature between recharge and aquifer water
9. Factors that cause the buildup of water levels in a recharge well to be less than the corresponding draw down in a discharging well may include the following.
10. Recharge water is warmer than native groundwater and therefore, less viscous.
11. Increase in the saturated thickness and transmissivity of the aquifer due to the higher water levels that result when a water table aquifer is recharged.
12. Recharge water that is unsaturated with respect to calcium carbonate. Such water may dissolve parts of a carbonate aquifer.

Indirect Recharge

Enhanced Streambed Infiltration (Induced infiltration)

This method of induced recharge consists of setting a gallery or a line of wells parallel the bank of a river and at a short distance from it. Without the wells there would be unimpended outflow of groundwater to the river. When small amounts of groundwater are withdrawn from the gallery parallel to the river, the amount of groundwater discharged into the river decreases.

The water recovered by the gallery consists wholly of natural groundwater. Each groundwater withdrawal is accompanied by a draw down in the water table. For high recovery rates this draw down tends to lower the groundwater table at the shoreline below that at the river. Thus, surface water from the river will be induced to enter the aquifer and to flow into the gallery. In areas where the stream is separated from the aquifer by materials of low permeability, leakage from the stream may be so small that the system is not feasible.

ConjunctiveWell

A conjunctive well is one that is screened in both a shallow confined aquifer and a deeper artesian aquifer. Water is pumped from the deeper aquifer and if its potentiometric surface is lowered below the shallow water table, water from the shallow aquifer drains directly into the deeper aquifer. Water augmentation by conjunctive wells has the advantage of utilizing sediment-free groundwater which greatly reduces the damage of clogging well screens.
Other benefits are:

1. It reduces the amount of evapotranspiration water loss from the shallow water table.
2. Reduces flooding effects in some places. Environmental effects from the conjunctive well method must be carefully studied to assure that unwanted dewatering of wetlands or reduction of base flow will not occur. The possibility of coagulation due to mixing of chemically differ groundwater should also be investigated.

Merits and demerits of the recharge processes:

Merits

1. Artificial recharge has several potential advantages, namely:
2. The use of aquifers for storage and distribution of water and removal of contaminants by natural cleansing processes that occur as polluted rain and surface-water infiltrate the soil and percolate down through the various geological formations.
3. The technology is appropriate and generally well understood by both the technologists and the general population.
4. Very few special tools are needed to dig wells.
5. In rock formations with high structural integrity, few additional materials may be required (concrete, soft stone or coral rock blocks, metal rods etc.) to construct the wells.
6. Groundwater recharge stores water during the wet season for use in the dry season, when demand is the highest.
7. The quality of the aquifer water can be improved by recharging with high-quality injected water.
8. Recharge can significantly increase the sustainable yield of an aquifer.
9. Recharge methods are environmentally attractive, particularly in arid regions.
10. Most aquifer recharge systems are easy to operate.
11. In many river basins, control of surface-water run-off to provide aquifer recharge reduces sedimentation problems.
12. Recharge with less-saline surface waters or a treated effluent improves the quality of saline aquifers, facilitating the use of the water for agriculture.

Demerits:

1. In the absence of financial incentives, laws, or other regulations to encourage landowners to maintain drainage wells adequately, the wells may fall into disrepair and ultimately become sources of groundwater contamination.
2. There is a potential for contamination of the groundwater from injected surface-water run-off, especially from agricultural fields and road surfaces. In most cases, the surface-water run-off is not pre-treated before injection.
3. Recharge can degrade the aquifer unless quality control of the injected water is adequate.
4. Unless significant volumes of water are injected in an aquifer, groundwater recharge may not be economically feasible.
5. The hydrogeology of an aquifer should be investigated and understood before any future full-scale recharge project is implemented. In karst terrain, dye-tracer studies can assist in acquiring this knowledge.
6. During the construction of water-traps, disturbance of soil and vegetation cover may cause environmental damage to the project area.

Periodic assessment and maintenance of groundwater recharge structures is essential because infiltration capacity is rapidly reduced because of silting, chemical precipitation, and accumulation of organic matter. Rapid urbanization has led to lying of metallic surfaces in broader perspectives. These have stopped porosity of surfaces. In the case of injection wells and connector wells, periodic maintenance of the system consists of pumping and / or flushing with a mildly acidic solution to remove encrusting chemical precipitates and bacterial growths on the well tube slots. By converting the injection or connector wells into dual-purpose wells, the time interval between one cleansing and another can be extended, but, in the case of spreading structures, except for sub-surface dykes constructed with an overflow or outlet, annual de-silting is necessary. Unfortunately, because the structures are installed as a drought-relief measure, periodic maintenance is often neglected until a drought occurs, at which time the structures must be restored (the 5 to 7 year frequency of droughts, however, means that some maintenance does take place). Several agencies and individuals normally carry out structural maintenance.

Groundwater replenishment is a major factor in the survival of every species on the planet. If we keep using groundwater at our current rate and contaminating the sources that replenish the groundwater, there will be no way for us to survive. There are plenty of options out there to replenish your local groundwater. Just remember that groundwater replenishment is a problem affecting everyone, but there is something you can do about it. So, we can rest assured that it is not fossil fuels but struggle for clean water will trigger flexing of muscle among the nations which may turn to large scale war. Industries across globes have lot CSR in this regard. They can do a lot for our resurgence and smoother survival.

Goutam Mukherjee

Goutam Mukherjee

A. LEXPO Siliguri – XXII

This year the inaugural ceremony of Lexpo – XXII, Siliguri took place on Thursday the 31st March, 2016 at Kanchunjungha Stadium adjacent ground.

The program commenced with presenting of a bouquet to Swami Akshayananda Maharaj, Hon'ble Secretary, Ramkrishna Mission Ashram, Jalpaiguri and the Chief Guest of the function, by Sri B. C. Jana, an Executive Committee Member of ILTA and to Sri Anshuman Chakraborty, General Secretary, Journalist Club (North Bengal), Siliguri and the "Guest of Honour" of the function by Sri Aniruddha De, an Executive Committee Member of ILTA.

In his welcome address Mr. Mrinal Kanti Chakraborty, a senior Executive Committee Member of ILTA expressed his view of ILTA and its function about Lexpo at Siliguri, Kolkata, Ranchi, Durgapur, etc.

Swami Akshayananda Maharaj expressed his view about the utilization of leather like footwear, garments, leather goods, etc. throughout India and World Sector. He also said this is the first time in his life to join such an Industrial Program and Leather Fair. He wished all success of ILTA for the future.

Sri Anshuman Chakraborty, General Secretary, Journalist Club (North Bengal), Siliguri explained the growing differences between demand and supply of leather goods in North Bengal and North East part of India.He also expressed his helping attitude to ILTA in all respect through information media.

Sri Jiban Dasgupta, Joint Secretary, ILTA offered vote of thanks to all concerned for all help and co-operation received, followed by declaring the fair opened with lighting the Inaugural Lamp by Hon'ble Swami Akshayananda'ji Maharaj of Ramkrishna Mission Ashram, Jalpaiguri along with others.

B. Purchase of books for our Library

The following books have been added to our Library :-

Sl. No.	Name of the Book	Authors' Name
1	A Manual of Shoemaking and Rubber Products	William H. Dooley
2	A Study of the Changes in the Skin during Their Conversion into Leather	Anton Augustus Schlichte
3	Applications to Dyestuff (Volume I)	J. M. Matthews
4	Applications to Dyestuff (Volume II)	J. M. Matthews

Sl. No.	Name of the Book	Authors' Name
5	Handbook of Practical Tanning	Rogers
6	Practical Handbook of Tanning Currying and Chrome Leather Dresses	Watt
7	Art of Tanning Leather	Kennedy
8	Leather Trades Chemistry	Trotman
9	The Decoration of Leather	Nathan
10	Leather from Raw Material to Finished Product	Adcock
11	Applications of Oil & Greases to Leather`	Blockey
12	Handbook for Leather Chemists	Procter
13	Wastewater Microbiology, 4th edition	Gabriel Bitton
14	Standard methods for Examination of Water and Waste Water, 22nd edition	APHA
15	Entrepreneurship: Organization and Management in Leather Sector	TSK Madhaban
16	The Framework for Leather Manufacture	Richard Daniels & Walter Landman
17	A Manual for Leather & Accessories and Leather Ware	S. Natesan

C. 487th E. C. Meeting

The Executive Committee at its 487th Meeting held on Thursday the 28th April' 2016, recommended formation of various Sub-Committees. The names of Co-Ordinators and Committee Members of these Sub-Committees will be announced in the next issue of JILTA.

D. ILTA Flag

The idea that ILTA should have a flag was mooted out first by Mr. Prabir Kumar Dasgupta. Various suggestions were received from the members. E. C. finalized the design suggested by Mr. Alok Kr. Basu. Henceforth the ILTA flag will be on display on all functions organized by ILTA.

E. IULTCS – 2017

Henceforth all updates regarding IULTCS Congress–2017 will be available in a special segment titled **"IULTCS – 2017".**

You are requested to :-

a) Kindly inform us your '**E-Mail ID**', '**Mobile No**', '**Phone No**', through E-Mail ID: admin@iltaonleather.org or over Telephone Nos. : 24413459 / 3429 / 7320. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.

b) Kindly mention your **Membership No. (If any)** against your each and every communication, so that we can locate you easily in our record.

c) **Kindly obtain an Acknowledgement Slip (available at ILTA Office) for any document handed over to ILTA Office.**

Susanta Mallick
General Secretary

Executive Committee Members meet every Thursday at 18-30 hrs. at ILTA Office.
Members willing to participate are most welcome.

XXXIV IULTCS CONGRESS

(International Union of Leather Technologists and Chemists Societies)

"Science and Technology for Sustainability of Leather"

R&D focus of research institutes, chemical companies and organizations around the world has been the sustainable development of the leather sector. In this scenario, the congress aims to address the following technological challenges:

- Fundamentals in leather science
- Strategies for sustainability
- Innovation and value addition for leather
- Advances in chemicals for smart and intelligent leathers
- Design innovation for lifestyle leather products
- Emission control strategies
- Enriching human capacity
- Global research alliances and partnerships

Important Dates:

- Congress Dates: 5 – 8 February 2017, preceded by India International Leather Fair, Chennai (1–3 February 2017)
- Congress Localization: Chennai
- Abstract submission due: 31 October 2016
- Selection of papers: 15 November 2016
- Early bird registration till: November 2016
- Expected Number of Participants: 200 International, 300 Indian

Organizers:

- Indian Leather Technologists Association (ILTA)
- CSIR-Central Leather Research Institute (CSIR-CLRI)

Congress Partners:

- Council for Leather Exports, India (CLE)
- Indian Finished Leather Manufacturers & Exporters Association (IFLMEA)

Organization committee:

Congress President: Dr T Ramasami, Former Secretary, S&T, Govt. of India

Patrons:

- Mr M Rafeeque Ahmed, Chairman, Council for Leather Exports
- Mr N Shafeeq Ahmed, President IFLMEA

Institutional representatives:

- Dr B Chandrasekaran, Director CSIR-CLRI,
- Mr Arnab Jha, President ILTA,

Congress Convener : Dr N K Chandrababu, Chief Scientist, CSIR-CLRI;

Working President : Dr S Rajamani, ILTA

Indian Leather Industry, through CSIR-CLRI & ILTA and through the Council for Leather Exports and IFLMEA welcome all the visitors, industrialists, academicians and researchers interested in leather to participate at the XXXIV IULTCS Congress. With India International Leather Fair, just before the congress and good climate to visit Chennai, the participants to the congress would be taken through a rich experience of S&T innovations in leather and the cultural diversity of India.

Please visit our website **www.iultcs2017.org** for further details.

Address by Shri Arnab Jha, President, ILTA as Guest of Honour during curtain raising program of IULTCS-2017 Congress

'Quote'

I feel myself utterly privileged to be a part of the 69th Foundation Day Celebration of CSIR-CLRI. I am further privileged to be a part of the curtain raising program of IULTCS – 2017 Congress, scheduled to be held from 5th to 8th Feb, 2017.

Actually the finalization of the date for IULTCS Congress took a long time due to matching the calendar of Global programs of the leather world. China initially fixed up the month November 2016 for Asian Congress (declared as regional program of IULTCS too) so we could not find gap of time even for 3 months.

Chinese New Year was in a close proximity too. The date, time, weather and LERIG would be mismatched if thought otherwise. Hence, lot of correspondences were there, and we decided to hold IULTCS Congress in Feb, 2018. We held a meeting in CLRI on this dates, and afterwards China dropped down the idea to hold Asian Congress in 2016 and extended the date to 2018. All these took a long time to decide the final date. Giving respect to the IULTCS Statutes and Congress guidelines this final date was fixed and declared. China being a very important member, the date of Chinese New Year was also considered, apart from tagging with the India International Leather Fair with a gap of a day or two. The available time for preparation of Congress is very limited, yet we believe that with the regular experience of CLRI conducting conferences, etc. and a recent excellent performance in conducting Footwear Congress in Chennai lead us to accept that IULTCS with the full support of all friends and stake holders of the leather fraternity will leave a special mark and may be a bench mark as have been declared by my dear friend Dr. N. K. Chandrababu.

IULTCS is an unique body which has got no corporate office. It exists in the city of the Executive Secretary of the Union. During end of last millennium the IULTCS Website was launched. One can imagine how much labour oriented job it was to maintain the records and communicate with each other before the internet era. The old records were usually carried from the office of one Secretary to next Executive Secretary.

Formation of International Union was initially dreamt by Prof. Dr. H. R. Proctor in 1897 in England, currently its Member Societies are twenty three or more apart from no. of Associates and individual members.

