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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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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Economic Snapshot

India's poor economic performance in the January-March period offset healthy dynamics in the majority of countries in East and South Asia (ESA), including China, Hong Kong and Korea. A comprehensive set of data for the region showed that aggregate GDP increased 6.2% year-on-year in Q1 2017 (Q4 2016: +6.2% yoy), which was a notch below the 6.3% expansion that panel of economic analysts had projected last month.

In the final quarter of FY 2016, which ended in March 2017, growth in India felt the brunt of the lingering demonetization process, with the economy expanding at the weakest pace in over two years. The government's decision to remove around 85% of the cash from circulation in order to crack down on the black economy impacted household consumption as citizens front-loaded spending. The construction sector was badly hit by the government's move to scrap high-value notes. Moreover, growth was negatively affected by an unfavorable base effect from the previous year. While spillovers from demonetization and the base effect are gradually fading away, more recent data signals that momentum remains weak, with industrial production decelerating in April. On the upside, services activity gained some steam in May, providing some support to India's growth prospects for the April-June period.

Elsewhere in the region, growth momentum stabilized in China as the government's efforts to deleverage the financial sector and curb a booming property market in some cities are gradually feeding into the real economy. Although manufacturing PMIs in Korea and Taiwan remained firmly entrenched in positive territory in May, some alarming signs have started to emerge. Political tensions between China and Korea are putting downward pressure on export volumes of manufactured goods, while the peak of the electronics cycle is undermining activity in Taiwan's industrial sector. Against this backdrop, our panel of analysts foresees the ESA economy expanding 6.1% in Q2.

In the political arena, the new Korean administration led by President Moon Jae-in unveiled a supplementary budget of USD 10.0 billion to foster job creation and increase social welfare. Korea and Taiwan are set to unveil tax reforms in the coming months, with the aim of hiking their corporate tax rates. Moreover, the Korean government is looking to include higher income tax rates, while Taiwan's finance minister stated that the tax reform plan will likely include lower rates for low-income individuals.

Strong growth in some key major economies and healthy global demand are boosting the growth outlook for the East and South Asian economies, along with evidence that downside risks to China's economy are not materializing. Against this backdrop, Focus Economics Consensus Forecast panelists expect the region to expand 6.1% this year, which is up 0.1 percentage points from last month's estimate. Next year, the ESA economy may expand at a slightly slower pace of 5.9%.

This month's improvement for 2017 reflects an upgrade to the forecasts for China, Hong Kong, Korea, Mongolia and Sri Lanka, while growth prospects for Bangladesh, India, Pakistan and Taiwan were stable. No country experienced a downgrade this month.

India and Bangladesh will be the region's fastest-growing economies in 2017 with expansions of 7.3% and 6.8% respectively. China will expand at a healthy rate of 6.6%. At the other end of the spectrum, Mongolia will be the worst performer as the debt-ridden economy is still facing large structural imbalances. Growth in Hong Kong, Korea and Taiwan will fluctuate around 2.0% and 2.6%.

Economic momentum was largely stable in May, with growth in industrial production and retail sales steadying. Property investment growth slowed in the same month after having expanded consistently since Q3 2016 at which point the government's initiatives to curb the booming real estate market started to bear some fruit. Overall, the economy is feeling the pinch from a tighter monetary policy, reflecting the authorities' efforts to deleverage the financial sector. Nevertheless, it seems that China's reforms are not sufficient enough to rein in the country's massive debt. Moody's downgraded China's credit rating on 24 May citing risks stemming from rising

debt in a context of slowing potential growth. On the upside, data from the external sector showed healthy global demand and still resilient dynamics at home, with both exports and imports accelerating in May.

Tighter financial conditions and slowing growth in the property sector will led the economy to slow in the second half of the year. Nevertheless, the government will continue to shore up growth if necessary. Focus Economics panelists forecast that the economy will grow 6.6% in 2017, which is up 0.1 percentage points from last month's estimate. In 2018, the panel expects GDP growth to tick down to 6.2%.

The lingering impact of demonetization in India and a statistical base effect caused growth to plunge in the final quarter of FY 2016. A deceleration was seen across almost all components of GDP, with investment being a particular weak spot and contracting for the first time in two years as the stressed banking sector hurt activity. Early data for FY 2017 points to lackluster momentum: industrial production growth lost steam in April and the PMIs pointed in different directions in May. However, household consumption is on the mend as the impact of demonetization fades and a healthy monsoon is seen supporting rural spending. On the political front, despite speculation that the overhaul could be delayed, the sweeping GST reform appears set to be rolled out on 1 July, simplifying India's array of indirect taxes to four rates—5%, 12%, 18% and 28%. While the reform is seen largely as positive in the long-run, it is uncertain if many firms in the country are prepared for the transition and the implementation could disrupt activity temporarily. Growth is seen picking up in the coming quarters as an improving external sector and reviving consumption support activity. The Economists' panel sees GDP expanding 7.3% in FY 2017, which is unchanged from last month's forecast. For FY 2018, growth is projected to accelerate to 7.6%.

The Korean economy grew at an even faster pace than had been estimated in the first quarter, the result of a strong upward revision in construction activity growth. Nonetheless, the economy is already showing incipient signs of a slowdown in Q2, with industrial output on a much weaker footing in April on account of subdued manufacturing production. In addition, plummeting Chinese tourist arrivals—down 61.5% year-on-year in May—following China's ban on group tours to Korea in March is likely to dent service activity this quarter. Meanwhile, the new administration unveiled a USD 10.0 billion supplementary 2017 budget in early June, one of the main promises made during the campaign trail by now-President Moon Jae-in. The additional budget, which is expected to be largely financed by using this year's extra tax revenue, aims at creating 110,000 jobs by the end of 2017 through a mix of direct hiring and subsidies to SMEs.

Although the external sector's stellar performance has provided some relief, economic growth is expected to moderate in the months to come as construction investment cools and households become increasingly constrained by weaker real income growth. Focus Economics panelists expect GDP to expand 2.6% in 2017, which is up 0.1 percentage points from last month's forecast. In 2018, the economy will also grow 2.6%.

Inflation in East and South Asia inched up from 1.7% in April to 1.8% in May. Although May's print represented the highest rate in four months, inflation remains at historically-low levels. May's figure reflected higher prices in regional giant China, Korea, Mongolia and Pakistan, while price-pressures eased in India, Sri Lanka and Taiwan. In India, inflation continued to fall and is nearing levels last seen in 2009.

Although inflationary pressures are expected to build up in the coming months due to hikes in certain taxes, inventory restocking in some economies and higher commodity prices, they will remain at relatively low levels, allowing the region's central banks to keep their key policy rates unchanged. That said, China will continue its targeted tightening in order to support financial deleveraging and address structural imbalances.

Panelists expect inflation in East and South Asia to be 2.5% this year, which is down 0.1 percentage points from last month's estimate. The downward revision was mainly the result of lower inflation projections in China, India and Taiwan. For 2018, our panel of experts expects regional inflation to rise to 2.8%.

Available data suggests that the economy of the Association of Southeast Asian Nations (ASEAN) gained

further steam in Q2, after growth picked up at the start of the year. Focus Economics analysts see regional GDP expanding 4.9% annually in the second quarter, a notch up from Q1's 4.8%. Resilient domestic demand, which is benefiting from public spending initiatives, higher commodities prices and accommodative monetary policies, is supporting the regional economy. Looking at the individual economies, growth is expected to edge up in regional giant Indonesia in Q2. The economy is being supported by the government's ambitious spending plan, which is designed to upgrade infrastructure. While spending constraints have impeded public stimulus in the past, improved tax collection following the government's tax amnesty initiative and higher earnings from natural resources should support fiscal stimulus this year. Meanwhile, growth is expected to moderate in other regional heavy-weights Malaysia, Philippines, Singapore and Thailand. Singapore's economy remains constrained by unfavorable demographics, due to a low birth rate and aging population, and a soft labor market.

Focus Economics analysts held ASEAN's outlook unchanged for a fourth consecutive month as upside and downside risks to the region's prospects remain balanced. Protectionist U.S. policies or a pronounced slowdown in China are large downside risks to the region's outlook, however, so far these have yet to materialize. Slower than expected government spending or muted reform progress could hamper the region's prospects, while stronger than expected global growth is an upside risk. Economic analysts see GDP rising 4.8% in 2017 and 4.9% in 2018. This month's unchanged outlook reflects stable projections for all but four economies in the region. Malaysia, Singapore and Thailand all saw their forecasts upgraded, while Brunei was the only economy to see poorer prospects.

Myanmar will be the region's fastest-growing economy this year, expanding 7.4%, followed by Cambodia. On the other side of the spectrum, Brunei will grow a tepid 1.1% and the more mature economy of Singapore is seen increasing 2.3%. Looking at the major players, Indonesia will lead the pack and is seen expanding 5.2%, followed by Malaysia with 4.7% growth. Thailand is seen growing a more moderate 3.4%.

The economic picture has brightened recently after growth ticked up in Q1 and the country received investment grade ratings from all three credit ratings agencies. Data for the second quarter suggests that the economy continues to gather steam, albeit slowly. Industrial production growth accelerated in April and exports grew nearly 25% in May, while consumer confidence is resting at a multi-year high. On the political front, after a months-long dispute over tax payments, the finance ministry reached an agreement with Alphabet Inc.'s Google in June. Improving tax collection has been a cornerstone of the government's plan to narrow the fiscal deficit while funding an ambitious infrastructure program. Low unemployment and high consumer sentiment should fuel healthy private consumption this year, while recovering commodities prices and an improved external backdrop bode well for exports. Our panel sees GDP expanding 5.2% in 2017, which is unchanged from last month's forecast. In 2018, GDP growth is expected to pick up further to 5.4%.

The economy gained traction at the start of the year supported by healthy household spending, as better weather boosted farming income. However, while a robust performance in the tourism sector ushered in an improvement in exports, rising imports limited the external sector's contribution. Overall, available data for Q2 points to slightly lower growth as the economy is not yet firing on all cylinders. Manufacturing production contracted in April and booming imports drove the trade balance to near even. In addition, consumer confidence edged down in May but businesses became more optimistic.

Focus Economics analysts nudged the country's growth forecast up this month and now expect the economy to grow 3.4%, which is 0.1 percentage points higher than last month's forecast. Robust public sending as the government aims to boost investment and supportive monetary policy will buttress growth this year. However, political risks linger ahead of the 2018 elections. Next year, the panel sees steady growth of 3.4%.

The economy seems to have started Q2 on a downbeat note according to recent economic indicators. In April, industrial production growth slowed as a result of a contraction in the mining sector, which more than offset

an acceleration in the manufacturing sector. Likewise, relatively weak commodity prices caused export growth to moderate in April. Economic activity is widely expected to ease from Q1's two-year high, as higher inflation is eroding consumers' purchasing power. Household debt servicing costs should rise throughout the year, reflecting increasing domestic borrowing rates. Nevertheless, Q1's better-than-expected performance should still allow for growth to accelerate in 2017.

A pickup in global trade and a weak ringgit should fuel Malaysia's export-dependent economy. Meanwhile, rising trade protectionism and a potential deceleration in China pose the main downside risks to the country's outlook. Focus Economics panelists expect GDP to expand 4.7% in 2017, which is up 0.2 percentage points from last month's forecast. For 2018, the panel also foresees the economy growing 4.6%.

Preliminary data show that inflation in ASEAN came in at 2.8% in May, just below April's 2.9%. Lower price pressures in Philippines, Thailand and Vietnam drove the result, while inflation edged up in regional-giant Indonesia. While inflation has remained broadly steady in recent months at a relatively-low level, tightening rates in the U.S. have limited room for central banks to ease monetary conditions. Indonesia's Central Bank held rates in June and Thailand's stayed put at its May monetary policy meeting.

Goutam Mukherjee

Dr. Goutam Mukherjee
Hony. Editor, JILTA

FROM THE DESK OF GENERAL SECRETARY

RECONSTITUTION OF EXECUTIVE COMMITTEE OF ILTA FOR THE TERM 2017-2019

It is found that the Office bearers and the Executive Committee members for all the three regions of ILTA are to be declared as "Elected Unopposed". Hence there is no requirement for conducting the polling process for the term 2017 – 2019. A letter from **Mr. Dhiman Chakraborty,** Returning Officer for the Election to reconstitute the Executive Committee of ILTA for the term 2017 – 2019 is being posted to all the voter members on this subject.

67TH FOUNDATION DAY CELEBRATION OF ILTA

As of now the Auditorium of Freya Design Studio, ILPA Leather Goods Park, Bantala, 24 Pgs. (South) has been booked from 11.00 hrs onward for the programme.

Mr. Kalyan Rudra, Chairman, West Bengal Pollution Control Board has given his consent to deliver the prestigious B. M. Das Memorial Lecture.

Dr. B. Chandrasekaran, Director, CSIR – CLRI has kindly consented to be present in the programme as the Chief Guest.

Name of the toppers in B.Tech Leather Technology Examinations of Moulana Abul Kalam Azad University of Technology (formerly WBUT) and of Anna University, who will be awarded with B. M. Das Memorial Medals and J. M. Dey Memorial Medal (for MAKA University only) are yet to receive. Whereas the name of the topper in M.Tech, Leather Technology Examination from MAKA University has been received.

Dr. Sanjoy Chakraborty and Dr. Dipankar Chaudhuri has been requested to be the juries to adjudge the best article published in JILTA during 2016 for felicitating with J. Sinha Roy Memorial Award.

The leather and allied industry, our members. CSIR–CLRI, GCELT, CLCTA, ILPA & CLE will be approached to participate in this auspicious occasion.

Confirmed programme details will be communicated to you well in advance.

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.

(Susanta Mallick)
General Secretary

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

PENTACHLOROPHENOL (PCP) - DIRECTIVE 94/783/EC

Mr. Dinker Bajpai

BUREAU VERITAS CONSUMER PRODUCTS SERVICES INDIA PRIVATE LIMITED, NOIDA, UTTAR PRADESH, INDIA

Due to its toxicity to the aquatic environment, pentachlorophenol (PCP) is banned in textile products worldwide.

Abstract Pentachlorophenol is a toxic compound mainly use as preservative in leather and wood industries and also as disinfectant in various sectors such as agriculture, food, wood, oil and paints industries. In present investigation fifteen bacterial strains were isolated from sediment core of tannery effluent sludge (Kanpur, U.P., India). These strains were screened on mineral salt agar medium, containing sodium pentachlorophenate (Na-PCP) as a sole source of carbon and energy and bromothymol blue (0.1%) as screening agent. Among fifteen isolates, eight strains showing PCP degrading capability were characterized morphologically as well as biochemically. The strains showed similarities with Pseudomonas species, Arthrobacter species (three strains of each), Proteus species and Bacillus species (one strains of each). The PCP degrading potential of each individual species was performed in lab scale bioreactor. It was observed that the Arthrobacter species has highest PCP degrading potential as it degraded 55 percent within 30 days followed by Pseudomonas species and Bacillus species degrading 47 and 44 percent respectively. Whereas, Proteus species showed lowest degrading potential as it degrades only 38 percent within same time. Key words: Pentachlorophenol, Tannery effluent, Screening, Bacterial biodegradation, Bioreactor.

Toxicity :

Short-term exposure to large amounts of PCP can cause harmful effects on the liver, kidneys, blood, lungs, nervous system,[3] immune system, and gastrointestinal tract. Elevated temperature, profuse sweating, uncoordinated movement, muscle twitching, and coma are additional side effects.

Contact with PCP (particularly in the form of vapor) can irritate the skin, eyes, and mouth. Long-term exposure to low levels such as those that occur in the workplace can cause damage to the liver, kidneys, blood, and nervous system.[3] Finally exposure to PCP is also associated with carcinogenic, renal, and neurological effects. The U.S. Environmental Protection Agency Toxicity Class classifies PCP in group B2 (probable human carcinogen).

DETERMINA~ON OF PENTACHLOROPHENOL(PCP) IN LEATHER -METHOD OF TEST :

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Leather Sectional Committee had been approved by the Chemical Division Council. Pcntnci~lorophe~~ol (PCP) was being used as preservative in leather as well as in many other leather processing chemicnls in the past. However, use of this chemical has now been banned and limits of PCP in leather has been restricted in almost all over the world because of its suspected carcinogenic effect. In India also use 01 this chemical has been banned by the Government of India through the Gazette Notification number I7-I O/O I -PPI dated I7 May 1991. In view of this ban detection and determination of PCP has become of utmost importance. Further it has been observed during the study that even though PCP is not used in the chemicals used for processing of leather but because of usage of PCP over a prolonged period in the past the real life data gives ahou(5 ppm PCP/kg of leather. It may require some more time to be flushed out from the system completely. The Leather Sectional Committee of the Bureau therefore decided to formulate a method of test on this sulject. So far there has been no universally accepted method for determination of PCP. This method has hecndevclopcd by the Central Leather Research Institute, Chennai and the PFI, Germany and is known as Indo-German method (Method B). This method is at present under the consideration of IS0 for adoption x ml International Standard. In addition to the above method two more methods nave also been incorporated in this standard keeping in view the other international methods being followed all over the world for determination of PCP in leather. However, in case of any dispute, Method A shall be considered as referee method. Composilion of the Committee responsible for formulation of this standard is given in Annex A. FOI- the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded

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off in accordance with IS 2: 1960 'Rules for rounding off numerical values (rev&d)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE This standard prescribes methods of test for determination of Pentachlorophenol (PCP) in leather. The three methods described in this standard are applicable to all kinds of leather and raw hides. 2 REFERENCES The Indian Standards listed below contain provisions which through reference in this text, constitute provisions of this Indian Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Indian Standard are encouraged to investigate the possibility of applying the most recent editions of the Indian Standards indicated below: I IS No. Title 582 : 1970 Methods of chemical testing of leather (first revision) 1640: 1960 Glossary of terms relating to hides, skins and leather 5868 : 1983 Method of sampling for leather yirst revision) 3 TERMINOLOGY hr the purpose of this standard, the definitions given in IS I640 shall apply. 4 TEST METHODS In the event of any dispute the method described in 4.1 (Method A) shall be considered as referee method. Sampling shall be done in accordance with IS 5868. For every leather sample at least two determinations shall hc made. 4.1 Method A PC'I' CI-0111 alcathc~- sample to bcnnalyscd is aucccssivclyaciditicd with sulphuric acid, washed twice combined with water and then extracted with acetone hySoxhlct extraction. Acctonc extract is evaporated combined with sulphuric acid extract and re-extracted with ,r-hexane. The n-hexane extract is evaporated to dryness and subjected to acetylation with acetic anhydride and triethylamlne at 60°C and worked up to get the acetyl derivative. The acetylated PCP is determined quantitatively by Gaschromatograph with electron capture detector (GC-ECD) using Tribromophenol acetate (TBPA) as internal standard. 4.1.2 Reagents All reagents shall be of analytical grade purity. 4.1.2.1 Sulphuric acid 4.1.2.2 Acetone 4.1.2.3 n-Hexane 4.1.2.4 Acetic anhydride 4.1.2.5 Triethyl amine 4.1.2.6 Sodium sulphate 4.1.2.7 Pentachlorophenol (PCP) 4.1.2.8 Trihromophenol acetate (TBPA) 4.1.3 Apparatus 4.1.3.1 Soxhlet extractor 4.1.3.2 Rotavapour 4.1.3.3 Water bath (60°C) 4.1.3.4 Separating funnels (60 ml and 120 ml) 4.1.3.5 Micrulitre syringe (10 p1) 4.1.3.6 Gaschromatograph designed for capillary columns, with electron capture detector (GC-ECD). 4.1.4 Procedure About 5 g of the leather sample pieces are accurately weighed in a beaker to the nearest 0.00 I g and soaked with 10 ml of JO percent sulphuric acid for 1 hour after which the sulphuric acid is decanted in a clean beaker, and the leather pieces are washed two times with 25 ml of distilled water. The sulphuric acid solution washings are combined and kept separately. The leather sample is then extracted with IS0 ml acetone by Soxhlctcxtractitrn tar 6 haul-s. 'I'hcacctonc extract is then concentrated to a small volume and combined with dilute sulphuric acid extract and watcl washings. This is then re-extracted 4 times with 2.5 ml hexane. The hcxane extract is dried ovctsodiumsulphate, filtered and evaporated under vacuum nearly to dryness in a rotavapour and the residue is taken for acetylation.

(I) EU Regulation

The Pentechlorophenol (PCP) requirement of the European Regulation (EC) No. 1907/2006 of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII concerning the Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles, Item no. 22.

Limit (in general) = 0.1% (1000 ppm)

(II) German Regulations / Test Methods

German Food and Commodities Act LMBG, Recommendation XL VII

Chemikalienverbotsverordnung – Chemical prohibition Act – Pentachlorophenol (PCP) in wood and textiles

Extractable PCP - German Chemical Prohibition Regulation Appendix 15, DIN 53313:1996

DIN CEN/TS14494, § 35 LMBG B 82.02-8 2001-06, IUC 25 – Nachweis und Bestimmung von Pentachlorphenol in Bedarfsgegenständen, insbesondereausLeder und Textilien (DIN 53313)
Leather and Textiles - Chemical tests - Determination of Pentachlorophenol (PCP) content

(III) Germany – Pentachlorophenol (PCP) in several products

Pentachlorophenol (PCP) can be used to prevent fungal growth and decay by bacteria. In textile and leather industry, PCP is mostly used for preservation finishing; in ligneous products PCP can be used in conservation paints. PCP can also be used in wooden toys and handicrafts.

PCP and its salts are highly toxic for aquatic systems, harmful to human health and highly persistent in the environment. Products containing PCP may form highly toxic substances when they are incinerated.

In **Germany**, import and trade of products containing more than **5 ppm** PCP (pentachlorophenol), pentachlorophenol sodium, all pentachlorophenol salts and compounds in products is prohibited. In practice, the low maximum concentrations allowed in Germany imply that the use of PCP is prohibited.

The legislation in Germany is stricter than the **EU legislation** concerning PCP (maximum 0,1% by weight (**1000 ppm**).

(IV) Regulatory Impact Assessment — Pentachlorophenol (PCP)

Implementation of the 5th amendment to Annex 1 of the Marketing and Use Directive - Council Directive 76/769/EEC (Pentachlorophenol)

1. Purpose and Intended Effect of the Measure

New Regulations to introduce a lower permissible content of total hexachlordibenzoparadioxin (H_{6CDD}) in pentachlorophenol (PCP) preparations placed on the market. Required to meet the UK's obligation to implement the provisions (in part) of European Commission Directive 1999/51/EC (the 5th amendment to Annex 1 of the Marketing and Use Directive 76/769/EEC).

The Regulations reduce the permitted total H_{6CDD} content in PCP, or any substance containing PCP, to 2 parts per million from 4 parts per million and provide that PCPs may no longer be used in industrial installations as a synthesising and/or processing agent in industrial processes. The Regulations also remove the exemption permitting the use of structural timbers treated with PCPs.

Given the hazards of PCP and H_{6CDD}, the Regulations seek to minimise the overall risk to man and the environment.

2. Risk Assessment

The Directive was negotiated in 1998/99 as part of a package including organostannic compounds (tributyltin) and cadmium; DTI, HSE and the then DETR collaborated in these discussions. The Directive was negotiated because of the EU Accession Treaty for Sweden, Finland and Austria (who had previously banned PCP). It is based on an assessment of human occupational and consumer exposure as well as environmental risk conducted by Environmental Resources Management (ERM) Ltd on behalf of the European Commission. A detailed opinion was given by the EC Scientific Committee for Toxicity, Ecotoxicity and Environment (CSTEE), based on the ERM report and additional published literature. The CSTEE concluded that human exposure could occur from contaminated soil and that there was a risk to the environment from localised 'hotspots'.

3. Options

The proposed Regulations are required to fulfil the UK's obligation to implement the provisions (in part) of European Commission Directive 1999/51/EC (the 5th amendment to Annex 1 of the Marketing and Use Directive 76/769/EEC). Directive 76/769/EEC harmonises Member States' controls over the marketing and use of dangerous substances and a series of amendments since 1976 have added further substances and/or restrictions to those already controlled. Article 2 of the Directive calls for Member States to apply its provisions from 1 September 2000. There are no options other than to implement. Failure to do so will result in legal action by the European Commission against the UK.

4. Benefits

The Regulations minimise risks posed by PCP and H_{6CDD} to human health and the environment in the EU. PCP is known to cause chloracne in occupational exposures and is on the EU 'red list' as toxic to the environment; H_{6CDD} is an unwanted contaminant in PCP.

5. Business Sectors Affected

PCP is manufactured in the United States and imported for use by the Wood Preserving and Damp Proofing industry and the Textile industry, which are the only UK sectors to be affected by this legislation. Most companies have already withdrawn PCP products on commercial grounds and remaining uses are due to cease in 2008 in any case. The UK firm Catomance Ltd produces PCP laurate as a synthesising/processing agent, but DG Sancohave confirmed that this manufacture is not prohibited by this Directive. The Defence Logistics Organisation (DLO), which used PCP laurate for application to military items such as parachute webbing, have confirmed that they have taken steps to secure alterna-

tive finishes for the products under their responsibility.

6. Compliance Costs for a Typical Business

No costs to business are expected as a consequence of the Regulations. We have conducted the normal consultation process with the Wood Preserving and Damp Proofing industry, the Textile industry, DLO and Catomance Ltd, none of whom made any comments. DLO will incur costs in testing for an alternative which meets NATO specifications, but it appears unlikely that these will be passed on to business.

7. Consultation Process

The DTI, the National Assembly of Wales and the Scottish Executive were consulted in the normal way and all are content with implementation of the proposed Regulations on a GB-wide basis, as proposed. DoENI are transposing the requirements of 1999/51/EC separately into Northern Ireland legislation.

8. Summary and Recommendations

It is recommended that the part of Directive 1999/51/EC dealing with PCP is enacted into national law using powers conferred by section 2(2) of the European Communities Act 1972. This option minimises risks posed by PCP and fulfils the UK's obligation to implement the provisions of the European Directive. The costs associated with the Regulations will be negligible.

(V) What is Pentechlorophenol (PCP) ?

Introduction

Pentachlorophenol (PCP) is a synthetic substance that was first produced in the 1930s. It is marketed under the trade names, Santophen, Pentachlorol, Chlorophen, Chlon, Dowicide 7, Pentacon, Penwar, Sinituho and Penta among others. It can be found in two forms: PCP itself or as the sodium salt of PCP, which dissolves easily in water. In the past, it has been used as a herbicide, insecticide, fungicide, algaecide, disinfectant and as an ingredient in antifouling paint. Some applications were in agricultural seeds (for nonfood uses), leather, masonry, wood preservation, cooling tower water, rope and paper mill system.

Since the early 1980s, the purchase and use of PCP in the U.S has not been available to the general public. Nowadays most of the PCP used in the U.S is restricted to the treatment of utility poles and railroads ties.