As per statutes of IULTCS the aims of the union are to foster co-operation between member societies, to hold congress to further the advancement of leather science and technology, to form commissions for special studies and to establish International methods of samples and testing of leathers and materials associated with leather manufacture (by virtue of MOU between IULTCS and ISO).

It is amazing to note that in 1897 Prof. Proctor could make an assembly of around 200 experts and scientists from different countries. The business of the conference was largely around Vegetable tanning materials and their analysis etc., but special attention was given on the necessity to deal with the polluting effects of Tannery effluents.

From 1897 through make and break, formation and dissociation etc. of different union, ultimately in the year of 1948 Provisional Statutes of IULTCS was drawn and with a little modification was approved in the Council of delegates meeting in 1949.

But the inclusion of India in IULTCS was not so easy. Except Japan they were not much interested for Asia. Mr. Sanjoy Sen took lot of efforts to put an entry of India through a body named ILTA. For a longer time Asian countries' presence were through India, Pakistan and Japan. Pakistan discontinued. Till date no congress was held in Japan. With the advancement of time India, Bangladesh, Japan, Taiwan, China have become members and in 1999, for the first time IULTCS Congress was held in India and it was a grand success under the stewardship of Dr. T. Ramasami, the then Director of CLRI. The 2nd IULTCS Congress was held in China. The scheduled Congress of 2017 will be 3rd IULTCS Congress in Asia.

From the time of Golden Jubilee Celebration of ILTA, the efforts for formation of Asian Forum was exerted. Incidently Dr. Rajamani was the Chairman of the IUE Commission for a considerable period and he continued to take all efforts to form it and now in all IULTCS Congress and regional congresses, a time slot is provided for the Asian International Forum and Liaison Committee Meeting. I believe that we will have a detail discussion during Congress on this subject too. I am happy that India took the lead role in this forum and we should utilize it properly.

A sincere effort was taken to call for two day conferences of South East Asian Congress. You will be happy to learn that for the first time the Asian Congress held in Kolkata, India in the year 2010 jointly by ILTA and CLRI was included in the calendar of IULTCS Regional Congress and officially that is the last IULTCS Asian Congress.

The 2017 Congress in India will take care of all the rituals of the previous Congress, with a special emphasis on quality of presentation on Science and Technology, encouragement of the younger students and scientists etc. apart from heartfelt hospitality. All the specific events of LERIG like, Prof. B. M. Das Memorial Lecture and other lectures will be retained apart from conventional Hedemann's lecture in IULTCS. We will also have a special discussion on total solids management in a global perspective.

We have recently conducted the International Footwear conference, it was a gala presentation and I solemnly believe that with all the support from stakeholders, industry and others of leather fraternity, this IULTCS Congress will also be a Gala presentation too.

At the end, 'Sustainability' has become a common word in our industry. It is the key matter in our Congress too. But this word is to be felt at heart, enquire in all senses and to work on the Techno-Commercial-Socio angles; otherwise it is very difficult to sustain in this tough and complicated world. The Environment Norms will continue to become tighter and synthetics will continue to develop and yield at lower cost. It is not possible to compete with non-leather in terms of price. I suggest that we have to –

- Take full advantage of the word "Leather", which is still the USP of Industry.
- Raise the level of Technology and marketing to reach the Exclusive and Niche Market and to make it realized by all segment of the industry in true sense.
- Outright development of total workmanship (from Carcass recovery to Final Packing of the product).
- To work sincerely to reduce/omit emission loads in the atmosphere and maximize the optimum consumption of chemicals. It may be by introduction of required Machines, or, by application of Chemistry, or jointly by joint collaborative efforts.
- Finally to introduce a global "leather mark", accepted universally for leather like Silk Mark, Hall Mark, etc.

Now, let us start from today to work on these issues, through assembly of 'World Leather Research to City of Leather Research' and fix up the procedures through discussions and sincerely implement them. I am sure, that the entire industry and those connected to each and every sense will stand in word and spirit and make the program of IULTCS Congress a turning point of the industry and remembered as Historic Event.

Thanking you all for giving a patience hearing.

'Unquote'

XXXIV IULTCS
2017 - INDIA

5 – 8 February 2017
CSIR-Central Leather Research Institute
Adyar, Chennai 600 020
iultcs@gmail.com; iultcs@clri.res.in
www.iultcs2017.org

From the Desk of Dr. N. K. Chandrababu, Convener, XXXIV IULTCS Congress : ,

The XXXIV International Union of Leather Technologists and Chemists (IULTCS) Congress is coming to India in February 2017. Regarded as the world's most important technical leather event, this meeting is being held in India only for the second time, the first one being in 1999.

The XXXIV Congress would bring together in CSIR-CLRI all the major players in the leather and leather product industries and also serve as an opportunity for the professional updating. The Congress at Chennai would be special in that it will also provide an opportunity for the upcoming graduates and undergraduates of leather education to meet the peers in the field.

Organized between 5th and 8th of February, this Congress would have the Sustainability of Leather as its focal theme. The sessions would exclusively discuss Fundamentals in leather science, strategies for sustainability, innovation and value addition for leather, advances in chemicals for smart and intelligent leathers, design innovation for lifestyle leather products, and emission control strategies.

We all recognize that for the growth of the sector skilled manpower, with skill sets ideal for various activities is required. The congress would therefore also take up discussions on enriching human capacity and global research alliances and partnerships.

The dates for the XXXIV congress have been aptly planned. It would be immediately after the India International Leather Fair and the Chinese New Year. We therefore look forward to about 200 research papers from the entire leather world to be presented either in the oral or poster format. For the information of my research colleagues, we have started accepting abstracts for the congress. The congress website www.iultcs2017.org would serve as the platform for abstract submission.

We hope, thanks to a vibrant leather industry in India and the partnership that we have with the Council of Leather Exports and Indian Finished Leather Manufacturers and Exporters Association (IFLMEA), more than 600 professionals would participate in this Congress.

The partnership with IFLMEA and CLE would provide for the Congress the much needed energy and push. We are thankful to both Mr Aqeel Ahmed and Mr Shaffeeq Ahmed for the interest that they have shown in taking this congress to a success. Sirs, we look forward to your continued guidance and support in making this congress a benchmark for future congresses. We are also thankful to the Chairman, Council of Leather Exports, Mr Rafeeque Ahmed who in the very first meeting that I had with him readily agreed to be the Chief Patron and offered the full support of CLE for the congress. We would remain indebted to the Council and their staff for their support. I must also thank Mr Aqeel Ahmed and the Regional CLE (Chennai) for the soft launch of the Congress flyer at the hands of Chairman CLE and Shri Md. Hashim alongside Mr Aqeel Ahmed, Mr Shafeeq Ahmed, ED CLE and others on 7 April 2016.

The XXXIV IULTCS Congress would see a conglomeration of the best minds in Leather Science. We would have Dr T Ramasami, Former Secretary, Department of Science and Technology, GOI as the Congress President, and the top scientists in the field delivering way forward lectures. We have put together a formidable team of Scientists from CSIR-CLRI to run this congress. This team would receive guidance and support of Dr S Rajamani, former Director Grade Scientist of CLRI and Shri NR Jagannathan, former President of the AC Tech Leather & Footwear Alumni Association (ALFA).

Founded in 1897, in London, UK, the IULTCS has 20 full time members and 6 associate members. In addition to promoting the congress aiming to improving the sector, the IULTCS also has commissions for Liason, Environment, Research, Training and Education and Test Methods. These commissions bring out strategic documents, test protocols etc. from time to time depending on the needs of the industry. The President IULTCS Dr Dietrich Tegtmeyer has requested the entire leather world to come down to Chennai for the congress. In his appeal to all member societies, Dr Tegtmeyer has said and I quote '"although information is easily shared electronically today, nothing can replace the direct interaction that occurs at an event like this. This helps with the sharing of ideas and creates opportunities for networking that helps stimulate those creative ideas critical for industry progress".

A congress of this magnitude can only be successful when it has the financial support of all the stakeholders. I earnestly appeal to all my industry colleagues to come forward and sponsor the congress. We have drawn up various levels of support mechanisms for the same.

In bringing this congress to India, the member society representing India at the IULTCS, viz., the Indian Leather Technologists Association has played a formidable part. The resident ILTA Shri Arnab Jha had placed enormous confidence in team CSIR-CLRI when he appealed to executive committee of IULTCS to support India for organizing this congress at CSIR-CLRI. We thank him for the support.

On behalf of CSIR-CLRI, ILTA, IFLMEA, CLE and the entire leather fraternity, we welcome you all to the XXXIV IULTCS Congress at Chennai between 5 – 8 February 2017.

An event of the :

Congress Committee:

IULTCS President	–	Dr. Dietrich Tegtmeyer,
Congress President	–	Dr. T. Ramasami,
Congress Partner Representatives	–	a. Dr. B. Chandrasekaran, Director CSIR-CLRI &
		b. Mr. Arnab Jha, President- ILTA, Congress
Convener	–	Dr. N. K. Chandrababu,
Congress working president	–	Dr. S. Rajamani
India Partners:	–	a. Council for Leather Exports (CLE) &
		b. Indian Finished Leather Manufacturers & Exporters Association (IFLMEA)
Media Partners:	–	A. R. Sutoria Tannery, Leather Age and Indian Leather

INTERNATIONAL UNION OF LEATHER TECHNOLOGISTS AND CHEMISTS SOCIETIES

News Release from the IULTCS

April 18, 2016

Preparations in Place for XXXIV IULTCS Congress in India

The next IULTCS Global Congress will take place from 5-8 February 2017, earlier in the year than usual, as it is timed to take place the week after the Chennai leather fair. The Congress - under the slogan "Science and Technology for Sustainability of Leather" - will be co-hosted by the CSIR-CLRI, one of the biggest leather Training and Research Institutes in the world, and ILTA, the Indian Leather Technologists Association. This event will bring together scientists and leather researchers from all over the world to present the latest ideas, projects, research results, and concepts related to the raw material collagen and the process of leather making. The event will include verbal and visual presentations. IULTCS President Dietrich Tegtmeyer said that he is certain the Chennai Congress will be a great success, and he added: "Although information is easily shared electronically today, nothing can replace the direct interaction that occurs at an event like this. Thishelps with the sharing of ideas and creates opportunities for networking that helpsstimulate those creative ideas critical for industry progress".

All chemists and technologists in the field of leather are encouraged to join this event and those thinking about submitting a paper or presentation should keep in mind the rapidly approaching October deadline for submissions. Registration for the event starts in June. More information is available as a link on the IULTCS website – www.iultcs.organd details of the Congress can now be accessed directly at www.iultcs2017.org.

End News Release

For editorial Information: Elton Hurlow, Email: elhurlow@buckman.com; Tel: +44 7471 351 247

Now available

Sl. No.	Title of the Book	Author	Price per Copy*	
			Inland (INR)	Foreign (USD)
01.	Treatise on Fatliquors and Fatliquoring of Leather	Dr. Samir Dasgupta	` 1500.00	$ 60.00
02.	Comprehensive Footwear Technology	Mr. Shomenath Ganguly	` 500.00	$ 50.00
03.	An Introduction to the Principles of Leather Manufacture (New Edition)	Prof. S. S. Dutta	` 800.00	$ 50.00
04.	Analytical Chemistry of Leather Manufacture	Mr. P. K. Sarkar	` 300.00	$ 10.00
05.	Synthetic Tanning Agents	Dr. Samir Dasgupta	` 900.00	$ 30.00
06.	Hand - Book of Tanning	Prof. B. M. Das	` 750.00	$ 25.00
**** Packing & Forwarding Charge Extra***				

Send your enquiries to :-

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History of Footwear

(Part – III)

Shomenath Ganguly*

Former Principal, Karnataka Institute of Leather Technology, Bangalore

Continued from April' 16 issue

16th century shoe styles changed radically. Both men and women wore low-cut, square-toed slippers. The toes, rolled back and often slashed to reveal a coloured lining, became enormously wide and eventually had to be limited by law. Also popular were mules, sometimes attached to high platforms (chopines) so as to raise feet and skirts above the mud.

Mules

In the 1700's, mules which are backless and close-toed evolved from the pattens, with varying heel heights. In ancient Rome, the senators wore a red shoe, called *calceus mulleus* from which the name 'Mule' may have derived.

Back Less Closed Toe Mule – 1700

Men's Gore Shoe – 1850

Luxurious wealth was expressed as being "well-heeled". In the wake of the French Revolution, heels become lower than at any time in the 18th century. In the early 1800's, flat shoes and Grecian-style sandals become popular.

High heels footwear was modernize in late 16th-century. This was further developed during **17th-century** shoes for both sexes. The fashion was encouraged by Louis XIV of France, who wore them to increase his modest height. A curved heel is still known as a **French, or Louis heel.**

In the **18th century** the soft boots were improved with upper material & replaced by the thicker cowhide, held up by a metal frame (jack) and often cut away behind the knee. Foot soldiers wore cheaper ankle boots with side-buttoned, canvas gaiters. High-heeled buckled shoes had pointed toes. Mule-type shoes worn by women were of embroidered brocade, silk, velvet or kid.

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Male civilians wore narrow, flat, buckled pump shoe. Women also favoured narrow, flat slippers laced around the ankle.

In 1839 Mr. Charles Goodyear discovered the vulcanized processed of cure rubber which was to have a significant impact on the shoe industry. But in 1869 the first flat soled rubber canvas shoe was made which was used principally as running & court shoe.

In 1863 the English football association issued its first ruling "No player should be allowed to wear projecting nails, iron plates or Gutta percha on the soles or heels of his boots" (Gutta percha is a fragile pre rubber like substance)

At the beginning of the first step to mechanise the footwear manufacture was started by attaching sole with metal elements to the uppers.it was Mr.David M Ranilph who patented sole fastening with rivets. **In 1810 Sir Isambamel Prunel** in London developed riveting machine. Almost at the same time Mr. Joseph Walker of America introduced fastening of sole by nails.

In 1858, Mr. Lyman R. Blake, a shoemaker, invented a machine for sewing the leather soles of shoes to the lasted uppers. His patents were purchased by Mr. Gordon McKay, who improved upon Blake's invention. The shoes made on this machine came to be called **" McKays Shoe".** During the Civil War, many shoemakers were called into the armies, thereby creating a serious shortage of shoes for both soldiers and civilians. The introduction of the Mckay was speeded up in an effort to relieve the shortage.

Even when McKay had perfected the machines, he found it very difficult to sell them due to various reasons. McKay gave the Machine on rental basis & issued "Royalty Stamps", representing the payments made on the machine-made shoes. This method of introducing machines became the accepted practice in the industry. Shoe manufacturers were able to use machinery without tying up large sums of money. This meant that, in the event a new shoe style suddenly became popular and called for major changes in shoe construction methods and production equipment, the manufacturer wasn't left with a huge investment in machinery.

This unique service was used in the shoe industry long time before it spread to other industries. McKay quickly found that in order to ensure payment for the use of the machines it was necessary to keep them in operation. A machine which wasn't working did not earn any money for Mckay. He therefore made parts interchangeable and organized and trained a group of experts who could be sent wherever machines needed replacement of parts or adjustment.

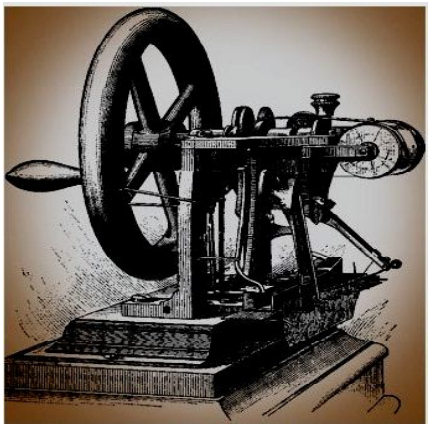
Development of sewing machine was the next very step towards rapid growth of the industry. Although the sewing machines of today in various form is largely of American origin stemming from the invention made in 10 years between 1845 – 1854. The earliest sewing machine was invented **in 1790 by Mr. Thomas Saint**,a London cabinet maker.

A chain stitch sewing machine using an eye pointed needle was made by a Germany Hosiery maker **Mr. B.Krems in 1810**.

But the first chain stitch sewing Machine which has some degree of success was invented by **Mr. Thimonnier, a French tailor in 1830**.

In 1834, Mr.Walter Hunt built America's first sewing machine which was also the first eye pointed needle sewing machine. He later lost interest in patenting his sewing machine, because he believed the invention would cause unemployment.

The eye pointed needle sewing machine was later re-invented by **Mr. Elias Howe in 1846** of Spencer, Massachusetts. Mr. Howe also patented the machine.



Elias Howe's Patented First Sewing Machine – 1846

Hunt's Patent Model of a Sewing Machine – 1854

In both Walter Hunt's and Elias Howe's sewing machine a curved eye pointed needle that passed the thread through the fabric in an arc motion; on the other side of the fabric a loop was created; and a second thread carried by a shuttle running back and forth on a track passed through the loop creating a lockstitch.

Elias Howe's design was copied by Mr. Isaac Merit Singer and others, leading to extensive patent litigation. A court battle in the 1850s showed conclusively Howe was not the originator of the eye pointed needle and ultimately gave credit to Walter Hunt.

The court case was started by Mr. Elias Howe against Mr. Isaac Merit Singer, the then largest manufacturer of sewing machines. Singer disputed Howe's patent rights, by claiming that the invention was already some 20 years old and that Elias Howe should not have been able to claim royalties for it. However, since Walter Hunt had abandoned his sewing machine and not patented it, Elias Howe's patent was upheld by the courts in 1854.

In 1852 Mr.Allen B.Wilson found a new and superior way of lock stitch.A sewing Machine with electric motor in place of hand driven wheel was made available in the market by M/S Singer sewing Company in 1889.This benefit was not reached to the masses because individual electricity was not available during that time.

In 1862 first Pfaff Sewing Machine was made.

Isaac Singer's machine was somewhat different its needle moved up and down, rather than sideways, and it was powered by a treadle rather than a hand crank. However, it used the same lockstitch process and a similar needle. Mr. Elias Howe died in 1867, the year his patent expired.

In 1875 a machine for making a different type of shoe was developed. Later known as the Goodyear Welt Sewing Machine, it was used for making both Welted and Turn shoes. These machines became successful under the management of Mr. Charles Goodyear Jr., the son of the famous inventor of the process of vulcanizing rubber.

Following McKay's example, Goodyear's name became associated with the group of machinery which included the machines for sewing Welt and Turn shoes and a great many auxiliary machines which were developed for use in connection with them. Invention as a product of continuous research has progressed at an almost incredible pace ever since. This has required great sums of money, sometimes more than a million dollars, to perfect one shoemaking machine, and tireless patience and effort. Inventors have often mechanized hand operations that seemed impossible for any machine.

By the mid-**19th century**, shoes began to be mass-produced in factories and thus became more widely available to the general public. Men wore laced or elastic-sided ankle boots. Women wore heeled shoes, low cut or laced or buttoned to the ankle. Canvas-topped, rubber-soled shoes (sneakers) were introduced for sports.

The **20th-century** emphasis on youth and informality has influenced shoe design. Male footwear includes low-cut, laced oxfords in various leathers, slip-on loafers, ankle boots, and specialized sport shoes. According to changing fashion, women have adopted high, spike, or low heels, with thin, platform, or wedge soles, in closed shoes or sandals; in the late 20th century, tight, knee-height boots were popular for day wear. With the growing interest in exercise for physical fitness, various adaptations of running shoes have become the universal footwear for men, women and children.

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- : The End : -

IULTCS Welcomes New Members

The IULTCS has announced that COMESA/LLPI is now a Member of the IULTCS and the Netherlands has also recently joined the International Union as an Associate Member.

Under the leadership of Prof. Mwinyikione Mwinyihija – Executive Director of the Leather and Leather Products Institute (LLPI) based in Addis Abada and a strong promoter and supporter of the leather industry in COMESA countries – the LLPI has now joined the IULTCS as full members. COMESA countries represented by the LLPI include Ethiopia, Kenya, Rwanda, Sudan, Uganda and Zambia. With continued growth of leather manufacturing in the Central and Southern Africa regions, it is important that the voice of this region be heard in global rechnical discussions and that make a contribution towards the technical direction taken by industry.

The Netherlands also continues its history of positive contributions to the leather industry and Dirick von Behr of the company Smit & Zoon will represent this sector at the International Union Level.

Dr. Tegtmeyer said in welcoming these organizations "On behalf of the Executive Committee I am pleased to welcome these new members and look forward to their active participation in IULTCS activities". The next meeting of the IULTCS Executive will be during the APLF in Hong Kong on 30th March.

Prof. Mwinyikione Mwinyihija is a well-known contributor at leather industry events worldwide.

Govern urged to announce new package for Pakistan Leather Industry

The tanning industry has urged the government to announce new incentive package for the leather industry to enable it to compete with the regional competitors to help enhance exports of leather goods and finished leather. According to Pakistan Tanners Association Chairman Gulzar Firoz, Pakistan leather export registered a decline of 20.93 percent during July-December, 2015, against the regional countries who have shown tremendous increase up to 73.58 percent mainly on account of incentives provided by their governments.

China exports increased by 19 percent, India 63 percent while Bangladesh is on top of the list with 73.58 percent increase in the leather exports. The recession all over the world also negatively impacted the Pakistan's leather exports, he said and urged the government to take corrective measures by providing incentives which are required to have level playing field.

Pakistan is producing the finest quality of leather, as good as any European Country and some of the best brands of shoes are buying leather from Pakistan, being shipped to China and Vietnam where the shoes are produced and re-exported to USA and European markets.

"Our global share in leather exports is negligible, thus the government must consider measures to increase the exports," he added. Gulzar Firoz said that like other value added exports 4 percent incentive which is being goven to leather products in case of 10 percent increase, the same incentive on FOB (freight on board) value may be given on the export of finished leather.

The State Bank of Pakistan recently reduced the refinance rates for textile sector only from 3.5 percent to 3 percent which needs to be extended to the leather sector, he mentioned. He said that Customs Duty three years ago on import of raw hides and skins was one percent, two years ago it was increased to two percent that was increased to three percent in last year budget. This three percent has increased the cost of raw material which is not refunded, he said and urged the government to abolish this three percent import duty and make this sector "Zero" rated industry as more than 80 percent of leather production is exported in the form of leather or leather products.

PTA Chairman further said that duty drawback rebates for leather sector in Pakistan are much lower than neighboring countries which is just 0.8 percent as compared with 5.8 percent in India, 7.50 percent in China, and 12.50 percent in Bangladesh. Our export of cow and buffalo hides for shoes in Pakistan is 1.17 percent against 5.8 percent in India, 7.50 percent in China and 12.50 percent in Bangladesh. On export of leather garments, the rates in Pakistan is 4.26 percent against 9.6 percent in India, 12.50 percent in China and Bangladesh each. On export of leather gloves the rates in Pakistan is 1.54 percent whereas in India the rate is 7.6 percent, in China 12.50 percent and in Bangladesh 12.50 percent. Similarly on export of footwear, the rates in Pakistan are 1.85 percent, in India 9.1 percent, in China and Bangladesh 12.50 percent.

SMALL SAVINGS RATE CUT : SHOULD YOU CLOSE YOUR PPF ACCOUNT ?

The PPF rate is down and could dip further as interest rates are cut. If your account is about to complete 15 years, here's what you should know.

Maturity is not in 15 years

The maturity period of a Public Provident Fund (PPF) account is calculated from the end of the financial year in which the account was opened. For instance, if you opened your PPF account on 15 April 2001, the account has completed 15 years but has not matured yet. The 15-year period would begin from the end of 2001-02 (31 March 2002), so your account will mature on 31 March 2007.

Tenure can be Extended

After the account matures, you can either withdraw the money or extend the account tenure. If you wish to extend it, you have two options : continue with the account without further contributions or continue investing in the account. If you choose to continue investing in it, you have to submit an application for extending the account tenure for a block of five years. The application (Form H) has to be submitted within a year from the maturity date. After five years, the account tenure can be further extended for another five years.

Continuing with Investing

If you don't submit an application for tenure extension, the PPF account tenure automatically gets extended but you cannot make further contributions to it. The balance in the account will continue to earn interest, but you will no longer be requires to invest the minimum '500 in the account every year. Once this option of continuing without contribution has been selected, the subscriber cannot alter it to make further contributions to the account.

Withdrawals during Extension

During this extension period, the withdrawal rules are more lenient. If the account tenure has been extended without contribution you can withdraw any amount, but just once in a year. The balance will earn interest till it is withdrawn completely. If the tenure has been extended with contribution, you can withdraw up to 60% of the balance that is in the account at the beginning of each block of five years. Avoid withdrawals at the end of a calendar month, otherwise you will lose the interest for that month.

No Change in Taxation and Other Rules

Whether you extend the account tenure with or without contributions, the tax treatment does not change. The interest earned is tax-free and contributions can be claimed as a deduction under Section 80C. The rules for contributing to the extended account also remain the same,

with a cap of Rs.1.5 lakh in a financial year. The only change is that NRIs, who may have opened PPF accounts before the change in their residency status, are not allowed to extend the account tenure after maturity.

Account can be Fore-closed

This year onwards, government has allowed investors to close their PPF accounts early if the account in question has completed five years. The account can be closed if they require money for their children's higher education or for medical treatment. However, there is a penalty for foreclosure. The investor gets 1% less interest on all the preceding years. Hence, this is not a good option unless there is a real emergency.

Account can be Transferred

You can also transfer your PPF account to a bank or post office branch, which is more convenient for you. Some banks such as ICICI Bank allow online operation pf PPF accounts, which makes it very easy, not only for working people but also for senior citizens. An application for the transfer of the account has to be submitted on the prescribed form to the bank or Post Office branch where you hold an account at present.

Since 1950

LESA

LEATHER SCIENCE ABSTRACTS

VOLUME 49 **NUMBER 04** **APRIL, 2016**

NATIONAL INFORMATION CENTER FOR LEATHER & ALLIED INDUSTRIES (NICLAI)
NATIONAL INFORMATION SYSTEM FOR SCIENCE & TECHNOLOGY (NISSAT)

CENTRAL LEATHER RESEARCH INSTITUTE
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Leather Science Abstracts **(LESA)** is published by National Information Center for Leather and Allied Industries **(NICLAI),** Central Leather Research Institute **(CLRI)**, Chennai.

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All enquiries for further details should be addressed to: THE DIRECTOR, **(ATTN.: EDITOR, LESA)** CENTRAL LEATHER RESEARCH INSTITUTE, ADYAR, CHENNAI-600 020, INDIA.

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LEATHER SCIENCE AND TECHNOLOGY

LEATHER INDUSTRY. HISTORY. MANAGEMENT. ECONOMICS. EDUCATION

49.14552

Optimising production scheduling in the batch industry. ROKOHL (L), (M/s. AspenTech, Canada Limited, Bow Valley Square II, #3300, 205-5th Avenue South West, Calgary, AB T2P 2V7, Canada). (Chem. Wkly.; 59, 11; 2013, Oct., 22; 211-2).