There are two general methods for preserving wood. The pressure process method involves placing wood in a pressure-treating vessel where it is immersed in PCP and then subjected to applied pressure. In the non-pressure process method, PCP is applied by spraying, brushing, dipping, and soaking. Utility companies save millions of dollars in replacement poles, because the life of these poles increases from approximately 7 years for an untreated pole to about 35 years for a preservative-treated pole.

Toxicity

Short-term exposure to large amounts of PCP can cause harmful effects on the liver, kidneys, blood, lungs, nervous system, immune system, and gastrointestinal tract. Further, elevated temperature, profuse sweating, uncoordinated movement, muscle twitching, and coma are additional side effects.
Contact with PCP (particularly in the form of vapor) can irritate the skin, eyes, and mouth. Long-term exposure to low levels such as those that occur in the workplace can cause damage to the liver, kidneys, blood, and nervous system. Finally exposure to PCP is also associated with carcinogenic, renal, and neurological effects. The EPA classifies PCP in group B2 (probable human carcinogen).

Releases to the environment

PCP has been detected in surface waters and sediments, rainwater, drinking water, aquatic organisms, soil, and food, as well as in human milk, adipose tissue, and urine. As PCP is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of PCP contamination.

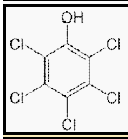
Releases to the environment are decreasing as a result of falling consumption and changing use methods. However, PCP is still released, to surface waters from the atmosphere by wet deposition, from soil by run off and leaching, manufacturing and processes facilities. Also, PCP is released directly into the atmosphere via volatilization from treated wood products and during production. Finally, releases to the soil can be by leaching from treated wood products, atmospheric deposition in precipitation (such as rain and snow), spills at industrial facilities and at hazardous waste sites. In the United States, any drinking water supply with a PCP concentration exceeding the MCL, 1 ppb, must be notified by the water

supplier to the public. Disposal of PCP and PCP contaminated substances are regulated under RCRA as a F-listed hazardous waste.

Environmental fate

After PCP is released into the atmosphere it is transformed via photolysis. The main biodegradative pathway for PCP is reductive dehalogenation. In this process, the compound PCP is broken down to tetra-, tri-, and dichlorophenols. Another pathway is methylation to pentaclhloroanisole (a more lipid soluble compound). These two methods eventually lead to ring cleavage and complete degradation.

In shallow waters, PCP is also quickly removed by photolysis. In deep or turbid water processes such as sorption and biodegradation take place. In reductive soil and sediments, PCP can be degraded within 14 days to 5 years, depending on the anaerobic soil bacteria that are present. However, adsorption of PCP in soils is pH dependent because it increases under acidic conditions and it decreases in neutral and basic conditions.

Pentachlorophenol	
	
Names	
IUPAC name 2,3,4,5,6-Pentachlorophenol	
Other names : Santophen, Pentachlorol, Chlorophen, Chlon, Dowicide 7, Pentacon, Penwar, Sinituho, Penta	
Identifiers	
CAS Number	87-86-5 ✓
ChEBI	CHEBI:17642 ✓
ChEMBL	ChEMBL75967 ✓
ChemSpider	967 ✓
ECHA InfoCard	100.001.617
Jmol 3D model	Interactive image
KEGG	C02575 ✗
PubChem	992
UNII	D9BSU0SE4T ✓
InChI[show]	
SMILES[show]	
Properties	
Chemical formula	C_6HCl_5O
Molar mass	266.34
Appearance	White crystalline solid
Odor	benzene-like[1]
Density	1.978 g/cm^3 at 22 °C
Melting point	190 to 191 °C (374 to 376 °F; 463 to 464 K)
Boiling point	309–310 °C (588–590 °F; 582–583 K) (decomposes)
Solubility in water	0.020 g/L at 30 °C
Vapor pressure	0.0001 mmHg (25°C)[1]
Hazards	
Lethal dose or concentration (*LD*, *LC*):	
LD50 (median dose)	117 mg/kg (mouse, oral)
	168 mg/kg (hamster, oral)
	17 mg/kg (rat, oral)
	150 mg/kg (rat, oral)[2]
LDLo (lowest published)	70 mg/kg (rabbit, oral)[2]
LC50 (median concentration)	355 mg/m^3 (rat)
	225 mg/m3 (mouse)[2]
US health exposure limits (NIOSH):	
PEL(Permissible)	TWA 0.5 mg/m3 [skin][1]
REL(Recommended)	TWA 0.5 mg/m3 [skin][1]
IDLH (Immediate danger)	2.5 mg/m3[1]
Except where otherwise noted, data are given for materials in their standard state (at 25 °C [77 °F], 100 kPa).	

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Under his leadership, **Asian Leather** has emerged as one of the largest manufacturing and exporting company in Eastern India Moreover, his rich contribution to the overall development of SME Sector in the region is praiseworthy.

(Source : Email dated 05.04.2017 from PS to Mr. Nari Kalwani)

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Munnar in Kerala stood seventh in the list while Srinagar in Jammu and Kashmir secured number eighth position followed by Nainital in Himachal Pradesh and Lonavala in Maharashtra, mentioned the report.

The report was compiled according to booking interest data for Indian travellers during the summer travel period May 1 – July 31, 2017.

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A sum of Rs 500 crore has already been sanctioned by the finance ministry for the sector. Seeking incentives, the ministry has circulated a note to collect views of other ministries. "The package would be part of the revamped Indian Leather Development Programme (ILDP). The expenditure finance committee would discuss the

note and then the ministry would seek Union Cabinets nod on the proposal. By July, we will be able to announce it," an official said. The ILDP ended last fiscal and the ministry has asked for extending it for three more fiscals, the official said.

The major players of the sector includes Bata India, Liberty Shoes, Mirza International and Relaxo Footwear.

The sector assumes significance as it is a thrust segment under the Make in India initiative. The Council for Leather has time and again asked the government to extend financial support. As per industry experts, Rs 1 crore investment in the sector results in creation of jobs for about 250 people. Currently about 30 lakh people are directly employed in the sector.

In global market, China is giving a tough competition to Indian leather manufacturers in terms of pricing. A financial package would support the sector to boost exports. Leather and leather goods are among the 25 focus sectors under the Make in India initiative.

The government aims to increase the sector exports to USD 15 billion by 2020 from the current USD 7 billion. The Indian industry is mainly dominated with products made up of synthetic leather. It accounts for about 90 per cent of the total leather manufacturing in the country. Last year, the Union Cabinet introduced labour law changes while approving a Rs 6,000 crore package for the textile and apparel sector.

(Source : P. T. I.)

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Sources said that the gazette notification states that the officials at the animal market will have to verify that the purchaser of the cattle is a farmer by checking his relevant revenue documents. "It also states that the purchaser of the cattle will not sell the animal for the purpose of slaughter nor sacrifice the animal for any religious purpose. The notification defines 'cattle' as bovine animals, including bulls, cows, buffaloes, steers, heifers, calves and camels. The Animal Market is defined as a 'market place or sale-yard or any other premises or place where animals are brought from other places and exposed for sale or auction and includes any lairage adjoining a market or a slaughterhouse," sources added.

However, Animal Activists and Legal Eagles in the city gave mixed reactions to the said notification wherein, some even raised the question on how will the Central Government implement the said notification since livestock is a State subject.

Speaking to The Afternoon D & C, Sunish Subramanium Kunju, Secretary of the Plant & Animals Welfare Society (PAWS – Mumbai) said, "The points mentioned in the notification are beneficial for the society and should not just remain in the notification, but implemented in reality. The Government should bring proper awareness about the said notification. There are times when the Government officials are themselves not aware of the notification, even when we point out to some violations in the Act. The Government should also think about how it will take care of the old livestock. Such old livestock cannot be just left in lurch by the farmers once they are not in use," (Afternoon Despatch & Courier)

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If buffaloes are not excluded from the ban list, Indian exporters will be bound to import hide to meet their commitments. Buffalo hides account for in excess of 50 per cent of the leather demand, he said.

"India has never imported hides so far and has met the demand from domestic supplies. The USA produces a lot of cattle hide but due to high labour cost they don't produce leather goods," he said.

However, the hide, skin and leather industry in the USA is growing in recent times and according to reports in 2016, the country has exported cattle hide and semi-proceed leather products worth USD 2 billion.

"The hides and skins industry is a major success story for US agriculture and exports. The industry has positioned itself well to capitalize on a highly dynamic, integrated global leather marketplace," President of the US Hide, Skin and Leather Association Stephen Sothmann was quoted in a report.

China is the largest importer of cattle hides from the USA. Other large destinations include Korea, Mexico, Vietnam and the European Union.

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"The decision will have implications on meat exports as well as on the availability of raw material for the domestic industry. We will ask the government to reconsider the decision," Council for Leather Exports former chairman Rafeeq Ahmed told PTI.

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Li-Fi : A FUTURE TECHNOLOGY

Dr. Goutam Mukherjee[1], Shubham De[2]
Govt. College of Engineering & Leather Technology, Kolkata

ABSTRACT

- Li-Fi stands for Light-Fidelity. Li-Fi technology, proposed by the German physicist – Herald Haas, provides transmission of data through illumination by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. This paper focuses on developing a Li-Fi based system and analyses its performance with respect to existing technology. Wi-Fi is great for general wireless coverage within buildings, whereas Li-Fi is ideal for high density wireless data coverage in confined area and for relieving radio interference issues. Li-Fi provides better bandwidth, efficiency, availability and security than Wi-Fi and has already achieved blisteringly high speed in the lab. By leveraging the low-cost nature of LEDs and lighting units there are many opportunities to exploit this medium, from public internet access through street lamps to auto-piloted cars that communicate through their headlights. Haas envisions a future where data for laptops, smart phones, and tablets will be transmitted through the light in a room.

KEYWORDS

- Li-Fi, Wi-Fi, Li-Fi vs Wi-Fi, high-brightness LED, photodiode, wireless communication, solar li-fi, li-fi market.

INTRODUCTION

- Transfer of data from one place to another is one of the most important day-to-day activities. The current wireless networks that connect us to the internet are very slow when multiple devices are connected. As the number of devices that access the internet increases, the fixed bandwidth available makes it more and more difficult to enjoy high data transfer rates and connect to a secure network.

  A solution to this problem is by the use of Li-Fi. The idea of Li-Fi was introduced by a German physicist, Harald Hass, which he also referred to as data through illumination. The term Li-Fi was first used by Haas in his TED Global talk on Visible Light Communication. Li-Fi can play a major role in relieving the heavy loads which the current wireless systems face since it adds a new and unutilized bandwidth of visible light to the currently available radio waves for data transfer. Thus it offers much larger frequency band (300 THz) compared to that available in RF communications (300 GHz). Also, more data coming through the visible spectrum could help alleviate concerns that the electromagnetic waves that come with Wi-Fi could adversely affect our health. Li-Fi can be the technology for the future where data for laptops, smart phones, and tablets will be transmitted through the light in a room. Security would not be an issue because if you can't see the light, you can't access the data. As a result, it can be used in high security military areas where RF communication is prone to eavesdropping.

- **WORKING PRINCIPLE OF Li-Fi**

1. When a constant current is applied to an LED light bulb, a constant stream of photons are emitted from the bulb which is observed as visible light.

2. If the current is varied slowly the output intensity of the light dims ups and down.

3. As LED bulbs are semi-conductor devices, the current and hence the optical output can be modulated at extreme high speeds which can be detected by a photo-detector device and converted back to the electrical current.

4. The logic is very simple. If the LED is on, a digital 1 is transmitted. If the LED is off, a digital 0 is transmitted. These high brightness LEDs can be switched on and off very quickly which gives us a very nice opportunities for transmitting data through light.

5. The working of Li-Fi is not very complicated. There is a light emitter on one end, for example, an LED, and a photo detector (light sensor) on the other. The photo detector registers a binary one when the LED is on; and a binary zero if the LED is off. To build

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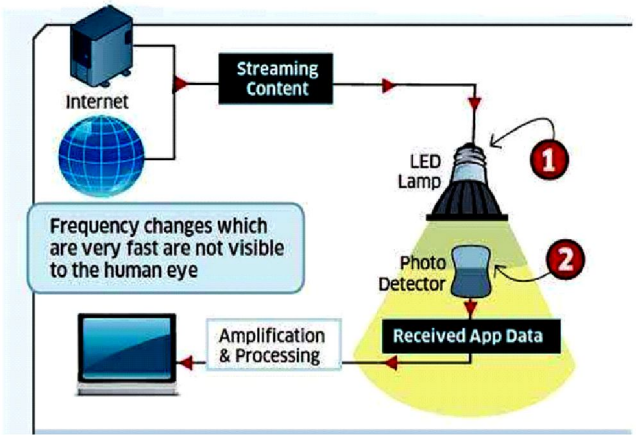
up a message, the LED is flashed numerous times or an array of LEDs are used perhaps a few different colours, to obtain data rates in the range of hundreds of megabits per seconds.

6. LEDs can be switched on and off to generate digital strings. Conclusion combination of 1s and 0s. To generate a new data stream, data can be encoded in the light by varying the flickering rate of the LED. The LEDs can be used as a sender or source, by modulating the LED light with the data signal. The LED output appears constant to the human eye by virtue of the fast flickering rate of the LED.