Process manufacturers are constantly under pressure to maximize productivity from their assets. The vital importance, of optimizing production scheduling to remaining competitive and a number of factors that must be considered simultaneously, ranging from capacity and material limitations, batch dependencies, sequenced changeovers and scheduling of preventive maintenance. All of this must be done while minimizing inventories and ensuring that customer orders are ready to ship on time.

49.14553

Investment opportunities in the Indian chemical industry. SHARMA (NM), (Institute of Chemical Technology, Purannal Singhani Road, Opp. Khalsa College, Near Don Bosco School, Matunga East, Mumbai-400 019, India). (Chem. Wkly.; 59, 15; 2013, Nov., 19; 212-4).

Speaks on some of the items that are not made in the country and need to be manufactured. These items are acrylic acid, Aniline/MDI (Methylene diphenyl diisocyanate), Polymethyl methacrylate etc. It is stressed very much that an acrylic acid and derivative complex with a capacity of 200,000-tpa should be considered. It is very firmly expected that a non-phosgene route that should be linked to making phenol and bisphenol-A, should be adopted. (4 Photos).

49.14554

EMERGE : an alternative avenue for raising funds. (Leather Age; 35, 12; 2013, Nov.; 49-50). It is a well established fact that Small and Medium Enterprises(SMEs) play a very important role in developing the local economy. They have been a key engine of economic growth, job creation, wealth distribution and effective mobilization of resources(capital and skills). SMEs face many challenges, including raising productive capital for their growth. There are limitations on how much they can tap the banking sector for their growth while they have challenges, for decades depended on banking channels. The types of companies, that can seek to raise funds on such a platform; the ways by which the SMEs benefit from listing; what are all should be the eligibility criteria for listing on EMERGE and what initiatives, that have been so far taken by National Stock Exchange(NSE) for developing the market. NSE has been encouraging the small companies that desire to go in for voluntary grading by credible agencies, to give confidence to investors.

49.14555

The chemistry in Veneto region : A "holding" sector. CHIMIS (S), (Leather Age; 35, 11; 2013, Oct.; 45). nswers the questions on how, the chemical-tanning allied sector, in Italy and on the foreign markets.

49.14556

The world's economy effects made in Italy and the tanning industry are still leaders.... against all the odds! (Leather Age; 35, 11; 2013, Oct.; 36).

Analyses the production, of made in Italy tanned leathers based on Unic date.

49.14557

Maximising the productivity of plastic components manufacturers. KARNIK (S), (Asia Pacific Mobil SHC (Spontaneous Human Combustion, M/s. Exxon Mobil Lubricants Private Limited, 4th Floor, Tower C, Building No. : 10, DLF Cyber City, DLF II, Gurgaon-122 002, Haryana State, India). (Chem. Wkly.; 59, 9; 2013, Oct., 8; 211).

Discusses the achievement, of a competitive advantage in the operation, maximization of the productivity and the reduction of the energy consumption of hydraulic machinery of the plastic companies by combining the use of high quality oils and an effective oil and equipment analysis programme.(2 Photos).

49.14558

Status and strategies for oil palm development in India. ARUL RAJ (S), (Directorate of Oil Palm Research(DOPR), Redda Vegi Saibaba Temple Road, Pedavegi Mandal-534 450, Ankannagudem Village, Godavari District, Andhra Pradesh State, India). (Chem.Wkly.; 59, 13; 2013, Nov., 5; 212-4).

Discusses the present status and the various strategies, that should have to be pursued for developing both the oil palm production and successful marketing of the oil palm in India. (3 Tab.; 3 Fig.).

49.14559

World oil supply & demand-long term outlook. MISTRY (DE), (M/s. Godrej International Limited, Pirojshanagar, Eastern Express Highway, Vikhroli, Mumbai-400 079, India). (Chem. Wkly.; 59, 15; 2013, Nov., 19; 209-10).

Describes briefly about the role of palm complex, yield improvement, use of oils & fats for biofuels and the challenge to be met. It is questioned whether the world can produce more to accommodate the needs of the biofuel industry. (4 Photos).

49.14560

Doubling global castor oil world from current levels : Approaches & strategies. UDESHI (AV), (M/s. Jayant Agro-Organics Limited, Corporate Headquarters, No. : 38, Akhandanand, Off. M.V. Road, Andheri East-J.B. Nagar, Mumbai-400 059, India). (Chem. Wkly.; 59, 11; 2013, Oct., 22; 223-6).

Castor oil has been an integral part of life since centuries. Its uses have grown multifold in this generation. India is at present serves as the largest producer and exporter of castor oil, owing to its ideal tropical climatic conditions. Discusses the current demand pattern, challenges and solutions, Industry and trade, infrastructure and sustainability. Stresses the necessity, of a multi-pronged approach for the development of this agro-based industry. (2 Tab.; 6 Fig.; 1 Photo).

49.14561

Can India manufacture urea and ammonia without use of gas? NATESAN (MV), (No. : 5B, 6th Block, Rani Meyyammai Towers, MRC Nagar, Raja Annamalai Puram, Chennai-600 028, India). (Chem. Wkly.; 59, 11; 2013, Oct., 12; 193-4).

Even though several economically and strategically important industries are vying with each other to use gas as raw material, efforts are being adopted by these companies for drastic minimization in the utilization of the urea as the raw material. Gas is being used for manufacturing urea which in turn is produced without ammonia. Describes the methods for producing these industries. Indicates the non-necessity and in fact the non-advisability of utilizing the gas for producing either gas or ammonia. Discusses the direct economical production of gas with lime. The economic production of gas is expected to reduce both the India's needs as well as the prices of the gas. This may facilitate India to save valuable foreign exchange and also make the gas for availability to other uses like power generation city distribution. States the desirabilities, of erecting the smaller plants etc. for producing fertilizers near consuming areas. It is very firmly viewed that the dependence on imports and foreign exchange requirements will be very much reduced by vastly improving the overall prosperity in the region/state. (2 Photos).

49.14562

Eco-benign leathers using greener tanning and dyeing materials. JAWAHAR (M), KANTH (SV), ARUMUGAM (Y), RAJANGAM (V), CHANDRASEKARAN (B), CHANDRA BABU(NK), (Council of Scientific and Industrial Research-Central Leather Research Institute(CSIR-CLRI), Adyar, Chennai-600 020, India). (Leather Age; 35, 11; 2013, Oct.; 33-5).

Improved eco-balances are leading to niche products for special markets in global leather market using sustainability and green chemistry. This necessitates development of wide variety of natural products to balance the need of such markets. The leather industry is also undergoing several transition due to environmental concerns. Moreover, environmental constraints on discharge of tannin and dye–containing wastewater have forced to look for natural tannins and compatible natural dyes, which have several advantages like the toxicity and cost that are easy available. Natural tannins are obtained from waste products and natural dyes are obtained from newer plant resources. The development, of colored leathers using both natural tannins and dyes in combination has been approached. A wide range of colors can also be produced through mordent with eco-benign materials. Established and presented the color chemistry and the color reflectance values. Studied the visual appearance and their fastness properties. Developed color leathers have the potential value in the global leather market as eco-benign leathers. (10 Ref.; 1 Tab.; 2 Fig.).

49.14563

An opportunity to meet the challenges of the 21st Century. CLARK (J), (Chemistry Department,York University, Faculty of Science, No. : 124, Chemistry Building(CB)(Building 16), No. : 4700 Reele Street, Toronto, Ontario, Canada M3J 1P3). (Chem. Ind. Dig.; 26, 10; 2013, Oct.; 67-8).

The products of the chemical industry are ubiquitous in modern society and have greatly improved the quality of the human lives. However, manufacturing these products in both an environmentally compatible and economically viable way based on renewable feedstocks is of critical importance. Discusses these factors that form the basis of Green Chemistry.

49.14564

Impact of global warming on world economics-An analysis-Part 2. PAUL (BC), (M/s. Indian Leather Technologists' Association(ILTA), 'Sanjoy Bhavan', No. : 44, Shanti Pally, 3rd Floor, Kolkata-700 107, India). (J. Indian Leather Technol. Assoc.; 63, 10; 2013, Nov.; 1239-54).

Analyses in detail about the marketing impacts of the global warming on world economics.

49.14565

MBA Tech-the present expectation & future demand of the chemical industry. JHAVERI (A), (Department of Chemical Engineering, Mukesh Patel School of Technology Management and Engineering, Narjee Monjee Institute of Management Studies(NMIMS), Bhakti Vedang Marg, Juhu Vile Parle Development(JVRD), Vile Parle(W), Mumbai-400 056, India). (Chem.Wkly.; 59, 11; 2013, Oct., 12; 215-7).

Discusses the unique and very essential combination, of competent chemical engineers and efficient managers who happen to be the chemical technomanagers and who have the ability to create and effectively maintain the chemical industry. (2 Tab.).

49.14566

Study of new technologies of information and communication(TIC) in tanning industry. LATHA (P), (Computer Center, Council of Scientific and Industrial Research-Central Leather Research Institute(CSIR-CLRI), Adyar, Chennai-600 020, India). (Leather Age; 35, 10; 2013, Nov.; 21-4 & 33-5).

Studies the provision, of the way in which the major applications of the new technologies of the information and communication technology(ICT), that can be applied in the tanning industry and its development to leverage its current strength to emerge as a global leader in leather; to provide a closer interaction of leather industries with research and education institutes; to facilitate towards societal goals and to enter into newer frontier of science and technologies. Discusses a detailed work on networking of tanneries, eLearning modules, Enterprise Resource planning solution and methods of Data warehousing, Data mining and eCommerce techniques. Attempted an approach to build a smart computer for tannery application. (8 Ref.; 3 Tab.; 6 Fig.).

49.14567

Information and communication technology : Its impact on human resource development in Academic Library and Information Centre in Chennai City : An analytical study. ABDUL KAREEM (A), KASI RAO (V), (Bharathiyar University, Marudamalai, Coimbatore - 641 046, Tamil Nadu State, India and Great Lakes Institute of Management, Dr. Bala V. Balachandar Campus, East Coast Road, Manamai-603 102, Thirukazhukundram Taluk, Kancheepuram District, Tamil Nadu State, India). (Paper presented at the 18th National Convention on Knowledge Library and Information Networking(NACLIN-2015) at Gulbarga University, Gulbarga, Karnataka State, India during November 24-26, 2015).

Aims in this study to investigate the Information and Communication Technology, its impact on human resource development and customer satisfaction among Academic Libraries and Information Centers in Chennai in India. Population studied in this research includes academic collage librarians, faculty and students. Sample size of 12 librarians and 31 students community obtained elimination of a number of samples in the calculation stage, normality was 43. Data collection tool was researcher made questionnaire of Information and Communication Technology and standard questionnaire of human resource development and confirmed their validity. Analyzed the collected data by using simple standard methods and was tabulated. The results include Information and Communication Technology impact on human resource development components, professional skills, library user views and suggestions.

PROTEINS AND COLLAGEN

49.14568

Design of a prototype to produce a new collagen material by dehydration. OLLÈ(L), SOROLLA (S), CASAS (C), BACARDIT (A), (A^3 Chair in Leather Innovation, Escola d'Enginyeria dIgualada(EEI), Universitat Politecnica de Catalunya(UPC) 15 Plaça del Rei, 08700 Igualada, Spain). (J. Soc. Leather Technol. Chem.; 97, 6; 2013, Nov.-Dec.; 244-50).

Aims for the development of a prototype to produce a new collagenous material by dehydration for use in the leather industry. Obtained a new dry and very porous collagenous substrate through this process which allows the application of tanning and retanning chemicals by inversion in aqueous solutions and also the economic and environmental advantages from the use of this material when compared to existing traditional processes. (12 Ref.; 10 Tab.; 9 Fig.).

ENZYMOLOGY

49.14569

Unhairing : improved leather quality with less sulfide. FENNEN (J), HERTA (D), CHRISTNER (JPJ), (M/s. TFL Ledertechnik AG, Klybeckstrasse 15, 4057 Basel, Switzerland). (Leather News India; 5, 1; 2014, Jan.; 34-5).

Describes a low sulfide, low lime process with good epidermis, hair-root and fine-hair removal which is possible with the proper preparation of the hide in soaking. A selective enzymatic auxiliary can be used in unhairing without affecting the integrity of grain, bellies and flanks. Indicates several benefits, that can be obtained by the technology through a combination of both products over a traditional way of working. They are (a) improved safety; (b) much less obnoxious smells; (c) substantially reduced load on the environment namely (i) sulfide, (ii) nitrogen; (iii) chemical oxygen demand(COD) and (iv) sludge; (d) optimized and more consistent yield in lay-out, cutting and leather quality and (e) lower chemical process and waste costs. (1 Tab.; 4 Fig.).

49.14570

Potential application of â-1,3 glucanase from an environmental isolate of *Pseudomonas aeruginosa MCCB 123* in fungal DNA extraction. JOSE (D), JAYESH (P), GOPINATH (P), MOHANDAS (A), BRIGHT SINGH (IS), (National Center for Aquatic Animal Health, Cochin University of Science and Technology, Lakeside Campus, Fine Arts Avenue, Cochin-682 016, Kerala State, India). (Indian J. Exp. Biol.; 52, 1; 2014, Jan.; 89-96).

Describes *Pseudomonas aeruginosa MCCB 123* that was grown in a synthetic medium for â-1,3 glucanase production. â-1,3 glucanase was purified with a molecular mass of 45 kDa from the culture filtrate. The enzyme was a metalloenzyme as its â-1,3 glucanase activity got inhibited by the metal chelator ethylene diamine tetra acetic acid(EDTA). Optimum *p*H and temperature â-1,3 glucanase activity on laminarin was found to be 7 and 50°Centigrade respectively. Evaluated the MCCB 123 â-1,3 glucanase was found to have good lytic action on a wide range of fungal isolates and hence its application in fungal deoxyribonucleoro acid(DNA) extraction. â-1,3 glucanase purified from the culture supernatant of *Pseudomonas aeruginosa MCCB 123* could be used for the extraction of fungal DNA without the addition of generally using any other reagents. Optimum *p*H and temperature of enzyme for fungal DNA extraction was found to be 7 and 65°Centigrade respectively. This is the first report on â-1,3 glucanase employed in fungal DNA extraction. (25 Ref.; 3 Tab.; 10 Fig.).

49.14571

Hypolipidimic and antioxidant activity of ethanolic extract of *Symplocos racemosa Rexb.* in hyperlipidemic rats : an evidence of participation of oxidative stress in hyperlipidemia. DURKAR (AM), PATIL (RR), NAIK (SR), (Department of Pharmacology, Sinhgad Institute of Pharmaceutical Science, Nos. : 309/310, Kusgaon(BK), Off. Mumbai-Pune Expressway, Lonavala, Pune-410 401, Maharashtra State, India). (Indian J. Exp. Biol.; 52, 1; 2014, Jan.; 36-45).

Studied the hypolipidemic and antioxidant activity profiles of ethanolic extracts of *Symplocos racemosa*(EESR) by triton-WR1339(acute) and high fat diet induced(chronic) hyperlipidemic rat models. Observed a significant increase in total cholesterol(TC), triglycerides(TG), very low density lipoproteins(VLDL), low density lipoproteins(LDL) and decrease in high density lipoproteins(HDL) in serum in both the models. EESR(200 and 400 mg/kg) and simvastin(10 mg/kg) administered orally reduced the elevated serum lipids(TC, TG, VLDL, LDL), restored the decreased HDL and

improved the athrogenic index. EESR treatment prevented the increased formation of malondialdehyde(MDA) in liver, restored the depleted liver antioxidants, glutathione, superoxide dismutase, catalase significantly. The increased liver cholesterol, HMG-CoA(3-hydroxy-3-methyl-glutaryl-Coenzyme) reductase activity and body weight of hyperlipidemic rats were significantly reduced by EESR treatment. The EESR exhibited HMG-CoAreductase, a rate limiting enzyme in cholesterol biosynthesis, thereby causing hyperlipidemic effects. EESR treatment also improved histoarchitecture of hepatocytes in hyperlipidemic rats. Experimental findings demonstrated anti-hyperlipidemic and antioxidant activity of EESR, which may be due to the presence of flavonoids phenolic compounds and steroids. (49 Ref.; 6 Tab.; 5 Fig.).

49.14572

Study on the synergistic action of cellulose systems from *Trichoderma* and *Aspergillus* mutants on carboxy methyl cellulose. ARUN (P), SUHAS (VB), NAVEEN (S), RAVISHANKAR (HB), (Department of Biotechnology, RV College of Engineering, RV Vidhyanikethan Post, Mysore Road, Bengaluru-560 059, Karnataka State, India). (Scitech J.; 1, 1; 2014, Jun.; 25-8).

Describes the fungal cellulases which are multi subunit enzymatic proteins that convert cellulose into fermentable sugars. Exploited this process for interesting applications such as textile processing, waste management and cellulosic ethanol. Inconsistencies in the enzyme yield and activities have been the primary reasons for this promising area of research not being economically viable at the industrial scale. Random mutagenesis and synergism of mixed fungal cellulase systems exhibit a feasible solution to the above stated problem. Indigenous wild type strains of *Trichoderma viride* and *Aspergillus niger* were subjected to mutagenesis with ultraviolet light and ethyl methane sulphonate. Mutants were selected based on the colony diameter on carboxy methyl cellulose plates and their activities determined by submerged fermentation technique. Two strains with maximum increase in endo Glucanase activities. *Trichoderma UV* 120s-0.3975 $IU.ml^{-1}$(77%) and *Aspergillus UV*200s-0.1356 $IU.ml^{-1}$(65%) as compared to the wild type were selected for synergison studies on carboxy methyl cellulase substrate. Synergistic profiles of mixed cellulase systems obtained showed a substantial increase in the overall conversion of cellulose to reducing sugars compared to either of the individual profiles. These results indicate that the use of synergistic action of cellulase systems from mutated strains of fungi increase the conversion efficiency, hence exhibiting the potential of the above described strategy to be applied on large scale for development of feasible and economical methods for industrial applications of fungal cellulases. (25 Ref.; 2 Fig.).

PRE-TANNING

49.14573

Protective effect of calcium hydroxide in hair-saving unhairing process. HI (Y), LIU (L), DAN (W), DAN (N), (National Engineering Laboratory for Clean Technology of Leather Manufacture, Sichuan University, Wangjiang Campus, Section No. : 24 of Southern Yichuan, Chengdu 610065, Sichuan Province, People's Republic of China). (J. Soc. Leather Technol. Chem.; 97, 5; 2013, Sep.-Oct.; 200-6).

Discusses the native bovine hair that had been selected as the direct research subject rather than fresh salted bovine hide for better understanding of the mechanism of alkali-induced hair immunization. Evaluated the state of hair, both before and after having undergone the procedure of immunization by measuring the changes of active groups, thermal stability surface morphology, strength, calcium content and cysteine content. The result indicates that the immunization is indeed caused by the interaction between calcium hydroxide and the cystine active center. Meanwhile, the optimum condition for immunization was : calcium hydroxide 15 g/l and treatment time 90 minutes. This work may, to some extent, provide theoretical support for searching the balance between the dehairing[hair burning] and hair saving process. (15 Ref.; 2 Tab.; 15 Fig.).

LEATHER CHEMICALS AND AUXILIARIES

49.14574

Transition-metal-free amination of aryl boromic acids and their derivatives. COEFFARD (V), MOREAU (X), THOMASSIGNY (C), GRECK (C), (Institut Lavoisier de Versailles, UMR(United Medical Resources) Central de la National Recherche Scientifique(CNRS) 8180, Universite de Versailles Saint-Quentin-en-Yvelines, 45, Avenue des Etats-unis, 75035 Versailles Pedex, France). (Angew. Chem.; 52, 22; 2013, May, 27; 5684-6).

Described recently the advances in transition-metal-free direct amination of aryl bornonic acids and their derivatives. These reactions are based on the use of hydroxylamine or azide derivatives and offer great potential for further applications. (27 Ref.; 5 Schemes).

49.14575

An efficient approach to the Securinega alkaloids approved by cooperative N-heterocylic carbene/ Lewis acid catalysis. ELSOHLY (AM), WESPE (DA), POORE (TJ), SPYDER (SA), (Department of Chemistry, Columbia University, Havemeyer Hall, 3000 Broadway, New York 10027, USA). (Angew. Chem.; 52, 22; 2013, May, 27; 5789-94).

Describes most of the syntheses that are developed for the Securinega alkaloid class require lengthy sequences to create their bridging butenoide domains. A novel approach uses N-heterocyclic carbenes(NHCs) and Lewis acids to forge the entire domain in a single step from appropriate precursors, showing that ynal-derived homoenolates can participate as nucleophiles in intramolecular settings. (70 Ref.; 2 Tab.; 4 Schemes).

49.14576

Base-pairing properties of a structural isomer of glycerol nucleic acid. KARRI (P), PUNNA (V), KIM (K), KRISHNAMURTHY (R), (Department of Chemistry, The Scripps Research Institute, 10550 North Torrey Pines Road, La Jolla, California 92037, USA). (Angew. Chem.; 52, 22; 2013, May, 27; 5840-4).

Describes a structural isomer of GNA called IsoGNA(Isomer glycerol nucleic acid) that was found-in sharp contrast to GNA-to be highly restricted in its ability to base-pair with itself and other

nucleic acids.While homogeneous sequences(e.g. isoGNA$(A)_{1B}$) formed duplexes, the heterogeneous sequences showed no base-pairing. This exemplifies the limitations of canonical nucleobases as the recognition elements in simpler, more primitive phosphate backbones. (38 Ref.; 11 Fig.).

49.14577

Synthesis of aldehydic ribonucleotide and amino acid precursors by photoredox chemistry. RITSON (DJ), SUTHERLAND (JD), (MRC Laboratory of Molecular Biology, Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge CB2 0QH, England). (Angew. Chem.; 52, 22; 2013, May, 27; 5845-7).

Describes an ultraviolet(UV) irradiation of a system formed by adding copper(**I**) cyanide to an aqueous solution of glycolonitrile, sodium phosphate and hydrogen sulfide efficiently generates aldehyde precursors to the building blocks of ribonucleoro acid and proteins. (15 Ref.; 1 Tab.; 2 Schemes).

49.14578

Weak arene C=H—O hydrogen bonding in palladium-catalyzed arylation and vinylation of lactones. HUANG (Z), CHEN (Z), LIM (LH), QUANG (GCP), HIRAO (H), ZHOU (J), (Division of Chemistry and Biological Chemistry, School of Physical and Mathematical Sciences, Nanyang Technological University, 21 Nanyang Link, 637371, Singapore). (Angew. Chem.; 52, 22; 2013, May, 27; 5807-12).

Describes the palladium catalyst that uses weak CH···O hydrogen bonding to control the absolute configuration of the new stereocenter in the palladium-catalyzed arylation and vinylation of lactones. A similar palladium catalyst used conventional NH···O hydrogen bonding to guide stereoselection. (66 Ref.; 3 Fig.; 9 Schemes).

49.14579

A facile strategy for selective incorporation phosphoserine into histones. LEE (S), OH (S), YANG (A), KIM (J), SÖIL (D), LEE (D), PARK (H), (Department of Biological Sciences, Korea Advanced Institute of Science and Technology, No. : 335 Gwahak-ro, Yuseong-gu, Daejeon 305-701, Republic of Korea). (Angew. Chem.; 52, 22; 2013, May, 27; 5771-5).

Describes a general strategy for producing recombinant histones with site-specific serine phosphorylation which is developed by engineering phosphoseryl-transparent ribonucleoroacid(tRNA) synthetase O-phosphoserine persulfidic sulfur(Sep RS) and elongation factor(Tu)-Thermo unstable(EF-Tu). Serine-phosphorylated nucleosomes provide direct evidence for crosstalk between phosphorylation and acetylation in histones. (21 Ref.; 11 Fig.).

49.14580

Supramolecular self-assembled nanoparticles mediate oral delivery of therapeutic TNF-á siRNA against systemic inflammation. YIN (L), SONG (Z), QU (Q), KIM (KH), ZHENG (N), YAO (C),

CHAUDHURY (I), TANG (H), GABRIELSON (NP), UCKUN (FM), CHENG (J), (Department of Materials Science and Engineering, University of Illinois, Urbana-Champaign, 1304 West Green Street, Urbana, Illinois 61801, USA). (Angew. Chem.; 52, 22; 2013, May, 27; 5757-61).

Describes the multifunctional supramolecular self-assembled nanoparticles(SSNPs)-that consist of a set of rationally designed components that collectively facilitate efficient intestinal absorption of siRNA(ribonucleoro acid) and induce potent TNF(tumor necrosis factor-á) silencing in macrophages. Single gavage of SSNPs(supramolecular self-assembled nanoparticles) in mice depletes systemic TNF-á production at an siRNA dose as low as 50ìgkg^{-1} and thus protects mice from lipopolysaccharide-induced hepatic injury. (39 Ref.; 22 Fig.).

49.14581

Total synthesis of the antifungal agent Echinocandin C. MESSIK (F), OBERTHÜR (M), (Fachbereich Chemie, Philipps-Universität Marburg, Hans-Meerwein-Strasse, 35032 Marburg, Germany). (Angew. Chem.; 52, 22; 2013, May, 27; 5871-5).

Describes a dipeptide building block with fully elaborated *N*-acyl hemiaminal which is proned to be a versatile precursor for echinocandin C, a prototypical member of the echinocandin group of antimycotic drugs. This first total synthesis of an *N*-acyl hemiaminal-containing echinocandin is concise and highly convergent, thereby making additional derivatives easily accessible. (42 Ref.; 7 Schemes).

49.14582

Metal-free catalysis of ammonia-borane dehydrogenation/regeneration for a highly efficient and facilely recyclable hydrogen-storage material. TANG (Z), CHEN (X), CHEN (H), WU (L), YU (X), (Department of Materials Science, Fudan University, Shanghai 200433, China). (Angew. Chem.; 52, 22; 2013, May, 27; 5832-5).

Describes the mesoporous graphitic carbon nitride(MGCN; g-C_3N_4) which is utilized to support ammonia borane(AB) on the basis of its accessible nanoporous structure and basic properties. A high loading of uniformly disposed AB nanoparticles into the MGCN is possible giving greatly enhanced H_2(hydrogen) generation from AB and facile regeneration cycles by a hydrazine hydrogenation process, even at room temperature. (53 Ref.; 11 Fig.).

49.14583

Palladium-catalyzed Ortho-Selective C=F activation of polyfluoroarenes with triethylsilane : A facile access to partially fluorinated aromatics. CHEN (Z), HE (C), YIN (Z), CHEN (L), HE (Y), ZHANG (X), (Key Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, No. : 345 Lingling Lu, Shanghai 200032, People's Republic of China). (Angew. Chem.; 52, 22; 2013, May, 27; 5813-7).

Describes a simple catalytic system, broad substrate scope and high versatility that provide an useful and facile access to partially fluorinated aromatics. Tuning the reaction conditions enables a diverse range of product structures to be prepared. (55 Ref.; 3 Tab.; 3 Schemes).