The block diagram of Li-Fi system is shown below :-



(Image source : http://www.extremetech.com/extreme/147339-micro-led-lifi-whereevery-light-source-in-the-world-is-also-tv-and-provides-gigabit-internetaccess)

PARAMETER		
Data Density		*
		* *
		*
		* *
		*
Market Maturity		* * *

PROBLEMS OF Wi-Fi

Wi-Fi uses the radio wave spectrum to transfer data. The following are the basic issues with radio waves :

a) **CAPACITY :** Wireless data is transmitted through radio waves which are limited and expensive. It has a limited bandwidth. With the rapidly growing world and development of technologies like 3G, 4G and so on we are running out of spectrum.

b) **EFFICIENCY :** There are 1.4 million cellular radio base stations that consume massive amount of energy. Most of the energy is used for cooling down the base station instead of transmission. Therefore efficiency of such base stations is only 5%.

c) **AVAILABILITY :** Availability of radio waves is a big concern. It is not advisable to use mobile phones in aero planes and at places like petrochemical plants and petrol pumps.

d) **SECURITY :** Radio waves can penetrate through walls. They can be intercepted. If someone has knowledge and bad intentions, they may misuse it. This causes a major security concern for Wi-Fi.

ADVANTAGES OF Li-Fi

Li-Fi uses the visible light spectrum as data is transferred through LED lamps. For this reason it can eliminate the issues of using Wi-Fi mentioned earlier :

a) **CAPACITY :** Light has 10000 times wider bandwidth than radio waves. Also, light sources are already installed. So, Li-Fi has got better capacity and also the equipment are already available.

b) **EFFICIENCY :** Data transmission using Li-Fi is very cheap. LED lights consume less energy and are highly efficient.

c) **AVAILABILITY :** Availability is not an issue as light sources are present transmitting. There are billions of light bulbs worldwide; they just need to be replaced with LEDs for proper transmission of data.

d) **SECURITY :** Light waves do not penetrate through walls. So, they can't be intercepted and misused.

DRAWBACK OF Li-Fi

The major demerit of this technology is that the artificial light cannot penetrate into walls and other opaque materials which radio waves can do.

APPLICATIONS OF Li-Fi

- **RF SPECTRUM RELIEF –** Excess capacity demand of cellular networks can be off-loaded to Li-Fi networks where available. This is especially effective on the downlink where bottlenecks tend to occur.

- **SMART LIGHTING –** Any private or public lighting including street lamps can be used to provide Li-Fi hotspots and the same communication and sensor infrastructure can be used to monitor and control lighting and data.

- **MOBILE CONNECTIVITY –** Laptops, smartphones, tablets and other mobile devices can directly interconnect using Li-Fi. Short range links gives very high data rates and also provides security.

- **HAZARDOUS ENVIRONMENT –** Li-Fi provides a safe envisions to electromagnetic interference from radio frequency communications in environments such as mines and petrochemical plants.

- **AVIATION –** Li-Fi can be used to reduce weight and cabling and add flexibility to seating layouts in aircraft passenger cabins where LED lights are already deployed. In-flight entertainments systems can also be supported and integrated with passengers own mobile devices.

- **UNDERWATER COMMUNICATION –** Due to strong signal equipment in water, RF use is practically impossible. Acoustic waves have extremely low bandwidth and disturb marine life. Li-Fi provides a solution for short range communication.

- **VEHICLES & TRANSPORTATION –** LED headlights and taillights are being introduced. Street lamps and traffic signals are also moving towards LED. This can be used in vehicle-to-vehicle and vehicle-to-roadside communications for road safety and traffic managements.

SOLAR Li-Fi

Solar Li-Fi will use solar cell instead of photodiode conventionally used in Li-Fi technology.

The basic features of solar Li-Fi technology is as follows –

1. As shown in the figure solar cell decodes encoded data transmitted by LED lamp. The data is encoded with sudden change of brightness of light signal.

2. Solar panel is connected with laptop which will receive the decoded data and displays on the screen.

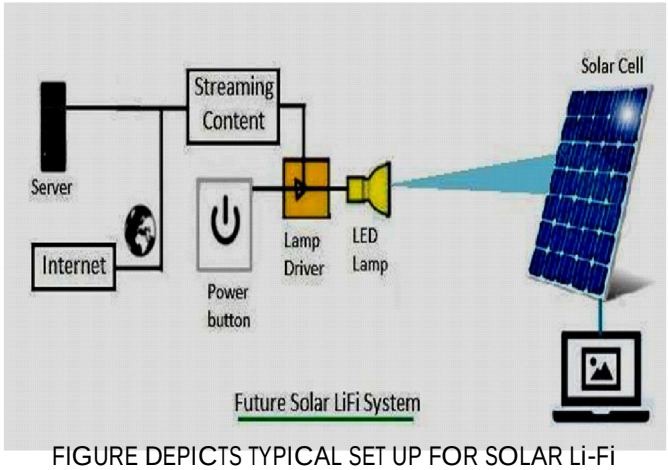


FIGURE DEPICTS TYPICAL SET UP FOR SOLAR Li-Fi TECHNOLOGY

(Image source : http://www.rfwireless-world.com/terminology/what-is-solar-LiFi.html)

Here solar cell does two functions :

- Energy harvesting
- Decoding of light signal into useful information

Solar cell functions satisfactorily till it receives changes in brightness properly in distinguishable manner.

SOLAR Li-Fi AND DIGITAL INDIA

DIGITAL INDIA programme as stated by its official website is a flagship programme of the Government of India aimed at transforming India into a digitally-empowered society and knowledge economy.

The basic features of Li-Fi technology that can boost the goal of DIGITAL INDIA PROGRAMME launched by Govt. of India are as described –

1. **MINIMAL COST :** This comes with just a single investment. All a person needs is to get solar panels installed and then exploit solar energy for years to come. Owing to our present infrastructure, distribution of subsidized LEDs and solar subsidy in near future, the two technologies can be merged to ensure better energy harvesting at drastically reduced cost.

2. **BROADBAND ACCESS FOR RURAL INDIA :** A whooping 70% of the Indian population resides in the rural areas. It is not possible to provide broadband services to all of them when a majority exist without electricity supply. However with Li-Fi enabled solar panels we can ensure Internet connectivity to most of the remote areas owing to the minimal power consumption of LED bulbs.

3. **HIGH SPEED SMART CITY NETWORKS :** Digital India aims at developing smart cities with robust Internet connectivity and knowledge illumination. With Li-Fi enabled solar panels this plan seems far more feasible. Built upon the backbone of optical fibre network and Wi-Fi infrastructure, Li-Fi can be embedded into current segment for rapid data transfer. An innovation for Digital India needed !

Li-Fi MARKET ANALYSIS

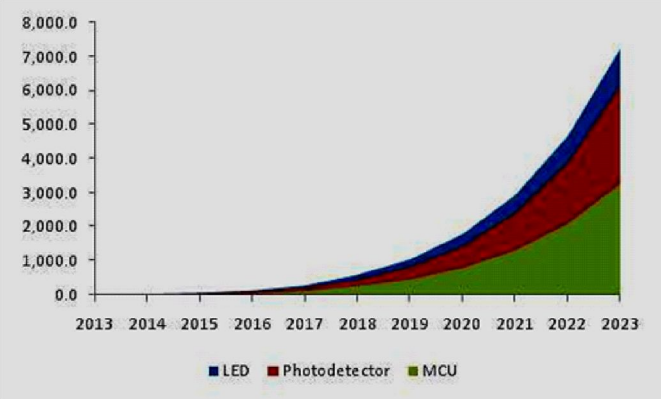
Li-Fi market size is anticipated to reach USD 75.5 billion by 2023; as per a new research report by Global Market Insights, Inc.

Key features regarding the market forecast is summarized below :

❖ **GLOBAL Li-Fi MARKET :**

Key opportunities :

- Li-Fi market was valued at USD 630 million in 2015 and is likely to grow at 80.8% CAGR from 2016 to 2023.
- Moreover LED is expected to exceed USD 33 billion by 2023 growing at 79% CAGR from 2016 to 2023.



U.S. Li-Fi MARKET SIZE BY COMPONENT, 2013-2016 (USD MILLION)

(Image source : https://www.gminsights.com/industry-analysis/lifi-market)

Key reasons behind this growth are as follows :

1) Internet video traffic is forecast to grow at over 45% in the coming years with video expected to contribute nearly 70% of consumer internet traffic. Increasing data production and usage will lead towards the need of wireless optical networks alongside RF-based networks.

2) Rising demand from environments such as hospitals, medical centres, and schools are likely to fuel the industry from 2016 to 2023. As this technology involves visible light wavelengths instead of radio waves, it is likely to nullify the negative impact on human health.

3) Rising LED adoption owing to benefits offered such as longer life span, high efficiency, energy conservation, and low maintenance will also aid in global Li-Fi market growth.

❖ **REGIONAL ANALYSIS :**

Asia Pacific Li-Fi Market size was valued at over USD 185 million in 2015. The regional growth will be fuelled by need for internet connectivity in underdeveloped countries.

US Li-Fi Market share projected to grow at 78% CAGR from 2016 to 2023; it was valued at around USD 190 million in 2015.

❖ **COMPETITIVE MARKET SHARE :**

Major industries like Pure-LiFi, GE, Phillips, Qualcomm, LVX, etc. are focusing on merger, acquisition and strategic collaborations to enhance their product portfolio. For instance, GE collaborated with Qualcomm to merge lighting and big data to transform in 2015. In the same year LVX teamed up with NASA in order to introduce these products for space missions and to develop new application for VLC.

CONCLUSION

There are a plethora of possibilities to be gouged upon in this field of technology. If this technology becomes justifiably marketed then every bulb can be used analogous to a Wi-Fi hotspot to transmit data wirelessly. By virtue of this we can ameliorate to a greener, cleaner, safer and a opportunitive future. The concept of Li-Fi is attracting a lot of eye-balls because it offers a genuine and very efficient alternative to radio based wireless. It has a bright chance to replace the traditional Wi-Fi because as an ever increasing population is using wireless internet, the airwaves are becoming increasingly clogged, making it more and more difficult to get a reliable, high-speed signal. This concept promises to solve issues such as the shortage of radio-frequency bandwidth and boot out the disadvantages of Wi-Fi. Li-Fi is the upcoming and on growing technology acting as competent for various other flexibility and already invented technologies. Hence the future applications of the Li-Fi can be predicted and extended to different platforms and various walks of human life.

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   Available Online at : www.ijarcsse.com
8. http://www.rfwireless-world.com/terminology/what-is-solar-LiFi.html
9. http://www.cmai.asia/digitalindia/
10. http://www.tec.com/talks/harald_hass_wireless_data_from_every_light_bulb

GST : 10 most used services and how Goods and Services Tax will impact them

GST: The new four-tier GST structure with five, twelve, eighteen and twenty eight per cent tax rates on the face seems to increase the tax incidence.

Majority of services are presently taxed at the rate of fifteen per cent including the Swatch Bharat and Krishi Kalyan Cess (KKC). The new four-tier GST structure with five, twelve, eighteen and twenty eight per cent tax rates on the face seems to increase the tax incidence, especially since the bulk of services are taxed at the rate of eighteen per cent. Discussed below is the impact of GST on 10 most used services:

1. Your mobile bill : A three per cent increase in the rate of tax under GST on telecommunication services is envisaged. There may be offsets of additional credits available against this increase in rate, but overall, an increase in the mobile bills is likely.

2. Banking Services : Banking services become costlier as the current rate stands increased by three per cent.

3. Tax incidence on Cable and DTH services is likely to reduce under the GST regime as entertainment tax levied by states will be subsumed under GST. Currently, these services attract an entertainment tax in states in the range of 10-30 per cent over and above the service tax levy of 15 per cent.

4. Movie tickets : Tax incidence on movie tickets is likely to come down for the same reason of entertainment tax being subsumed under GST.

5. Eating out : Meals at a restaurant may become cheaper as the GST rate of twelve/ eighteen per cent is lower than the current tax applied on food served in restaurants. In addition, restaurants are also eligible for credits of input taxes which was not available under the current regime.

6. Software : Currently, there is dual levy of service tax and VAT on sale of software, which may change under the GST regime, with only a single levy being charged on software, leading to a reduction in the gross tax on software.

7. Insurance : The GST rate for insurance services has been kept at the standard rate of eighteen per cent including for motor and health insurance policies, which is a three per cent hike from the rate under the existing regime. There are some concessional slabs only in the case of life insurance policies.

8. Hotel stay : Your vacations are likely to cost more in the new regime. Under GST, hotel room tariffs between 1,000 and 2,500 INR bracket will attract a twelve per cent levy, this will be eighteen per cent for tariffs in the range of 2,500 – 7,500 INR. Hotels with room rents above 7,500 INR will attract a twenty eight per cent GST rate.

9. Air Travel : The new GST rates make economy air travel marginally cheaper due to reduction in the effective tax rate of 0.6 per cent. However, business class airfare becomes more expensive by three to four per cent.

10. Radio taxi operator : Riding a radio cab may be cheaper in the new regime as the new GST rates are lower than the current service tax rate by a per centage point.

With GST round the corner now, its real impact is to be known soon. It is also likely to soften within a few months once service providers are able to seamlessly obtain GST credits and pass on the benefits of GST to consumers.

Linking your Aadhaar with PAN : Here's all you need to know

If you are eligible to obtain Aadhaar number, you will, on or after July 1, 2017, quote Aadhaar number in the application form for allotment of permanent account number and in your return of income.

Why? According to government, Aadhaar-enabled biometric identification will help check instances of multiple PANs and also keep a tab on tax evaders.

What if your income is below the tax limit ?

Even then. If you don't file income tax return but possess both PAN and Aadhaar then linking the two is compulsory otherwise your PAN will be liable to become invalid from a date to be notified by the government, as per section 139AA of the Act.