49.14584

The impact of Palladium**(II)** reduction pathways on the structure and activity of Palladium(O) catalysts. WEI (CS), DAVIES (GHM), SOLTANI (O), ALBRECHT (J), GAO (Q), PATHIRANA (C), HSIAO (Y), TUMMALA (S), EASTGATE (MO), (Chemical Department, Bristol-Myers Squipp, One Squibb Drive, New Brunswick, New Jersey 08903, USA). (Angew. Chem.; 52, 22; 2013, May, 27; 5822-6).

Examined the mechanism of in situ palladium-II(Pd**II**) catalyst activation to generate an active $\{L_nPd^0\}$ catalyst from an air-stable Pd" precursor by using the standard conditions of a Miyuara borylation reaction. Two pathways for catalyst activation exist under these conditions, producing two structurally and chemically distinct lanthanide palladium oxide{LnPdO} complexes. (69 Ref.; 1 Tab.; 4 Fig.; 1 Scheme).

49.14585

$PdCl_2$ and *N*-hydroxyphthalimide co-catalyzed C sp 2=H hydroxylation by dioxygen activation. YAN (Y), FENG (P), ZHENG (Q), LIANG (Y), LU (J), CUI (Y), JIAO (N), (State Key Laboratory of Natural and Biomimetic Drugs, Peking University, Xue Yuan Road 38, Beijing 100191, China). (Angew. Chem.; 52, 22; 2013, May, 27; 5827-31).

Discusses that the combination of transition-metal-catalyzed C=H activation and a NHPI(*N*-hydroxyphthalimide) initiated radical process is essential for the title transformation. The neutral and the ideal oxidant, molecular oxygen, make this hydroxylation environmentally friendly and practical. (95 Ref.; 1 Tab.; 1 Fig.; 4 Schemes).

49.14586

Gold catalysis : Highly functionalized cyclopentadienes prepared by intermolecular cyclization of Ynamides and propargylic carboxylates. RETTENMEIER (E), SCHUSTER (AM), RUDOLPH (M), ROMINGER (F), GADE (CA), HASHMI (SK), (Organisch-Chemisches Institut, Ruprecht-Karls-Universität Heidelberg, Im Neuenheimer Feld 270, 69120 Heidelberg, Germany). (Angew. Chem.; 52, 22; 2013, May, 27; 5880-4).

Describes the highly electrophilic gold carbenoids that are available from propargylic esters by means of 1,2-acyloxy migration and open up new reaction pathways for ynamide gold chemistry. In this way highly functionalized cyclopentadiene derivatives become accessible. (82 Ref.; 2 Tab.; 4 Schemes).

49.14587

Copper salts as additives in gold**(I)**-catalyzed reactions. GUÉRINOT (A), FANG (W), SIRCOGLU (M), BOUR (C), BEZZENINE-LAFOLLÉE (S), GANDON (V), (ICMMO/UMR Central National de la

Recherche Scientifique(CNRS)-8182), LabEx CHARMMAT Université, Paris-Sud, 91405 Orsey, France). (Angew. Chem.; 52, 22; 2013, May, 27; 5848-52).

Describes the Cu^{I} and Cu^{II} salts that can advantageously replace silver additives in Au(silver)1-catalyzed reactions. It is believed that anion metathesis between CuYn(Y=OTf, BF_4, PF_6, SbF_6) and [R_3PAuCl] take place to give[RuPAu]Y on the basis of reactivity studies and NMR(nuclear magnetic resonance) experiments. As this process is slow, there is no fast decay of the active species, thus allowing large scale reactions, even at high temperatures, with low loadings of the gold complex. (50 Ref.; 3 Tab.; 2 Fig.; 4 Schemes).

49.14588

Preferential adsorption of solvents on the cathode surface of lithium ion batteries.YU (L), LIU (H), WANG (Y), KUWATA (N), OSAWA (M), KAWAMURA (J), YE (S), (Catalytic Research Center, Hokkaido University, N21W10, Kita-ku, Sapporo 001-0021, Japan). (Angew. Chem.; 52, 22; 2013, May, 27; 5753-6).

Describes the adsorption structures of solvents on the surface of $LiCoO_2$(Lithium Cobalt Oxide), which is the most widely used cathode material for Li-ion batteries, in contact with nonaqueous electrolyte solutions of carbonate esters have been characterized by *in situ* sum frequency generation(SFG) spectroscopy. The cyclic carbonate of ethylene carbonate(EC) is preferentially adsorbed on the $LiCoO_2$ surface, in contrast to linear carbonates, such as dimethyl carbonate(DMC). (35 Ref.; 1 Tab.; 4 Fig.).

49.14589

Unveiling latent á-iminocarbene reactivity for intermolecular cascade reactions through alkyne oxidative amination. MACE (N), THORNTON (AR), BLAKEY (SM), (Department of Chemistry, Emory University, No. : 201 Dowman Drive, Atlanta, Georgia 80322, USA). (Angew. Chem.; 52, 22; 2013, May, 27; 5836-9).

Describes the development of a metallonitrene-initiated alkyene oxidation cascade with intermolecular trapping of the reactive intermediate with a variety of allyl ethers to provide á-oxyimine products in which new C=N, C=O and C=C bonds have all been generated. (56 Ref.; 2 Tab.; 5 Schemes).

49.14590

Total synthesis of the tubulin inhibitor WF-1360F based on macrocycle formation through ring-closing alkyne metathesis. NEUHAUS (CM), LINIGER (M), STIEGER (M), ALTMANN (K), (Swiss Federal Institute of Technology(ETH) Zürich, Department of Chemistry and Applied Biosciences, Institute of Pharmaceutical Sciences, HCl H405, Wolfgang-Pauli-Strasse 10, 8093 Zurich, Switzerland). (Angew. Chem.; 52, 22; 2013, May, 27; 5866-70).

Describes the key steps in this total synthesis of the antimitolic natural product WF-1360F(3) that include the formation of the macrocycle through ring-closing alkyne metathesis and the subsequent conversion of the ensuing alkyne moiety into an *E*-configured double bond. The macrycyclic vinyl iodide 2 can also serve as a common precursor for the synthesis of side-chain-modified rhizoxin analogues as illustrated by the synthesis of 4. (48 Ref.; 1 Tab.; 6 Schemes).

49.14591

Heterogenously catalyzed aerobic cross-dehydrogenative coupling of terminal alkynes and monohydrosilanes by gold supported on OMS-2.YAMAGUCHI (K),WANG (Y), OISHI (T), KURODA (Y), MIZUNO (N), (Department of Applied Chemistry, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan). (Angew. Chem.; 52, 11; 2013, May, 17; 5627-30).

Describes the cross-dehydrogenative coupling of various terminal alkynes and monohydrosilanes efficiently proceeded in the presence of gold supported on OMS-2(Au/OMS-2(octedral molecular sieves) using O_2(oxygen) as a terminal oxidant, affording the corresponding alkynylsilanes in moderate to high yields. The observed catalysis was truly heterogeneous and the catalyst could be reused atleast ten times without a significant loss of its high catalytic performance. (37 Ref.; 2 Tab.; 2 Schemes).

49.14592

Phosphastannirane : A phosphorus/Tin**(II)** Lewis pair that undergoes alkyne and alkene addition. FREITAG (S), HENNING (J), SHUBERT (H), WESEMANN (L), (Institut für Anorganische Chemie, Universität Tubingen, Auf der Morgenstelle 18, 72076 Tübingen, Germany). (Angew. Chem.; 52, 21; 2013, May, 17; 5640-3).

Describes the first molecule containing a cyclic three-membered Sn=C=P(subnetwork connection protection ring) that has been synthesized and characterized. This Sn^{II}=P Lewis pair reacts at room temperature with alkynes and pentene to give the five-membered cyclic addition products. In the case of pentene, the reaction is reversible at room temperature. (76 Ref.; 4 Fig.; 3 Schemes).

49.14593

General and efficient synthesis of indoles through triazene-directed C-H annulation. WANG (C), SUN (H), FANG (Y), HUANG (Y), (Key Laboratory of Chemical Genomics, School of Chemical Biology and Biotechnology, Peking University Campus, Shenzhen Graduate School, Lishui Road, Shenzhen 518055, Xili Town, Nanshan District, China). (Angew. Chem.; 52, 22; 2013, May, 27; 5795-8).

Describes the unprotected indoles that are prepared with the title method, which has a wide scope for alkynes and also the excellent regioselectivity that was accomplished for aryl-alkyl and alkyl-alkyl disubstituted acetylenes. This reaction features an unusual 1,2 rhodium migration and ring-contraction-triggered N-N(Nitrogen-Nitrogen) bond cleavage. It allows rapid conversion of the reaction products into several functional molecules. (68 Ref.; 1 Tab.; 6 Fig.).

49.14594

Enantioselective N-heterocyclic carbene catalyzed Aza-Benzoin reactions of enals with activated ketimines. SUN (L), LIANG (Z), JIA (W), YE (S), (Beijing National Laboratory for Molecular Sciences, CAS Key Laboratory of Molecular Recognition and Function, Institute of Chemistry, Chinese Academy of Sciences, No. : 2, 1st North Street, Zhongguancan, Beijing 100190, China). (Angew. Chem.; 52, 22; 2013, May, 27; 5803-6).

Describes á-amino ketones, which are versatile building blocks for organic synthesis and which were obtained with the Aza-Benzoin reaction. A free hydroxyl group on the NHC(N-Heterocyclic Carbene) catalyst was found to be crucial for the reaction and the possible competing reaction through a homoenolate or endate was not observed with this catalyst. (70 Ref.; 1 Tab.; 4 Schemes).

49.14595

Automated solid-phase synthesis of chondroitin sulfate glycosaminoglycans. ELLER (S), COLLOT (M), HAHM (HS), SEEBERGER (PH), (Department of Biomolecular Systems, Max Planck Institute of Colloids and Interfaces, Am Muhlenberg 1, 14476 Fotsdam, Germany). (Angew. Chem.; 52, 22; 2013, May, 27; 5858-61).

Describes the glycosaminoglycans(GAGs) which are important sulfated carbohydrates that are prevalent in the extracellular matrix. The synthesis of structurally defined GAGs requires laborious procedures and incorporating defined sulfation patterns is challenging. The automated synthesis of defined sulfated chondroitin hexasaccharides on solid support has been achieved using a photolabile linker that is efficiently cleaved in a continuous-flow photoreactor. (31 Ref.; 7 Fig.).

49.14596

Cinchona alkaloid amide/Copper(**II**) catalyzed diastereo- and enantioselective vinylogous Mannich reaction of ketimines with siloxyfurans. HAYASHI (M), SANO (M), FUNAHASHI (Y), NAKAMURA (S), (Department of Frontier Materials, Graduate School of Engineering, Nagaya Institute of Technology, Gokiso, Showa-ku, Nagoya 466-8555, Japan). (Angew. Chem.; 52, 21; 2013, May, 17; 5557-60).

Describes the development of the first enantioselective vinylogous Mannich reaction of siloxyfurans with ketimines derived from unactivated ketones. Excellent yields and enantioselectivities were obtained using a new class of readily accessible cinchona-alkaloid amide/copper(**II**) acetate($Cu(OAc)_2$) catalysts on a range of substrates. (46 Ref.; 2 Tab.; 1 Fig.; 4 Schemes).

49.14597

Synthesis of highly distorted À–extended[2.2] metacyclophanes by intramolecular double oxidative coupling. KOYAMA (Y), HIROTO (S), SHINOKUBO (H), (Department of Applied Chemistry, Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Aichi, Prefecture, Japan). (Angew. Chem.; 52, 22; 2013, May, 27; 5740-3).

Describes the oxidation of dihydroxy-substituted acenes which provides face-to-face [2.2] metacyclophane-like dimmers.The products exhibited highly distorted structures caused by steric repulsion. UV/Vis(ultraviolet-visible) and electrochemical analysis revealed that the HOMO-LUMO(Highest energy occupied molecular orbital-Lowest unoccupied molecular orbital) gap was decreased upon dimerization. (57 Ref.; 1 Tab.; 5 Fig.; 3 Schemes).

49.14598

Molecular understanding of reactivity and selectivity for methanol oxidation at the Au/TiO_2 interface. CAMELLONE (MF), ZHO (J), JIN (L), WANG (Y), MUHLER (M), MARX (D), (Lehrstuhl fur Theoretische Chemie, Ruhr-Universitat Bochum, 44780, Bochum, Germany). (Angew. Chem.; 52, 22; 2013, May, 27; 5780-4).

Describes the consistent demonstration by the experimental and theoretical data that the interfacial on an Au/TiO_2(gold/titanium oxide) catalyst show both high reactivity and selectivity for low-temperature methanol oxidation with O_2(oxygen) to give formaldehyde. Unrevealed the microscopic mechanism of this complex reaction in full molecular detail. (45 Ref.; 9 Fig.).

49.14599

Catalytic asymmetric [8+2] cycloaddition : Synthesis of cycloheptatriene-fused pyrrole derivatives.XIE (M), LIU (X), WU (X), CAI (Y), LIN (L), FENG (X), (Key Laboratory of Green Chemistry & Technology, Ministry of Education, College of Chemistry, West China Medical School, Sichuan University, No. : 29, Wangjiang Road, Chengdu 610064, People's Republic of China). (Angew. Chem.; 52, 21; 2013, May, 17; 5604-7).

Describes the development, of a catalytic asymmetric[8+2] cycloaddition reaction of azaheptafulvenes with alkylidene malonates. The reaction afforded functionalized cycloheptatriene-fused pyrrole derivatives in excellent yields(up to 99%), diastereoselectivities(>95:5 d.n.) and enaantioselectivities(91-97% enantioexcess(ee)) under mild conditions when employing catalytic amounts of a chiral N,N-dioxide L-NI(Ligand-Nitrogen) complex. (89 Ref.; 2 Tab.; 3 Schemes).