The recent Supreme Court order provides interim relief to those who may have PAN but do not have an Aadhaar and have not applied for one as yet from having to compulsorily link the two. It does not provide any relief to those who already have both PAN and Aadhaar.

Even individuals who are not required to file income tax returns due to income being below exemption limit but possess both PAN and Aadhaar are mandatorily required to link both by a date to be notified as per section 139AA. If such individuals do not link the two by the date to be notified then their PAN will become invalid as per Section 139AA of the Income Tax Act introduced in the last budget, according to Sonu Iyer, Tax Partner and People Advisory Services Leader, EY.

This means that a large number of people - senior citizens, students, entry-level workforce, housewives etc. who have PAN and Aadhaar both, but don't file returns will have to link the two numbers. This can be done via the income tax department's e-filing website.

Link it if you don't want to lose your PAN

If a person does not link PAN and Aadhaar as mandated by section 139AA then the person's PAN would become invalid. If a person's PAN becomes invalid they would face problems in all banking / financial transactions requiring PAN to be quoted.

How does one do it

The IT department has made provision for assesses to link their PAN to Aadhaar on the efiling portal. If you have Aadhaar and PAN card and you haven't linked it yet, here's help.

Link

Visit the income tax e-filing portal at **https://incometaxindiaefiling.gov.in/** and enter your user id and password to access your profile. A new user can register on the portal by entering basic registration details such as PAN, name and date of birth.

Update Aadhaar

Once you are logged into the portal, go to the "Profile Settings" tab. A drop down menu will appear. Click on "Link Aadhaar". A new form will be displayed.

Details

You need to enter name, date of birth and gender as per PAN records. Next, your Aadhaar number and your name as per Aadhaar records must be entered. These details must be submitted after entering the text in the captcha code appearing on the screen.

Confirmation

After submitting the Aadhaar details, a success message is displayed confirming the linking of Aadhaar with PAN. A confirmation email is also sent to the registered email id of the assessee.

Points to note

1. Once Aadhaar-PAN is linked, one can e-verify the IT return using Aadhaar if the mobile number is registered with Aadhaar database.

2. If the name in Aadhaar does not exactly match with the name on PAN.

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LEATHER SCIENCE ABSTRACTS

VOLUME 50 **NUMBER 06** **JUNE, 2017**

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Leather News India

World Footwear

LEATHER SCIENCE AND TECHNOLOGY

LEATHER INDUSTRY. HISTORY. MANAGEMENT. ECONOMICS. EDUCATION

50.15527

What will it take to 'Make in India. MALSHE (VC), (No. : 33-34, Building No. : 10 Kamdhenu Hari Om Nagar, Mulund(E), Mumbai-400 081, India). (Chem. Wkly.; 61, 21; 2015, Dec., 29; 208-9).

Highlights serious impediments that come in the way of this government initiative, especially as regards to the chemical industry. (3 Photos).

50.15528

Global developments in chemical regulation : Lessons for Indian chemical policy-Developments in regulations in major chemical markets. KUMRA (M/s. Nagpur Sustainability Support Services Private Limited, 3rd Floor, No. : 301, SamredSankul, Near MLA Hostel, Temple Road, Civil Lines, Nagpur-440 001, Maharashtra State, India and Sustainability Support Services(Europe) AB, Markaskalvagen 6, 226 47, Lund, Sweden). (Chem. Wkly.; 61, 21; 2015, Dec., 29; 197-203).

Discusses the key markets and regulator status of the chemicals, Impact of regulation ; Indian initiatives and proposed implementation strategy. Recommended a phased approach to chemical regulation. (6 Tab.).

50.15529

India's quest for energy : Green and clean energy. (Chem. Wkly.; 61, 16; 2015, Nov., 24; 207-10).

Discusses the energy which is needed in huge volumes for India and attempts to analyze India's efforts that it has taken so far for its production.Describes the methods, which India should pursue for more productions of green and clean energy which is sure to lead the country to a very prosperous nation in the world by wiping out all the drawbacks that hamper the smooth flow of progress of the nation. (3 Photos).

50.15530

Revitalizing traditional healthcare practices. JOSHI (RK), (Department of Chemistry, Government Post Graduate College, Ghursal, Gopeshwar-246 401, Chamoli District, Uttarkhand State, India). (Chem. Wkly.; 61, 23; 2016, Jan., 12; 186-8).

Discusses that the knowledge of various medicinal plants being used is confined to Vaidyas. It is of utmost importance to document this knowledge for future generations. The recording of indigenous healthcare system has become increasingly important and its hoped that the information will be of use to plan future research. (17 Ref.; 3 Photos).

50.15531

Will Asia's ethylene market continue to see strength into 2016? DOBASHI (F), (M/s. 'Platts", Global Headquarters, No. : 20 Canada Square, 9th Floor, London E14 5LH, England). (Chem. Wkly.; 61, 23; 2016, Jan., 12; 210-2).

Discusses briefly about the various factors that both serve as boost and some other factors that serve as stumpling blocks to the markets for ethylene in Asia. (2 Tab.; 1 Photo).

50.15532

Is India utilizing the breathing time provided by crude price fall.VENKATARAMAN (S), (M/s. Nandini Consultancy(S) Private Limited, No. : 105, Cecil Street, 0601 The Octagon, Singapore 069534, Singapore). (Chem. Wkly.; 61, 22; 2016, Jan., 5; 210-1).

Discusses that India's impending energy crisis finds its ultimate and immediate solution in the form of acquiring oil and gas assets abroad. It is stated that many oil and gas producers abroad are struggling with the financial burden of servicing their investments and profitability of their oil and gas investments have come down drastically with oil price at distressed levels. The government of India should be ready with a war chest of funds and target assets around the world that are available for sale or are in distress. India appears to have taken some half-hearted measures in the recent past to acquire suchassets abroad, some of which may be in politically unstable regions. It is indicated that China has adopted this strategy with efficiency and achieved considerable success and has acquired assets abroad to the extent of around 3-mbpd oil production. It is questioned why India cannot follow a similar strategy, with China's speed and efficiency. (2 Photos).

50.15533

Supply chain in the broadroom : Five levers to boost a chemical company's bottom line. SUNTROP (C), KRUPP (T), VERES-HOMM(U), (M/s. CMC^2 GmbH Grimmelshavsenstrasse 14, 50996 Köln, Deutschland, Germany and European University of Applied Sciences, Kaiserstrasse 6, 50321 Brühl, Germany). (Chem. Wkly.; 61, 13; 2015, Nov., 1; 205-10).

It is argued that logistics-far more than a necessary evil-could, in fact, be a significant contributor to bottom-line results. Chemical companies could establish real competitive advantage with a more strategic approach to supply chain management. They could use logistics services to differentiate themselves in increasingly commoditized markets by productivity aligning logistics to the special needs of product sectors and customers. Strategic logistics can help optimize costs, increase supply chain liquidity hedge emission-critical assets, ensure safety and security across increasingly complex and far-flung supply chains and differentiate between chemical product portfolios. Examines the challenges of the current chemical industry landscape and distills five levers for chemical company executives-five ways in which strategic supply chain management can turn challenges into opportunities and make a positive bottom-line contribution on the basis of the case study analysis, desk research and interviews with the chemical industry representatives. (3 Fig.; 4 Photos).

50.15534

Global bioeconomy in the conflict between biomass supply and demand. MICHEL (SP), ESSEL (C), ESSEL (R), (M/s. Nova-Institut GmbH, c/o ChemieparkKnpsack, Industriestrasse 300, 50354 Hürth, Germany). (Chem. Wkly.; 61, 15; 2015, Nov., 17; 209-17).

Summarizes and discusses the most important results of the study on "Sustainable biomass potentials for biofuels in competition to food, feed, bioenergy and industrial material use in Germany, Europe and the world". Differentiates the global level, the European Union and Germany and provides a perspective on future trends and developments. The results of this study provides a detailed view of possible scenarios for a sustainable supply of biomass until the year 2050 and of the development of demand in all biomass sectors such as food, feed, chemical and materials, bioenergy and biofuels. This approach facilitates one to clearly see under which assumptions global supply shortages or a sufficient coverage of demand may occur. (12 Ref.; 2 Tab.; 5 Fig.; 1 Photo).

50.15535

Education for sustainable development.PANGARKAR (VG), (Chem. Wkly.; 61, 14; 2015, Nov., 10; 203-5).

Discusses in detail about the sustainable development which is closely connected with all branches of engineering and technology. It is very firmly stressed that such programmes should include that part of sustainable development which is related to the particular branch. As afinal step, besides engineers and technologists, a course comprising the basic tenets of sustainable development must also been integral part of the training imparted to all civilian bureaucrats / administrators. Business administration courses should also include the same. (1 Ref.; 2 Photos).

50.15536

India's current IPR regime and need for urgent policy changes. (Chem. Wkly.; 61, 17; 2015, Dec., 1; 212-3).

It is cautioned that the government of India needs to demonstrate through policy change that Intellectual Property Rights(IPRs) are taken seriously in the country. India should develop a more robust, predictable and enforceable legal framework for the protection of IPRs through the proposed policy. It is very sad to note that the recent experiences of bioipharmaceutical innovators offer several examples that, if unchecked, will continue to undermine rather than facilitate the building of a robust, innovative bio-pharma sector in India. It is stated that a strong IPR regime could allow the country to make a major contribution to tackling health challenges, both domestically and around the world. (4 Photos).

50.15537

Award winning alternative techniques for generic drugs. SATHAYE (K), (Chem. Wkly.; 60, 51; 2015, Jul., 28; 201-6). Discusses the Green Technology Awards that have been instituted for generating awareness and reward the effort by the Government and the pharmaceutical companies have started developing environmentally safer processes to make even the known older medicines by new green chemistry and green chemical technology. Discussed

also the manufacturers of widely used anti-inflammatory analgesic drugs viz. : ibraprofen, prefabalin, cephalexin, atorvastatin and also the alternative strategies like solvents and energysources,as one of such classic examples**.** (18 Ref.; 2 Tab.; 6 Fig.).

50.15538

Strategies for Chinese chemical industry in context of the global slowdown. VENKATARAMAN (S), (M/s. Nandini Consultancy(S) Private Limited, No. : 105, Cecil Street, 0601 TheOctagen, Singapore 069534, Singapore). (Chem. Wkly.; 61, 19; 2015, Dec., 15; 191-4).

It is very firmly stressed that the Chinese chemical industry should remain focused on gaining strong foothold in the global chemical distribution industry, commonsurate with its size and range of chemical products made. Chinese chemical industry has to give greater importance to promoting trading activities than it has done so far. (5 Tab.; 1 Fig.; 1 Photo).

RAW HIDES AND SKINS

50.15539

What does the future hold for biopharmaceutical outsourcing? REES (H), (M/s. Pharma Flow Limited, No. : 12 Island Farm Clave, Bridgend, Mid Glamorgan CF31 3LY, Wales, UK). (Chem. Wkly.; 61, 35; 2016, Apr., 5; 206-7).

Describes a new generation of biologically based therapies called advanced therapy medicinal products(ATMPs) that are made up of gene therapies, somatic cell therapies and tissue engineered products. Exposes an intention of creating the closer ties between manufacturers and the healthcare system.Discusses the different approach to outsourcing, multiple issues and the access to technical skills. (1 Photo).

ENZYMOLOGY

50.15540

Metabolic profiling of bacteria by unnatural C-terminated D-amino acids. PIDGAON (SE), FURA (JM), LEON (W), BIRABAHARAN (M), VEZENOV (D), PIRES (MM), (Department of Chemistry, Lehigh University, No. : 6 East Packer Avenue, Bethlehem, Pennsylvania 18105, USA). (Angew.Chem.; 54, 21; 2015, May, 18; 6158-62).

Describes the bacterial peptidoglycan as a mesh-like network comprised of sugars and oligopeptides. Transpeptidases cross-link peptidoglycan oligopeptides to provide vital cell wall rigibly and structural support. It was recently discovered that the same transpeptidases catalyzethe metabolic incorporation of exogenous D-amino acids onto bacterial cell surfaces with vast promiscuity for the side-chain identity. It is currently shown that this enzymatic promiscuity is not exclusive to side chains, but that C-terminus variations can also be accommodated across a diverge range of bacteria. Atomic force microscopy(ATM) analysis revealed that the incorporation of C-terminus amidated D-amino acids onto bacterial surfaces substantially reduced the cell wall stiffness. The promiscuity of bacterial transpeptidases had been exploited for developing a novel assay to profile the different bacterial species. (27 Ref.; 9 Fig.).

50.15541

The organocatalytic asymmetric prins cyclization. TSUI (GC), LIU (L), LIST (B), (Max-Plank-Institut fur Kohlensforschung, Kaiser-Wilhelm-Plantz 1, 45470 Mulheim an der Ruhr, Germany). (Angew.Chem. ; 54, 26; 2015, Jun., 22; 7703-6).

Herein describes the design and development of an organocatalyticPrins cyclization. Salicylaldehydes react with 3-methyl-3-buten-1-ol in the presence of a confined chiral imidodiphosphoric acid catalyst to afford highly functionalized 4-methylenetetrahydropyrans in excellent region- and enantioselectivity. The extreme steric demand of the acid catalyst in key for the success of this transformation. (76 Ref.; 1 Tab.; 3 Schemes).