49.14600

Chemotactic behavior of catalytic motors in microfluidic channels. BARABAN (L), HARAZIM (SM), SANCHEZ (S), SCHMIDT (OG), (Institut for Integrative Nanosciences, Leibniz Institute for Solid State and Materials Research Dresden, Hehnholtzstrasse 20, 01069, Dresden, Germany). (Angew. Chem.; 52, 21; 2013, May, 17; 5552-6).

Describes two different artificial catalytic micromotors(tubular and spherical) that show characteristic behavior in microfluidic channels demonstrating that catalytic micromotors can sense the gradient of chemical fuel in their environment and be directed towards desired locations. (46 Ref.; 14 Fig.).

49.14601

Of graphs and graphenes : Molecular design and chemical studies of aromatic compounds. BALDRIDGE (KK), SIEGEL (JS), (Organic Chemistry Institute, University of Zurich Winterthurestrasse 190, 8057 Zurich, Switzerland). (Angew. Chem.; 52, 21; 2013, May, 17; 5436-8).

Indicates the subgraphs for a myriad of novel aromatic hydrocarbons, that can be found within a graph of grapheme. For example, defining vertices of a C3 subgraph within grapheme evokes higher-order structures simply by changing the length of the ring fusion links. Analogously, the C6 transformation yields coronene and kekulene. (23 Ref.; 8 Fig.).

FINISHING MATERIALS

49.14602

Colorants in spectroscopic probes. SEKAR (N), (Dyestuff Technology Department, Institute of Chemical Technology(ICT), Nathelal Parekh Marg, Matunga(C. Rly.), Mumbai – 400 019, India). (Colourage; 61, 1; 2014, Jan.; 56).

Describes the terms viz. :'Spectroscopic probes' as the molecules capable of reacting with analytes accompanied by perceivable change in spectroscopic properties. These molecules are usually chromogenic, fluorescent or chemiluminescent in nature. Describes briefly the utility of the colorants in spectroscopic probes. Lists these probes that possess few distinct advantages. Probe molecules with an extensive absorption in the red region as well as emission in the NIR(Near infrared spectroscopy) region have become extremely important in biology in recent years.

49.14603

Catalysis of TBHP oxidation of styrene and diphenylmethane by a supported cobalt(**III**)-oxo cluster. SARMAH (P), DAS (BK), (Department of Chemistry, Gauhati University, Gopinath Bordoloi Nagar, Guwahati – 781 014, Assam State, India). (Indian J. Chem.; 53A, 1; 2014, Jan.; 41-5). The supported catalyst produced by immobilizing the cobalt(**III**)-oxo cluster $Co_4O_4(O_2CMe)_4(py)_4$ on chemically modified mesoporous silica shows very good activity in the tert-butyl hydroperoxide oxidation of styrene and diphenylmethane. While complete conversion of styrene takes place to yield styrene epoxide at moderate selectivity, diphenylmethane is completely converted to obtain benzhophenone at excellent selectivity. (17 Ref.; 1 Tab.; 3 Fig.; 1 Scheme).

49.14604

Optimization of fermentation conditions for green pigment production from *Bacillus cereus* M^1_{16}*(MTCC 5521)* and its pharmaceutical application. BANERJEE (D), MONDAL (A), GUPTA (M), GUHA (AK) AND RAY (L), (Department of Food Technology and Biochemical Engineering, Jadavpur University, No. : 188 Raja Subodh Chandra Mullick Road, Bijoygarh, Kolkata-700 032, India). (Lett. Appl. Microbiol.; 58, 1; 2014; 25-30).

Investigated the optimal culture conditions for the production of green pigment. The optimal culture conditions for the production of an extracellular green pigment by growing *Bacillus cereus* M^1_{16}*(MTCC 5521)* in a complex medium containing (g l^{-1}) Peptone-4.0, Beef Extract-9.0, NaCl-7.0, Mg SO_4.$7H_2O$-1.0 and KH_2PO_4-5.0 was as follows : *p*H 7.0 at 30°Centigrade for 72 hours in a 5 litre fermenter. Aeration rate and agitator speed had no effect on the pigment production. Thin layer chromatogram of the pigment extracted from the fermented broth with chloroform on silica gel GF254 using ethyl

acetate and hexane(1:1) as solvent showed three fractions. Separated out the major fraction(C_3) and identified as 9-methyl-1,4,5,8-tetra-azaphentathrene. Acute toxicity test revealed the nontoxic nature upto a dose of 1000 mg kg^{-1}, b.wt. of mice. MTT(Microculture Tetrazolium) assay showed the cytotoxic nature in HL60 cells having an IC_{50} of 2.47 monol. So, this biopigment may have application in food, textile colorant and pharmaceutical industry. (22 Ref.; 9 Fig.).

49.14605

An efficient improved one-pot synthesis of thiazolo[2,3-c][1,2,4]triazol-5-yl)-2*H*-chromen-2-one derivatives via multi-component approach. PENTA (S), VEDULA (RR), (Department of Chemistry, National Institute of Technology(NIT), NIT Campus, Off.: Warangal-Hyderabad Highway, Warangal-506 004, State, India). (Indian J. Chem.-Section B : (Organic including Medicinal); 53B, 1; 2014, Jan.; 115-9).

Describes the development, of an efficient improved protocol, for the synthesis of various thiazolo-triazoles via a three-component reaction of various 3-(2-boromoacetyl)-2*H*-chromen-2-one, thiosemicarbazide and aromatic/aliphatic carboxylic acids using phosphorus oxychloride as the cyclizing agent in toluene at reflux. This method is simple, efficient and requires shorter reaction times in comparison to the multi-step synthesis. Established the structures of the newly synthesized compounds from analytical and spectral data. (26 Ref.; 2 Schemes).

49.14606

Intramolecular proton transfer of 2-hydroxyl-1-naphthaldehyde semicarbazone and thiosemicarbazone in ground and lowest excited singlet states : A comparative experimental and computational study. BOSE (D), CHATTOPADHYAY (N), (Department of Chemistry, Jadavpur University, No. : 188, Raja Subodh Chandra Mullick Road, Kolkata-700 032, India). (Indian J. Chem.; 53A, 1; 2014, Jan.; 17-26).

Explored the photophysics of 2-hydroxy-1-naphthaldehyde semicarbazone(2H NS) and the corresponding thiosemicarbazone(2H NT) in n-heptane and methanol as solvents, focusing on the intramolecular proton transfer(IPT) in the ground(S_o) and the first excited singlet(S_1) states using absorption, steady state and time-resolved fluorometric techniques. Compared also the feasibility of the IPT process in the two molecular systems. Experiments confirm that for both the compounds IPT takes place in the lowest excited singlet state(S_1), but not in the ground state(S_o). Ab-initio quantum chemical calculations provide support to the experimental findings. Simulated potential energy curves(PEC) in the two electronic states imply that the IPT process is endothermic in the So state but becomes exothermic in the S_1 state for both the probes. PECs also reveal that compared to the ground state the activation barrier for the IPT process is reduced appreciably in the S1 state. The experiments and calculations, however reveal that the excited state intramolecular proton transfer process is relatively more viable for 2H NS compared to 2H NT. Further, demonstrated any of the suitably chosen structural parameters that lead to the unique transition state and yielding the same values of the reaction parameters can be taken as the reaction coordinance to follow the progress of the intramolecular prototypic process. (45 Ref.; 1 Tab.; 15 Fig.; 1 Scheme).

49.14607

Effect of secondary growth conditions on orientation and thickness of TS-1 membranes. WANG (X), LI (S), YAN (J), CHEN (X), HUANG (W), (Key Laboratory of Coal Science and Technology of Ministry of Education and Shaanxi Province, Taiyuan University of Technology, No. : 79 Yingze West Street, Wanbailin, Taiyuan 030024, People's Republic of China). (Indian J. Chem.; 53A, 1; 2014, Jan.; 52-6).

Synthesized the b-oriented TS-1 membranes by controlling alkanility and hydrothermal reaction time in the secondary growth process. The results of scanning electron microscopy (SEM) and X-ray diffraction(XRD) show that in the 1 TEOS:0.0008TBOT:TPAOH:77H_2O system, with higher alkanility(x=0.21), the b-orientation of the seed layer is maintained only at short reaction time(12 hours) and the membranes formed are asymmetric. Needed a longer time period(24 and 36 hours) with moderate alkalinity(x=0.13) and lower alkalinity(x=0.09) to prepare a compact b-oriented membrane and this membrane is symmetric. On prolonging the hydrothermal reaction time, the orientation of the seed layer is lost and the membranes are a & b oriented. The membrane is at the highest quality and is compact, symmetric, b-oriented and ca. 3 ìm thick with the alkalinity =0.13 and hydrothermal reaction time of 24 hours. (21 Ref.; 14 Fig.).

LEATHER PROCESSING MACHINES

49.14608

Heat pumps. (Renew. Energy; 7, 2&3; 2013, Dec.; 36-9).

Describes the first commercialization of the heat pumps for heating and cooling in the second half of the 20th Century, but applications in cold climates were limited to ground-source heat pumps because of the low temperatures of outdoor air. (1 Tab.; 2 Fig.).

LEATHER PROPERTIES. QUALITY CONTROL

49.14609

Part deployment model using combined quality function deployment and cybernectic fuzzy analytic network process. MOHAMMADI (F), NATEGHI (F), POURHEJAZI (SP), ABDULLAH (A), GANDOMI (N), SADI (MK). (Department of Structure & Materials, Faculty of Civil Engineering, Sokolah Agama, Universiti Teknologi Malaysia, Johor Bahru, 81310, Johor, Malaysia). (Indian J. Sci. Technol.; 7, 1; 2014, Jan.; 53-62).

Quality Function Deployment(QFD) is a customer oriented design tool used to ensure that customer expectations are satisfied in the early design stage. Customers directly and companies indirectly enjoy the benefits of implementing such methodology. Proposed many extensions in order to extend QFD's application or improve limitations of traditional QFD; among which incorporation of Multi-Criteria Decision Making(MCDM) theories into QFD, in particular Analytic Network Process(ANP) is noteworthy. Proposed a new extension of QFD called Fuzzy Cybernetic ANP(FCANP) which is able to model QFD tables, especially when company's experts deal with a large number of customer demands while handling the subjectivity of judgments. (27 Ref.; 7 Tab.; 4 Fig.).

BY - PRODUCTS

49.14610

Indian chemical industry-A harlinger of good times.BASU (A), (New Business and Innovation Centre, M/s. Tata Chemicals, Bombay House, No. : 24 Homi Modi Street, Fort, Mumbai – 400 001, India). (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 53-4 & 57).

Indicates that a new phrase, viz. 'Necessity is the mother of invention' has been heard many times that best captures why the Indian chemical industry needs to build a strong innovation platform as the springboard for sustainable, profitable growth. Discusses the way, in which the chemical industry in India can exploit skilled labour and an innovative ecosystem to its advantage. Advocates the incorporation, of the global best practices in the chemical industry for sustainable management of energy, water and waste. (3 Ref.; 1 Photo).

49.14611

Principles of biopreservation. DAS (N), MUKHERJEE (G), (Government College of Engineering & Leather Technology, Block-LB, Sector-III, Salt Lake City, Kolkata-700 098, India). (J. Indian Leather Technol. Assoc.; 63, 12; 2013, Dec.; 1329-36).

The development of effective preservation and long-term storage techniques is a critical requirement for the successful clinical and commercial application of emerging cell-based technologies. Bio-preservation is the process of preserving the integrity and functionality of cells, tissues and organs held outside the native environment for extended storage times. Bio-preservation can be categorized into four different areas on the basis of the techniques used to achieve biological stability and to ensure a viable state following long-term storage. These include in vitro culture, hypothermic storage, cryopreservation and desiccation. Overviewed these four technologies with an emphasis on the recent developments that have been made using these technologies for the bio-preservation of cells and engineered tissues. It is the use of natural or controlled micro biota or antimicrobials as a way of preserving food and extending its shell life. Beneficial bacteria or the fermentation products produced by these bacteria are used in bio-preservation to control spoilage and render pathogens inactive in food. It is a benign ecological approach which is gaining increasing attention. Of special interest are lactic acid bacteria(LAB). The LAB have antagonistic properties which make them particularly useful as bio-preservatives. Their metabolites often include active antimicrobials such as lactic and acetic acid, hydroxide and peptide bacteriocins when LABs compete for nutrients. Some LABs produce the antimicrobial nisin which is particularly effective preservative. A bacterium, that is suitable for use as a bio-preservative does not necessarily have to ferment the food. But if conditions are suitable for microbial growth, then a bio-preservative bacterium will compete well for nutrients with the spoilage and pathogenic bacteria in the food. As a product of its metabolism, it should also produce acids and other antimicrobial agents, particularly bacteriocins. Bio-preservative bacteria, such as LAB, must be harmless to humans. (3 Ref.; 1 Tab.).

WOOL TECHNOLOGY

49.14612

Spotlight on garment processing machines – Part 4 – Texcare machines – Part 3. NAIR (GP), PANDIAN (SP), (No. : B2/12, Tecnocrat Society, Off. : V .S. Marg, Prabhadevi, Mumbai-400 025, India). (Colourage; 61, 1; 2014, Jan.; 67-79).

Describes briefly the various garment processing machineries that are useful for wastewater treatment, dyeing, wool, cleaning clothes with hydrocarbon solvent. (30 Ref.; 12 Tab.; 22 Fig.).

TANNERY. ENVIRONMENTAL ASPECTS

49.14613

Industrial water treatment : Eco protection only part of the story. (Chem. Wkly.; 59, 25; 2014, Jan., 28; 199-202).

Water is used for many purposes in industry, including cleaning, cooling and heating, as steam, feedstock or solvent or a part of a product. The most wide use of membrane technology, the recovery of the high-value substances by precipitation and flocculation, the utilities of the Advanced Oxidation Processes(AOP); the complex and versatility of the biological water treatment, the uses of the aerobic membrane reactors and anaerobic techniques; the uses of microbial fuel cells as a vision for the future as well as the use of the integrated water movement as one step further for recovery of high-value substances which becomes far easier and a reduction of emissions at the source reduces pre-treatment costs. (4 Photos).

49.14614

Quality issues : Will they affect the growth of the Indian pharmaceutical industry? NAIR (MD), (Chem. Ind. Dig.; 27, 1; 2014, Jan.; 94-6 & 98-100). The Indian pharmaceutical industry has seen a tumultuous year in terms of quality issues. India pharma companies have been singled out for being negligenate on quality, environment and safety issues. However, despite the negative publicity the sector has received in recent times it has yet again been a standout performer as compared to other sectors. Looked at the various issues plaguing the drugs and pharmaceutical industry and growth prospects in the sector. Discussed the impact of Ranboxy-type episodes on the industry's image. (10 Photos).

49.14615

Assessment of potability of surface water using water quality index in Angul-Talcher industrial cluster of Odisha. SAHU (BK), PADHAI (S), (Forest and Environment Department, Government of Odisha, Bhubhaneshwar – 751 001, Odisha State, India). (Indian J. Environ. Protect.; 34, 1; 2014, Jan.; 42-50).

Discusses the growing concern about surface water pollution in Angul-Talcher industrial area of Odisha that has been witnessed due to industrial, mining and other anthropogenic activities. Estimated the water quality index of 7 surface water sources representing 2 open ponds, 3 locations of river and 2 municipal taps for different seasons in order to classify the sources according to their pollution level and suitability for potability. It revealed that municipal tap water was good for use as drinking water throughout the period of investigation whereas the water quality of ponds and river was found to be poor or unfit for drinking. (12 Ref.; 8 Tab.; 1 Fig.).

49.14616

Comparison of water quality status of Nayagarh-Khudra district over the year. SAHU (PK), MOHANTY (SK), SAHOO (RK), (Bhubhaneshwar Engineering College, Department of Chemistry, Bhubhaneshwar-752 054, Odisha State, India). (Indian J. Environ. Protect.; 34, 1; 2014, Jan.; 1-17).

Water is one of the most important natural resources upon which all life depends. Attempted the collection, of in-depth analysis of the physic-chemical parameters in surface groundwater of Nayagarh-Khurda district for which 16 different locations were chosen to cover all parts of Nayagarh-Khurda district. The samples were collected quarterly in rainy, winter and summer season for the year 2009-10 and 2010-11 to determine different physical, chemical and biological parameters. Determined and compared some samples, which contain high amount of fluoride along with total dissolved solids(TDSs) and potassium dichromate(T-Cr) and observed seasonal data for the year 2009-10 and 2010-11, mean value of each parameter of different sampling points from the results. Compared the results of rainy, winter and summer of 2009-10 with 2010-11. Compared also the seasonal variation of different parameters with the standards. Found out the range of a particular parameter of these sampling points after determining the quantity of each parameter in each season of the year 2009-10 and 2010-11. All most all the parameters, that are increasing trend for the respective parameters obtained in the previous year, are clearly indicated from the graphical comparison, which indicates the water quality in the study are further deteriorated which requires immediate attention to overcome the problem. Five high fluoride content sampling points were taken for comparative study in different seasons for both the years. The fluoride content in all season are more than the prescribed standard, that is 1.5 mg/l for drinking water and in summer season the fluoride content is maximum in comparison to winter and rainy season in both the years was observed from the comparative study. Rainy season recorded the lowest fluoride content. The reason is due to increase in water table by perculation of rainy water through the soil. Present study may be treated as one step ahead towards the physic-chemical study of ground and surface water of Nayagarh-Khurda district. (10 Ref.; 18 Tab.; 19 Fig.).

49.14617

Assessment of the physical and bacteriological quality of water in the Halabja-Sulaimani-Kurdistan Region of Iraq. BARZINJI (DAM), GANJO (DGA), (University of Sulaimani, Soil and Water Science Department, School of Agriculture, Kurdistan, Iraq). (Indian J. Environ. Protect.; 34, 1; 2014, Jan.; 29-36).

Groundwater plays a number of very important roles in the environment and in the economies.

It supports rivers, lakes and wetlands, especially through drier months in the environment when there is little direct input from rainfall. The flow of groundwater into rivers as seepage through the river bed, known as base-flow, can be essential to the health of wildlife and plants that liver in the water. Conducted a 6 month monitoring study on several water sources in Halabja-Sulaimani. The field works commenced according to a regular schedule twice per month, starting in June and ending in November 2007.

The physical and bacteriological evaluation of the well waters based on standards given for drinking water by the World Health Organization(WHO) guidelines. Waters in all sources were saturated by oxygen and healthy with regard to biological oxygen demand(BOD). An evaluation of general water chemistry indicated spatio-temporal changes between studded well waters. Cation were dominated by calcium followed by magnesium, sodium and potassium in order of decreasing concentrations in all investigated sites. (23 Ref.; 2 Tab.; 1 Fig.).

49.14618

Analysis of quality of treated and untreated water sample of sun paper industry-Cheranmahadevi, Tirunelveli. PERUMAL (SB), PALANICHAMY (MS), THAMARAI (P), RAJA (SS), (R.M.K. Engineering College, Department of Civil Engineering, SRMS Nagar, Kavaraipettai-601 206, Gummudipoondi Taluk, Tiruvalluvar District, Tamil Nadu State, India). (Indian J. Environ. Protect.; 34, 1; 2014, Jan.; 37-41).

Analyzed the water samples from the paper industry for various physical and chemical parameters. It can be seen from the report that the physical parameters turbidity and total dissolved solids(TDSs) that are found to be within the permissible limits. It is found that the chemical parameters like *p*H, alkalinity, total hardness, ions, chloride are within the permissible limits.

Therefore, it is sure that not much polluted and also it is seen that the solid wastes are recycled and again used as a fuel in paper board making. So it does not affect the environment much. The water after the treatment is being used for the irrigation lands for the growth of pulp wood tree plantation. So it is suggested that the government has to come forward for encouraging the producers to construct such kind of effluent treatment plants(ETPs) for the treatment of wastewater. (10 Ref.; 1 Tab.; 10 Fig.).

49.14619

Implementing health- and science-based risk assessment for multi-product manufacturing. CARVER (M), (Research & Development(R&D) and Innovation, M/s. Fujifilm Diosynth Biotechnologies, No. : 6051, George Watts Hill Drive, Durham, North Carolina 27709, USA). (Chem. Wkly.; 59, 14; 2013, Nov., 12; 197-201).

Explored some of the issues, such as the defects that could impose significant new constraints on how early phase Investigation Medicinal Products(IMPs), particularly biologies, are manufactured, if adopted in its current form and makes proposals for a health-based approach founded on sound science, which could be used to consider safe and effective manufacture of early phase IMPs in multi product facilities. (11 Ref.; 3 Fig.; 1 Photo).

49.14620

Strategy for recycling of simulated dye house effluents of anionic dyes. BHULLAR (SKS), ANUPAM KUMAR, ARORA (S), (Government Institute of Textile Chemistry & Knitting Technology, Z-Block, Rishi Nagar, Ludhiana-141 001, Punjab State, India). (Colourage; 61, 1; 2014, Jan.; 37-44).

The textile industry is one of the largest industries in the world and is among the major waste generating industries. Number of physical and chemical treatments are followed by industries to control the waste water effluents. But the functional and operational cost for the process is high. So continuous efforts are being done by scholars to search for alternatives. Efforts have been made here to evaluate whether any improvement in treatment of dye house effluent is possible through use of adsorption technique followed by Aerobic/Anaerobic treatment. Batch studies & continuous studies were conducted using low cost adsorbents such as Sugarcane baggase, Rice husk and Saw dust without activation. Dyes used were C.I. Reactive Red 120, C.I. Reactive Blue 198 and C.I. Reactive Yellow 135 as about 80% of the industries in Ludhiana/Punjab deal with cotton goods. Dyes are used in many industries including paper, rubbers, plastics and textiles in order to colour their products. Simulated effluents were treated using adsorption technique followed by aerobic/ anaerobic treatments and results were compared with the standard norms of Punjab Pollution Control Board. Application of this technique was also subjected to real textile dye house effluents. Cost benefit analysis was also carried out which show that there is huge savings if the industries opt for the adsorption of the textile dye house effluents followed by anaerobic treatment. (13 Ref.; 14 Tab.; 17 Fig.).

49.14621

HAZOP 2.0 : Making a tried and tested safety method fit for the future. SEMMLER (R), (TÜV SÜD Chemie Service GmbH, Industriepark Hechst, Geb. K 801 65926 Frankfurt am Main, Germany). (Chem. Wkly.; 59, 22; 2014, Jan., 7; 188-90).

Experts in the chemicals industry have relied on the HAZOP study to make production processes safer for approximately 40 years. However, the conventional method frequently fails to meet the complex requirements of modern chemical plants, so approaches of improvement are currently under discussion. (1 Tab.; 1 Fig.; 2 Photos).

49.14622

Considerations for effectively managing Emergency Relief Systems Design(ERSD). WATSON (T), OHMES (R), (M/s. KBC Advanced Technologies, Incorporation, Headquarters, Thomson Reuters, No. : 3 Times Square, New York 10036, USA). (Chem. Ind. Dig.; 26, 12; 2013, Dec.; 63-70).

Emergency Relief Systems(ERSs) that mitigate all credible relief scenarios are a fundamental objective of ERS design and ensure a safe and profitable facility. Discusses the key considerations for an organization to ensure their ERS not only protects their facility, but also serves as a critical input into their process hazard analysis(PHA) process and other provisions of PSM(process safety management)(management of change and pre-startup safety reviews, for example).

The considerations include implementing and managing a facility wide ERS design basis documentation project(a "flare study"), maintaining the ERS design documentation after the project and effectively integrating the ERS design documentation into other elements of PSM. (1 Photo).

49.14623

Flame retardants : An overview. GROVER (T), KHANDUAL (A), CHATTERJEE (KN), JAMDAGNI (R), (College of Engineering, Koustur Technical Campus, Plot No. : (A), Sector B, Chandaka Industrial Complex, Patia, Bhubhaneshwar-751 024, Odisha State, India). (Colourage; 61, 1; 2014, Jan.; 29-36).

Many of the items, that are in use on a daily basis, including textiles, electrical appliances, automobiles and aircraft etc. are at undergoing intense examination and scruting for their flammability properties. Flame retardants(FRs) application play crucial protective function in saving life and property by reducing the overall fire risk associated with using highly combustible raw materials in products such as textiles, clothing, composites, plastics etc. Flame retardants are used to setback the spread of fires or delay the time of flash over enabling to get sufficient time to escape from the fire hazards. Recently, there has been an ever-growing demand for new flame retardant product options; recognizing not only to ensure a favourable ecological profile but also a durable and cost effective product. Discussed the various flame retardants types and their action mechanism. (33 Ref.; 5 Tab.; 3 Fig.).

49.14624

Real Time Optimization of process plant utility systems-Part **II** : Solution Technology. RAM NATH, (Process Engineering Organization of Honeywell Process Solutions, Headquarters, No. : 1250, West Sam Houston, Parkway, South Houston, Texas 77042, USA). (Chem. Ind. Dig.; 26, 12; 2013, Dec.; 71-6).

Real Time Optimization(RTO) of process plant utility systems is an often ignored area. One reason for this complacency is that a process plant utility system is usually a cost center in a production plant and its operating cost is typically prorated amongst the various production units, so it suffers from what at times is referred to as "the tragedy of the commons". Discussed the various aspects of real time optimization of plant utility systems. The solution will be illustrated with a recently completed project for a US refinery. Unlike most refineries, this refinery purchases steam from a neighbouring cogeneration facility to supplement their own steam production. This project was completed in June 2012 and has been in operation since then; it has been instrumental in streamlining the operation and decreasing the plant utility system operating cost. This part of the article discusses the solving problems associated with optimization of the plant utility systems and now optimizer models can be configured for providing effective solutions. (5 Ref.; 4 Fig.; 1 Photo).

49.14625

Electrochemical methods for treatment of hazardous organic wastes. DATTA (NC), (M/s. Modicon Private Limited, No. : D 40/2, TTC Industrial Area, MDDC, Turbhe, Navi Mumbai-400 705, India). (Chem. Ind. Dig.; 26, 12; 2013, Dec.; 81-6).

The electrochemical methods are novel, inexpensive and very effective to destroy the organic molecules completely to Carbondioxide(CO_2) and water(H_2O) under near ambient conditions. These methods are novel, because normally most organic molecules are non-conductors of electricity. Described some of the well-known commercial electrochemical processes and processes that are under development. (17 Ref.).

LEATHER PRODUCTS

FOOTWEAR

49.14626

Footwear : as exports grow, domestic consumption plummets. SAGRIPANTI(C), (Assocazaturifici(Italian Footwear Manufacturers' Association, Via Monte Rosa 21, Milano, Italy). (Leather News India; 5, 1; 2014, Jan.; 46-7).

It is confirmed very strongly through a report of the survey of the Market Research Office of the Association that represents Italian footwear manufacturers, while the footwear industry has lots of "foreign" highs, it also has many "domestic" lows. (1 Tab.).

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