50.15542

One-step formation of “Chain-Armor”-stabilized DNA nanostructures. CASSINELLI (V), OBERLEINER (B), SOBOTTA (J), NICKELS (P), GROSSI (G), KEMPLER (S), FRISCHMUTH (T), LIEDL (T), MANETTO (A), (Baseclick GmbH, Bahnhofstrasse 9-15, 82327 Tutzing, Germany). (Angew.Chem.; 54, 27; 2016, Jun.,26; 7795-8).

Describes the DNA(deoxyribonucleoroacid)-based self-assembled nanostructures that are widely used to position organic and inorganic objects with nanoscale precision. A particular promising application of DNA structures is their usage as programmable carrier systems for targeted drug delivery. 6-helix DNA tile tubes consisting of 24 oligonucleotides carrying alkyne groups on their 3’-ends and azides on their 5’-ends for providing DNA-based

templates that are robust against degradation at elevated temperatures, low ion concentrations, adverse *p*H conditions and DNA bases. The two ends of selected oligonucleotides were covalently connected to form rings and interlocked DNA catenanes. Strikingly, the structures stayed topologically intact in pure water and even after precipitation from EtOH. The structures even withstood a temperature of 95°Centigrade when all of the 24 strands were chemically interlocked. (43 Ref.; 2 Fig.; 1 Scheme).

50.15543

A PEGylated photocleavable auxiliary mediates the sequential enzymatic glycosylation and native chemical ligation of peptides. BELLO (C), WANG (S), MENG (L), MOREMEN (KW), BECKER (CFW), (FakultätChemie, InstitutfürBiologischeChemie, Universität Wien, WährungerStrasse 38, 1090 Vienna, Austria). (Angew.Chem.; 54, 26; 2015, Jun., 22;7711-5).

Aimed a research for understanding the specific role of glycosylation patterns in protein function would greatly benefit from additional approaches allowing direct access to homogeneous glycoproteins. Describes the development and application of an efficient approach for the synthesis of complex homogenously glycosylated peptides based on a multifunctional photocleavable auxiliary. The presence of a PEG (polyethyleneglycerol) polymer within the auxiliary enables sequential enzymatic glycosylation and straightforward isolation in excellent yields. The auxiliary-modified peptides can be directly used in native chemical ligations with peptide thioesters easily obtained by direct hydrazinolysis of the respective glycosylated peptidyl resins and subsequent oxidation. The ligand glycopeptides can be smoothly deprotected by ultraviolet irradiation. This approach isbeing applied to the preparation of variants of the epithelial tumor marker MUC1 carrying one or more Ts, T, or sialyl-T antigens. (58 Ref.; 3 Fig.;1 Scheme).

50.15544

Remarkable effect of chalcogen substitution on an enzyme mimetic for deiodination of thyroid hormones. RAJH (K), MUGESH (G), (Department of Inorganic and Physical Chemistry, Indian Institute of Science(IISc.), Sir C.V. Raman Road, Devasandra Layout, Bengaluru-560 012, Karnataka State, India). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7674-8).

Describes the iodothyromine deiodinases as selenoenzymes which regulate the thyroid hormone homeostasis by catalyzing the regioselectivedeiodination of thyroxine(T4). Synthetic deiodinase mimetics are important not only to understand the mechanism of enzyme catalysis, but also to develop therapeutic agents as abnormal thyroid hormone levels have implications in different diseases, such as hypoxia, myoceerdinal infraction, critical illness, neuronal isochemia, tissue injury and cancer. Described herein is that the replacement of sulfur/selenium atoms in a series of deiodinase mimeticsby tellurium remarkably alters the reactivity as well as regioselectivity toward T4. The reported tellurium compounds represent the first examples of deiodinase mimetics which mediate sequential deiodination of T4 to produce all the hormone derivatives including TO under physiologically relevant conditions. (34 Ref.; 1 Tab.; 7 Fig.).

POST-TANNING

50.15545

Cosmetics deals push skin 3D printing. (Chem. World; 12, 11; 2015, Nov.; 20).

Aims initially for the methods to streamline cosmetic testing-using artificial skin silvers. Mentions the problems associated with 3D printing of collagen. Describes the steps being taken to improve 3D printed skin, possibly to the stage where a patient's own cells could be used to prepare virtually perfectly compatible grafts. There are problems with current work but a number of bodies are working to overcome them. States that perhaps, in the distant feature, couture houses could offer purses matching the owner's own skin-which is viewed to be an opening for the leatherindustry.

LEATHER CHEMICALS AND AUXILIARIES

50.15546

Catalytic asymmetric synthesis of phosphine boromates.HORNILLOS (V), VILA (C), OTTEN (E), FERINGA (BL), (Stratingh Institute for Chemistry, University of Gronigen, Nijenborgh 4, 9747 AG, Groningen, The Netherlands). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7867-71).

Presents the first catalytic enantioselective synthesis of ambiphilic phosphine boromates esters. The assymetricboration á,â-unsaturated phosphine oxides cata1yzed by a copper bisphosphine complex affords

optically active organoboronate esters that bear a vicinal phosphonine oxide group in good yields and high enantiomeric excess(*ee*). Demonstrated the synthetic utility of the products through stereospecific transformations into multifunctional optically active compounds. (83 Ref.; 2 Tab.;4 Schemes).

50.15547

Acceptor reactivity in the total synthesis of alginate fragments containing á-L-guluronic acid and â-D-Mannuronic acid. ZHANG (Q), van RIJSSEL (ER), WALVOORT (MTC), OVERLEERT (HS), van der MAREL (GA), CODEE (JDC). (Leiden Institute of Chemistry, Leiden University, P.O. Box 9502, 2300 RA Leiden, The Netherlands). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7670-3).

Reported for the first time about the total synthesis of mixed-sequence alginate oligosaccharides featuring both â-D-mannuronicacid(M) and á-L-guluronic acid(G). A set of GM, GMG, GMGM, GMGMG, GMGMGM, GMGMGMG and GMGGMG alginates was assembled using GM building blocks, having a guluranic acid acceptor part and a mannuronic acid donor side to allow the fully stereoselective construction of the cis-glucosidic linkages. It was found that the nature of the reducing and anomeric center, which is ten atoms away from the reacting alcohol in the key disachharide acceptor, had a tremendous effect on the efficiency with which the building blocks were united. This chiral center determines the overall shape of the acceptor and it is revealed that the conformational flexibility of the acceptor is an all-important factor in determining the outcome of a glycosylation reaction. (29 Ref.; 1 Tab.; 1 Fig.;4 Schemes).

50.15548

DNA-encoded dynamic combinational chemical libraries. REDDAVIDE (FV), LIN (W), LEHNERT (S), ZHANG (Y), (B CBE Center for Molecular Bioengineering, TechnischeUniversitat Dresden, Dresden 01307, Germany). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7924-8).

Dynamic combinatorial chemistry(DCC) explores the thermodynamic equilibrium of reversible reactions. Its application in the discovery of protein binders is largely limited by difficulties in the analysis of complex reaction mixtures. DNA (deoxyribonucleoroacid)-encoded chemical library(DECL) technology allows the selection of binders from a mixture of up to billions of different compounds; however experimental results often show low a signal-to-noise ratio and poor correlation between enrichment factor and binding affinity. Herein, describes the design and application of DNA-encoded dynamic combinatorial chemical libraries (EDCCLs). The authors' experiments have shown that the EDCCL approach can be used not only to convert monovalent binders into high-affinity bivalent binders, but also to cause remarkably enhanced enrichment of potent bivalent binders by driving their*in situ* synthesis. Demonstrated the application of EDCCLs in DNA-templated chemical reactions. (28 Ref.; 9 Fig.).

50.15549

Nickel-catalyzed cross-coupling reactions of *o*-carboanyl with aryl iodides : Facile synthesis of 1-aryl-*o*-carboranes and 1,2-Diaryl-*o*-carboranes. TANG (C), XIE (Z), (Department of Chemistry and State Key Laboratory of Synthetic Chemistry, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong, China). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7662-5).

Describes the development of a nickel-catalyzed arylation at the carbon center of *o*-carborane cages, thus leading to the preparation of a series of 1-aryl-*o*-carboranes and 1,2-diaryl-*o*-carboranes in high yields upon isolation. This method represents the first example of transition metal catalyzed C,C'-diarylation by cross-coupling reactions of *o*-carboranyl with aryl iodides. (54 Ref.; 3 Tab.;1 Fig.).

50.15550

Can dynamics be responsible for the complex multipeak infrared spectra of NO adsorbed to copper**(II)** sites in zeolites. GOTTI (F), STUTET (P), HERMANS (I), (University of Wisconsin-Madison, Department of Chemistry, 1101 University Avenue, 53706 Madison, Wisconsin-Madison, USA). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7799-804).

Describes the copper-exchanged SSZ-13 as a very efficient material in the selective catalytic reduction of NO_xusing ammonia(deNO_x-SCR) and characterizing the underlying distribution of copper sites in the material is of prime importance to understand its activity. The IR spectrum of copper NO adsorbed to divalent copper sites are modeled using ab initio molecular dynamics simulations. Complex multi-peak spectra induced by the thermal motion of the cation as well as the adsorbate are found for most sites. A finite temperature spectrum for a specific catalyst was constructed, which shows

excellent agreement with previously reported data. Additionally, these findings allow active and inactive species in deNOx-SCR to be identified. To the best of the knowledge of the authors, this is the first time such complex spectra for simple molecules adsorbed to single active centers have been reported in heterogeneous catalysis and it is expected that similar effects to be important in a large number of systems with mobile active centers. (29 Ref.; 13 Fig.).

50.15551

Copper-promoted Sandmeyerdifluoromethylthiolation of aryl and heteroaryldiazonium salts. WU (J), GU (Y), LENG (X), SHEN (Q), (Key Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences(CASs), 345 Lingling Road, Shanghai 200032, China). (Angew.Chem.; 54, 26; 2015, Jun., 22;7648-52).

Describes an efficient copper-promoted difluoromethylthiolation of aryl and heteroaryldiazonium salts. The reaction is conducted under mild reaction conditions and various functional groups were compatible. In addition, reactions of heteroaryldiazonium salts such as pyridyl, quinolinyl, benzothiazoyl, thiophenyl, carbozolyl and pyrazoyldiazonium salts occurred smoothly to afford the medicinally important difluoromet hylthiolatedhetero arenes. Furthermore, developed a more practical one-pot direct diazotization and difluoromethylthiolation protocol and it converted the aniline derivatives into difluoromethyl-thiolatedarenes. Demonstrated the utility of the method by difluoromethylthiolation of a number of natural products and drug molecules. (58 Ref.; 1 Tab.; 1 Fig.; 4 Schemes).

50.15552

A simple, high-yield synthesis of DNA duplexes containing a covalent thermally cleavable interstrand cross-link at a defined location. VARELA (JG), GATES (KS), (Department of Biochemistry, University of Missouri, Columbia, Missouri 65211, USA). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7666-9).

Described the Intrastrand DNA-DNA (deoxyribnucleoro acid) cross-links that are highly toxic to cells because these lesions block the extraction of information from the generic material. The pathways, by which cells repair cross-links are important, but not well understood. The preparation of chemically well-defined cross-linked DNA substrates represents a significant challenge in the study of cross-link repair. Reported a simple method that employs "post-synthetic" modifications of commercially available 2'-deoxyribonucleotides to install a simple cross-link in high yield at a specified location within a DNA duplex.The cross-linking process exploits the formation of a hydrazine between a non-natural N^4-amino-2'-deoxycytidine nucleobase and the aldehyde residue of an abasic site in duplex DNA. The resulting cross-link is stable under physiological conditions, but can be readily dissociated and re-formed through heating-cooling cycles. (51 Ref.; 5 Fig.; 2 Schemes).

50.15553

Computer-aided design of ionic liquids as CO2 adsorbents. FIRAHA (DS), HOLIOCZKI (O), KIRCHNER (B), (Institute fur Physikalische und TheoretischeChemie, Universitat Bonn, Mulliken Center for Theoretical Chemistry, Beringstrasse 4 + 6, Bonn, 53115, Germany). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7805-9).

States the ionic liquids(ILs), that very strongly in their interaction with CO_2(carbondioxide). Suggested the simple theoretical approach to predict the CO_2 adsorption behavior of ILs.Strong interaction of the CO_2 with the IL anions corresponds to chemical adsorption whereas weak interaction indicates physical absorption. A predictive estimate with a clear distinction between physical and chemical absorption can be simply obtained according to geometrics optimized in the presence of a solvation model instead of optimizing it only in gas phase as has been done to date. The resulting Gibbs free energies compare very well with experimental values and the energies compare very well with experimental capacities. Promising anions, for ionic liquids with reversible CO_2 adsorption properties can be defined by a reaction Gibbs free energy of adsorption in the range of -30 to 16 kj mol^{-1}. (18 Ref.; 2 Tab.; 10 Fig.).

50.15554

1,2-Azaborine : The Boron-Nitrogen derivative of *ortho*-benzene. EDEL (K), BROUGH (SA), LAMM (AN), LIU (S), BETTINGER (HF), (Institut fur OrganischeChemie, Universitat Tubingen, Auf der Morgenstelle 18, 72076 Tubingen, Germany). (Angew.Chem.; 54, 27; 2015, Jan., 26; 7819-22).

Describes the boron-nitrogen(BN) analogue of ortho-benzyne, 1,2-azaborine, which is generated by flash by flash vacuum pyrolysis, trapped under cryogenic conditions and studied by direct spectroscopic techniques. The parent BN aryne spontaneously binds

N_2(Nitrogen) and CO_2(Carbon dioxide), thus demonstrating its highly reactive nature. The interaction with N_2 is photochemically reversible. The CO_2 of 1,2-azaborine is a cyclic carbamate which undergoes photocleavage, thus resulting in overall CO_2 splitting. (42 Ref.; 3 Fig.; 1 Scheme).

50.15555

Revisiting the solution structure of ceric ammonium nitrate.DEMARS (TJ),BERA (MK), SEIFERT (S), ANTONIO (MR), ELLIS (RJ), (Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, Illinois 60439, USA). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7534-8).

Revisits a single electron-transfer reagent called Ceric ammonium nitrate(CAN) with unparalled utility in organic synthesis and has emerged as a vital feedstock in diverse chemical industries. Most applications can use CAN in solution where it is assigned a monomeric $[Ce^{IV}(NO_3)_6]^{2-}$ structure; an assumption traced to half-century old studies. Challenged this tradition by using synchroton X-rays and Raman spectroscopy, thus conveying instead on an oxo-bridged dinuclear complex, even in strong nitric acid. Thus, one equivalent of CAN is a recast as a two-electron-transfer reagent and a redox-activated superbase, raising questions regarding the origins of its reactivity with organic molecules and giving new fundamental insight into the stability of polynuclear complexes of tetravalent ions. (38 Ref.; 6 Fig.).

50.15556

Synthesis and applications of Hajos-Parrish ketone isomers.EAGAN (JM), HORI (M), KANYIVA (KS), SYNDER (SA), (Department of Chemistry, Columbia, Columbia University, 3000 Broadway, New York 10027, USA). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7842-6).

Describes the first highly enantioselective Brønsted acid catalyzed intramolecular hydroamination of alkenes that enables the efficient construction of a series of chiral(spirocyclic) pyrrolidines with an á-tetrasubstituted carbon stereocenter with excellent functional group tolerance. A unique feature of this strategy is the use of a thiourea group acting as both the activating and the directing group through cooperative multiple hydrogen bonding with a Bronsted acid and the double bond. Highlighted the utility of this method by the facile construction of chiral synthetic intermediates and important structural motifs that are widely found in organic synthesis. (74 Ref.; 3 Tab.; 3 Schemes).

50.15557

Copper-catalyzed intramolecular asymmetric propargylic dearomatization of indoles.SHAO (W), LI (H), LIU (C), YOU (S), (Key Laboratory of Oil and Gas Fine Chemicals, Ministry of Education & Xinjiang Uygur Autonomous Region, Physics and Chemistry Detecting Center, Xinjiang University, Urumqi 830046, China). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7684-7).

Describes the development of the first copper-catalyzed intermolecular dearomatization of indoles by an asymmetric propargylic substitution reaction. This method provides a highly efficient synthesis of versatile furoindoline and pyrroloindoline derivatives containing a quaternary carbon stereogenic center and a terminal alkyne moiety with up to 86% yield and 98%*ee* (enantioexcess). (57 Ref.; 3 Tab.; 1 Fig.; 3 Schemes).

50.15558

A versatile room-temperature route to di-andtrisubstitutedallenes using flow-generateddiazo compounds. POH (J), TRAN (DN), BATTLIOCCHIO (C), HAWKINS (JM), LEY (SV), (Innovative Technology Center, Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge, CB2 1EW). (Angew.Chem.; 54, 23; 2015, Jun., 26; 7920-3).

Discusses a copper-catalyzed coupling reaction between flow-generated unstabilized diazo compounds and terminal alkynes that provides di- and trisubstituted allenes. This extremely mild and rapid transformation is highly tolerant of several functional groups. (41 Ref.; 2 Tab.;4 Schemes).

50.15559

Palladium-catalyzed hydroaminocarbonylation of alkynes with amines : A strategy to overcome the basicity barrier imparted by aliphatic amines. ZHANG (G), GAO (B), HUANG (H), (State Key Laboratory for Exo Synthesis and Selective Oxidation, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou, 730000, China). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7657-61).

Describes a novel and efficient palladium-catalyzed hydroaminocarbonylation of alkenes with animals, that has been developed under mild reaction conditions and allows the synthesis of a wide range of N-alkyl linear amides in good yields with high regioselectivity.

Established a cooperative catalytic system operating by the synergistic combination of palladium, para formaldehyde and acid on the basis of this method for promoting the hydroaminocarbonylation of alkenes with both aromatic and aliphatic amines which do not react well under conventional palladium-catalyzed hydroaminocarbonylation. (67 Ref.; 4 Tab.; 1 Scheme).

50.15560

Synthesis of phosphabenzenes by an iron-catalyzed[2+2+2] cycloaddition reaction of diynes with phosphaalkynes. NAKAJIMA (K), TAKATA (S), SAKATA (K), NISHIBAYASHI (Y), (Faculty of Pharmaceutical Sciences, Hoshi University, Ebara, Shinagawa-ku, Tokyo 142-8501, Japan). (Angew.Chem.; 54, 26; 2015, Jun., 22; 7597-601).

Describes a method for the synthesis of phosphabenzenes under iron catalysis.Thus, the FeI_2-catalyzed [2+2+2] cycloaddition ofdiynes with phosphaalkynes in m-xylene gave a variety of phosphabenzenes in good to high yields(up to 87% yield). (68 Ref.; 2 Tab.; 1 Fig.; 7 Schemes).

50.15561

Reductive catenation of phosphine antimony complexes. CHITNIS (SS), BURFORD (N), WEIGAND (JJ), McDONALD (R), (Department of Chemistry, University of Victoria, P.O. Box3065, Stn. CSC, Victoria, Canada). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7828-32).

Describes the reactions of triarylphosphines with fluoroantimony(III) triflates that give phosphine antimony(**III**) complexes, which undergo spontaneous reductive eliminatin of fluorophosphonium cations. The resulting phosphine antimony(I) complexes catenate to give the first examples of cationic antimony bicyclic compounds, $[CR_3P)_4Sb_6]^{4+}$, featuring a bicycle[3.1.0] hexastibine framework stabilized by four phosphine ligands. The unprecedented 14-electron redox process illustrates the generality of the reductive catention method. (38 Ref.; 6 Fig.; 1 Scheme).

50.15562

Dual hypervalentiodine(III)reagents and photoredox catalysis enable decarboxylative Ynonylationundermild conditions. HUANG (H), ZHANG (G), CHEN (Y), (State Key Laboratory of Bioinorganic and Network Products Chemistry, Collaborative Innovation Center of Chemistry for Life Sciences, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, China). (Angew.Chem.; 54, 26; 2015, Jun., 26; 7872-6).

Describes a combination of hypervalentiodine**(III)** reagents(HIR) and photoredox catalysis with visible light that has enabled chemo selective dicarboxylativeynonylation to construct ynones, ynamides and ynoates. This ynonylation occurs affectively under mild reaction conditions at room temperature and on substrates with various sensitive and reactive functional groups. The reaction represents the first HIR/photoredox dual catalysis to form acyl radical addition to HIR-bound alkynes. Its efficient construction of an mG/u5 receptor inhibitor under neutral aqueous conditions suggests future visible-light-induced biological applications. (53 Ref.; 1 Tab.; 4Schemes).

FINISHING MATERIALS

50.15563

Correlation of visual and instrumental color measurements to establish color tolerance tolerance using regression analysis. JAWAHAR (M), KANTH (SV), VENBA (R), (Tannery Division, Council of Scientific and Industrial Research-Central Leather Research Institute (CSIR-CLRI), Adyar, Chennai-600 020, India). (J. Am. Leather Chem. Assoc.; 110, 12; 2015, Dec.; 409-19).

Color is one of the important parameter considered in the determination of quality for fashion materials like leather. The color variation in each piece of leather sample in a batch should be within the acceptable range. Visual assessment is currently used in leather industry for quality control and color sorting. The current method used is subjective and often leads to disagreement between buyer and seller. Color measurement using reflective spectrophotometer evaluates color consistently and is an objective assessment system. However, there is always an apprehension that the instrumental color assortment may not agree with the human perception of color difference. Attempted to screen four color difference formulae, viz. : CIELAB76, CMC(2:1), CIE94 and CIE2000 for their suitability in obtaining pass/fail decisions, which would be in conformity with that of the average human observer. Regression analysis was performed to find a correlation between visual and instrumental color assessments and the results indicate that CMC(2:1) formula may the most suited for thepurpose. A detailed

analysis of visual and instrumental color values revealed visual non-conformity towards sensitivity to hue, chroma and lightness. This difference in sensitivity was also taken into consideration in instrumental color sorting and pass/ fail tolerance was established that led to closer conformity between visual and instrumental methods. (29 Ref.; 4 Tab.; 10 Fig.).

50.15564

Current research achievements in polymer science unit.NANDI (AK), (Indian Association for the Cultivation of Science, Nos. : 2A & 2B, Raja Subodh Chandra Mullick Road, Jadavpur, Kolkata-700 032, India). (Chem. Wkly.; 61, 29; 2016, Feb., 29; 215–6).

Focuses the variouis fields of polymer science such as (a) polymer synthesis, (b) polymer nanocomposites, supramolecular polymer and self assembly and polymers for biological applications.

50.15565

Centrifugal washing and recovery as an improved method for obtaining lignin precipitated from South African kraft mill black liquor. NAMANE (M), SITHOLE (BB), RAMJUGERNATH (D), (Discipline of Chemical Engineering, Howard College Campus, University of KwaZulu-Natal, 359 Mazisi Kunene Avenue, Durban, South Africa). (J. Sci. Ind. Res.; 74, 10; 2015, Oct.; 571-6).

Describes the centrifugal recovery as an improved method for collection of lignin isolated from black liquor obtained from a South African kraft mill. Precipitation of lignin was achieved by utilizing 6 M sulphuric acid. Evaluated the recovery by comparing filtration straight after precipitation with centrifugal recovery and washing.Obtained the higher lignin fields with straightforward recovery. However, filtration of the sample took a very long time, due to the colloidal nature of the lignin precipitate. Lignin recovery and washing utilizing centrifugation reduced the recovery time at the final filtration step quite significantly. The lignin obtained was characterized by FTIR(fourier transform infrared), ^{1}H and ^{13}C-NMR (nuclear magnetic resonance) spectroscopies to elucidate the heterogeneity of the sample, as well as to provide information on the syringyl and guaiacyl content of the lignin. Exclusion Chromatography (EC) revealed that the dispersity of the polymer was uniform and pyrolysis-GC/MS (Gas-Chromatography / Mass Spectroscopy) analysis provided insights and identification of typical degradation compounds that could be obtained from the lignin sample. (22 Ref.; 2 Tab.).

50.15566

Copper-catalyzed oxy-alkenylation of homoallylic alcohols to generate functional syn-1,3-diol derivatives. HOLT (D), GAULT (MJ), (Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, England). (Angew.Chem.; 54, 27; 2015, Jun., 26; 7857-61).

Reports a novel method for the synthesis of a wide range of functionalized 1,3-diol derivatives. Substituted homoallylic alcohol derivatives and alkenyl(aryl) iodonium salts combine to form syn-1,3-carbonates in excellent yield and with high selectivity by employing a copper-catalyzed oxy-alkenylation strategy. Furthermore, the products formed are amenable to an iterative reaction sequence, thus affording highly complex polyketide-like fragments. (74 Ref.; 3 Tab.; 4 Schemes).

50.15567

Diels-Alder reactions of 1, 2-azaborines. BURFORD (RJ), LI (B), VASILIU (M), DIXON (DA), LIU (S), (Department of Chemistry, Boston College, Chestnut Hill, Massachusetts 02467, USA). (Angew.Chem. ; 54, 27; 2015, Jun., 26; 7823-7).

Reports the Diels-Alder employing 1,2-azaborine heterocycles as 1,3-dienes. Carbocyclic compounds with high stereochemical and functional complexity are produced, as exemplified by the straightforward two-step synthesis of an amino allyl boronicester bearing four contiguous stereocenters as a sigle diastereomer. Observed a reversible Diels-Alder reaction with the less electron-deficient methyl acrylate whereas electron-deficient dienophiles undergo irreversible Diels-Alder reactions. Both the N(nitrogen) and b(boron) substituent of the 1,2-azaborine exert significant influence on the [4+2] cycloaddition reactivity as well as the aromatic character of the heterocycle. The experimentally determined thermodynamic parameters of the reversible Diels-Alder reaction between 1,2-azaborines and methyl acrylate correlate with aromaticity trends and place 1,2-azaborines approximately between furan and thiophene on the aromaticity scale. (41 Ref.; 2 Tab.; 6 Fig.).

LEATHER PROCESSING MACHINES

50.15568

Waterless washing : An emerging technology. VERMA (SS), (SantLongowal Institute of Engineering and Technology, Longowal-148 106, Sangrur District, Punjab State, India). (Chem. Wkly.; 61, 17; 2015, Dec., 1; 214-5).

Describes the development of a waterless washing machine and the needs for saving water. Highlights the benefits of waterless washing. (2 Photos).

LEATHER PROPERTIES. QUALITY CONTROL

50.15569

Comparison of physico-mechanical properties of leather tanned using different methods. KOWALSKA (M), PRZYBYLEK (M), ZBIKOWSKA (A), (Faculty of Materials Science, Technology and Design, Kazimierz Pulaski University of Technology and Humanities in Random, Poland). (J. Soc. Leather Technol. Chem.; 99, 6; 2015, Nov.-Dec.; 302-6).

Aims for the analysis of the physico-mechanical and physico-chemical properties of chrome leather, chrome-free and no-pickle chrome tanned leather. Leather was tested for tensile and tear strength. In addition, dome plasticity of grain, softness, absorption and permeability of water and water vapor were determined. The properties of no-pickle leathers tanned with chrome and mineral-free tanned were found to exhibit no significant differences from these tanned using traditional methods, even showing a greater tensile strength. Observed the softness as the sole parameter with a poorer performance was preliminarily concluded therefore, that introduction of more environment-friendly technologies requires a more thorough leather processing at the wet finishing stage in order to arrive at a desired leather quality comparable to that of the chrome tanned leather. (18 Ref.; 3 Tab.; 4 Fig.).

BY-PRODUCTS

50.15570

Preparation and characterization of nano-reinforced leather waste fiber-epoxy nano composite. SIVAKUMAR (V), SWATHI (TR), MOHAN (R), MANDAL (AB), (Council of Scientific and Industrial Research-Central Leather Research Institute(CSIR-CLRI), Adyar, Chennai-600 020, India). (J. Am. Leather Chem. Assoc.; 110, 12; 2015, Dec.; 401-8).

Significant quantities of leather waste fibers are generated from the leather industry. Confinement and utilization of leather waste fibers by converting them in to useful materials such as nano-composites is desirable. Earlier studies on making composites from leather waste fibers from strength properties for different applications. Studied about the preparation and characterization of nano composite from leather fiber-epoxy polymer reinforced with nanoTiO_2(titanium oxide) and reported for the first time. Physical testing of these nano composites shows better strength and other properties for improved performance as versatile material. TGA (Thermogravimetric analysis) and DSC (Dynamic Scattering Calorimetry) studies revealed better thermal stability (up to 330° Centigrade) for these nano composites. FTIR (fourier transform infrared) analysis shows possible chemical interaction between epoxy polymer and leather fiber. Also noticed better solvent resistant property for the prepared nanocomposites.SEM(Scanning Electron Microscopy) analysis indicates uniform nano-composite structure and distribution of nano TiO_2 in the matrix. The present approach not only offers a solution to the disposal problem regarding leather solid wastes like buffing dusts, but also offers a versatile nano composite material.

50.15571

Inhibitory effect of protein filling agent from bovine hair on the oxidation of Cr(III). YU (Y), ZENG (W), WANG (Y), SHI (B), (Key Laboratory of Leather Chemistry and Engineering of Ministry of Education, Sichuan University, Chengdu 610065, China). (J. Am. Leather Chem. Assoc.; 110, 12; 2015, Dec.; 385-91).

Investigated the inhibitory effect of protein filling agent prepared from bovine hair(HPFA) on the oxidation of Cr(III) in consideration of the fact that the hydrolysis of hair contains antioxidant and free radical scaweing groups. The results demonstrated that HPFA possessed remarkable reducing ability to transfer Cr(VI) to Cr(III) in solution when *p*H was lower than 6.0. The reduction reaction was enhanced with rise of temperature, extension of reaction time and increase of HPFA dosage. Meanwhile, the HPFA also presented a high activity to inhibit the oxidation of Cr(III) in chrome liquor in the presence of unsaturated fish oil fatliquor. More interestingly, the HPFA achieved

satisfactory inhibitory effect on Cr(III) oxidation in leather in the temperature range from 20°Centigrade to 100°Centigrade. Its inhibitory activity was much higher than that of commercial protein filling agent made from collagen hydrolysate. All the results suggested that bovine hair could be used as a potential resources for preparing protein filling agent with both filling and Cr(III) oxidation inhibiting properties. (24 Ref.; 1 Tab.; 9 Fig.).

50.15572

Natural fiber reinforced polyester based biocomposite : agro waste utilization. HAZARIKA (SB), CHOUDHURY (SU), PANJA (SS), DOLUI (SK), RAY (BC), (Cotton College State University, Cotton College Road, Pan Bazaar, Guwahati-781 001, Assam State, India). (J. Sci. Ind. Res.; 74, 10; 2015, Oct.; 589-94).

Presents the locally available betel nut fiber waste that had been used as reinforcement for composite preparation by hand layup and compression molding techniques. Evaluated the mechanical properties such as tensile strength, flexurral strength and impact strength of the composites with volume fraction (10, 20, 30 and 40%). Investigated the thermal properties and water absorption capacity. Statistically analyzed the results and found improvement in mechanical strength of these composites compared to viriginpolymer.

50.15573

Measurement of hexavalent chromium in chrome-tanned leather : Comparative study of acidic condition extraction with alkaline extraction. OGATA (K), KUMAZAWA (Y), KOYAMA (Y), YOSHIMURA (K), TAKAHASHI (K), (Japan Institute of Leather Research, 520-11 Kuwabara, Toride, Ibaraki, 302-0017, Japan). (J. Soc. Leather Technol. Chem.; 99, 6; 2015, Nov.-Dec.; 293-6).

Hexavalent chromium (Cr^{6+}) causes dermatitis and cancer and is often quantified from chrome-tanned leather. Analysis for Cr^{6+} is generally carried out after extraction into 0.1 M potassium phosphate buffer(P-buffer *p*H 8.0) according to the method of ISO 17075. However, since the *p*H value of chrome-tanned leather and swear due to wear are on the acidic side, the above method for Cr^{6+} should be validated acidic extracts. Analyzed the acidic extracts from chrome-tanned leather for Cr^{6+} comparing the results with those using alkaline extracts. (10 Ref.; 1 Tab.; 5 Fig.).

50.15574

Biopolymers produced from gelatin and chitosan using polyphenols. TAYLOR (MM), BUMANLAG (LP), BROWN (EM), (No. : 600 East Mermaid Lane, Eastern Regional Research Center, Wyndmoor, Pennsylvania 190388598, USA). (J. Am. Leather Chem. Assoc.; 110, 12; 2015, Dec.; 392-400).

Chitosan and its derivative chitosan, is an abundant waste product derived from crustaceans(e. g. crab). It has unique properties, which enable use in, but not limited to, cosmetic, medical and food applications. Chitosan has recently been studied, in conjunction with other waste carbohydrates and proteins, for the purpose of making biopolymer products with unique functional properties. Furthermore use of renewable polyphenols to assist in these reactions is a topic of growing interest. Investigated the use of polyphenols, specially gallic acid and the vegetable tanninsquebracho and tara to modify gallic in a prior research. The physical properties of gelatin were improved and were able to demonstrate that these products could be used effectively as fillers. At present, gelatin is scarce and becoming increasingly more expensive so the biopolymers from modification of gelatin and whey using the vegetable tannin tara and made products to augment the gelatin; it is further demonstrated that the resulting product could be used as a filler for leather. Investigated the preparation of a biopolymer using gelatin and chitosan, modified with the vegetable tannin tara, to make products that could be used either in leather making process, e.g. as fillers or coatings or could have other potential uses such as in film-making or as flocculants. Optimal conditions necessary for polyphenols to react with gelatin and chitosan were determined and physical properties showed that unique products were produced. Examined the gels for thermal stability ad for fluorescence. It is thus demonstrated that gelatin/chitosan/tara products are feasible and that gelatin products could be supplemented using an inexpensive abundant waste product, chitosan.

TANNERY. ENVIRONMENTAL PRODUCTS

50.15575

Plastics : Material with unlimited opportunities or contaminant in the environment ? (Chem. Wkly.; 61, 21; 2015, Dec., 29; 211-2).

Indicates the first hand information that has been received on the sources and impacts of microplastics in

the environment and discusses the possible-including biodegradable plastics for specific applications. (2 Photos).

50.15576

Need for appropriate policy with regard to accidents in factories. VENKATARAMAN (NS), (M/s. Nandini Consultancy Center, No. : M 60/1, 4th Cross Street, Besant Nagar, Chennai-600 090, India). (Chem. Wkly.; 61, 17; 2015, Dec., 1; 210).

It is very strongly stressed that the Government of India shouldcarefully examine accidents in industries and evolve a policy approach as to how government agencies handle such situations. It should not be left to the local police or the Pollution Control Boards to take a view as it deems fit. It is possible that different persons at different times in these bodies may take a different view. Appropriate government policy is necessary to view the issue in proper perspective, so that the kneejerk reaction of the government agencies would not result in industrial promoters developing cold feet in promoting and removing industrial projects.

50.15577

Elimination of chromium oxidation for effective chromic oxide detections. HOOKS (M), HAYES (M), MAENDLE (R), (Eagle Ottawa by Lear, Research and Product Development(LRPD), Rochester Hills, Michigan, USA). (J. Am. Leather Chem. Assoc.; 110, 12; 2015, Dec.; 420-4).

Describes the Inductively Coupled Plasma Optical Emission Spectrophotometer(ICP-OES) that was used to accurately determine the Chromic Oxide content in 90 total Wet Blue, Crust and Finished Leather samples. Accuracy was verified on each sample by testing retained composite material using ASTM D2807 Perchloric Digestion/Sodium Thiosulfate Titration Method. The ICP-OE8 Method correlated to ASTM D2807 with less than 2% deviation from the averaged standard deviation value. The Chromic Oxide mean values for ASTM D2807 and ICP-OES were 3.11±0.70% and 3.17±0.68% respectively. The new method maintains a highly consistent statistical capability with Cpk at 2.15 vs. 2.17. Oxidation of chromium in leather samples is not required for chromic oxide dection. Perchloric acid more than doubles the required consumables cost, test time and hazard required to validate chromic oxide levels in leather materials. The ICP-OES method eliminates the crystal formation explosion hazard and chlorinated waste environmental hazards associated with perchloric acid. Replacing ASTM D2807 with the proposed method by tannery validation laboratories is cheaper, faster, safer and more environmentally sustainable than titration by the authors' classic technique.(2 Ref.; 6 Fig.).

LEATHER PRODUCTS

FOOTWEAR

50.15578

Global foot size distribution. WILSON (M), ARMITAGE (Z), (World Footwear; 30, 1; 2016, Jan/Feb.; 22-3).

Discusses the new foot surveys that generate data which is being analyzed in numerous ways to address important industry questions.Addresses the optimization of the size distribution which is one particular key question for retailers.Demonstrates the desirability for footwear manufacturers to change their last model size to bring it in line with the most common shoe size worn by the end market. The difference between purchased shoe size and shoe size predicted by foot length raises some interesting questions, particularly regarding the balance between length fit and joint width fit and the effect joint girth has on comfort. This survey has provided data that is also being used to identify such relationships. (1 Photo).

50.15579

Kering kicks off its shoes. (World Footwear; 30, 1; 2016, Jan./Feb.; 38-9).

A doubt is raised on the statement that whether the sale of the only of its portfolio of brands to be devoted almost entirely to shoes will surely work as this statement on shoes fail to fit in properly with a wider group focused more on ready-to-wear luxury clothing. (4 Photos).

50.15580

Slip resistance tests. BAJPAI (D), (M/s. Bureau Veritas Consumer Products Services India Private Limited, No. : C-19, Sector-07, Noida-201 301, Uttar Pradesh State, India). (Leather News India; 7, 1; 2016, Jan.; 106-9).

Stresses very firmly that the manufacturers should never rely purely on marketing claims for 'slip resistance'; examination of any test data; needs of looking at ramp

test data for a range of footwear on the HSE website and this link is provided in the resources menu and always conducting a footwear trial before issuing new footwear to staff. (15 Photos).

50.15581

A middle way on automation. (World Footwear; 30, 1; 2016, Jan./Feb.; 30-1).

Describes the Actis RB System which is an automation and robotics technology provided and has adapted its approach to the footwear production market in Asia. It has currently become sure that the right mix of a traditional workforce with same carefully chosen and correctly integrated automation will offer shoe producers in most markets significant efficiencies and an acceptable ration on instrument. (2 Photos).

50.15582

Supporting Goodyear welted. (World Footwear; 30**,**1; 2016, Jan./Feb.; 26-9).

Describes the salient features of the Goodyear welted which remains a very traditional form of producing footwear where the basic construction has remained fundamentally unchanged for more than a hundred years. (4 Photos).

50.15583

Nanofoot project. (World Footwear; 30, 1; 2016, Jan./ Feb.; 24-5).

Discusses the 24-month Nanofoot project with the aim of pursuing the development of advanced and innovative nanotechnology-based solutions for leather and polymer components for footwear products, sustainable and customer-driven production of consumer goods where health, environment, high quality of components, fair marketing communication and retail price are combined to promote a company's competitiveness. Discusses also the European footwear industry, footwear processing and improving its quality and the positive results that have been obtained by this project. (2 Photos).

50.15584

Global manufacturing update.CLEAVER (S), (World Footwear; 30, 1; 2016, Jan./Feb.; 18-20).
Discusses the efforts that have been taken by the Indian manufacturers in challenging China to become the largest importer of the footwear products in 2016.China and India are also scheduled to become larger importers of footwear than at present as the middle classes in these countries are on the increase and are starting todemand brands from the West in ever greater quantities. (3 Photos).

50.15585

Time for testing to have one voice. (World Footwear; 30, 1; 2016, Jan./Feb.; 14-7).

Aims to bring a new initiative called Tired Testing to the leather and footwear sector. It insists that suppliers' necessity to comply with regulations and restricted substance lists (RSLs) is only going to intensify in years to come. It wants companies at all stages of the supply chain to share the compliance burden as there is nowhere to hide. (3 Photos).

50.15586

Vietnam's victory. (World Footwear; 30, 1; 2016, Jan./Feb.; 10-2).

Discusses the signing of the Trans-Pacific Partnership that will surely make the South East Asian country increasingly attractive for sourcing and the Footwear Distributors and Retailers of America estimates that it will lead to $450 million in savings for the US in the first year alone. (3 Photos).

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