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INDIAN LEATHER  
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**JILTA**



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# JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION

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**Opinions expressed by the authors of contributions published in the  
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		Inland	Foreign
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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), Geneva, Switzerland.

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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E-mail : leather1a@bsnl.in / mailto:ilta@rediffmail.com  
**www.iltaonleather.org**

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## Editorial

### LEATHER INDUSTRY TO SUSTAIN THE GLOBAL TRADE FRAMEWORK

The Leather and Leather Products in India dates back nearly 150 years when the British set up factories for production of shoes and saddlery items. During the first World War, the existing capacity was found to be inadequate to meet up the rising demand as such they encouraged the local entrepreneurs to set up manufacturing facilities for these items. Second World War further fillip to growth of such industries and in due course of time some Clusters become a prominent centre of Production of Leather and Leather Products. There are major centres in India like Kanpur, Kolkata and Chennai for producing/exporting different items of leather products.

Leather Industry in India is a developing sector as per the Economic Development Survey and its demand is increasing trend as per the change in demographic ratio in India. There is internal demand as well as external demand. The turnover of leather and leather products of export is about 3000 crores and employing more than 15 lakhs people directly and indirectly by the industries.

The leather industry has undergone dramatic transformation from mere exports of raw materials in sixties to that of value added finished products in nineties. For such transformation policy initiatives taken by the Govt. of India since 1973 have been found instrumental to such transformation. The leather industry is now poised for further growth to achieve greater shape in the global trade in future.

Despite the fact that India has a comparative advantage in leather sector on account of abundance raw materials, supply of labour at reasonable rates and availability of trained manpower, there continues to be acute deficit of good quality finished leather due to inadequate infrastructure of most of the tanneries who are not modernized and do not have facilities for pollution control measures.

Till the fifties, the exports were mainly in the form of raw materials only. Govt. of India restricted the export in raw stage and only the E.I. tanned hides, kips, calf, goat and sheep skins were permitted to be exported. However, sixties witnessed the transformation of leather catering to the demands of leathers in the form of pickle stage or in the wet blue chrome stage.

Thereafter, in the early seventies, based on the recommendations of Dr. Seetharamiah Committee constituted by the Govt. of India a great orientation towards export of finished leather and leather products was made by introducing incentives and duty draw back by discouraging export of semi-tanned leather. Though for every step of development the leather industry had to face internal and external pressure simultaneously.

After viewing the development of Indian Leather Industry in retrospect over the last half-a-century it will be worthwhile to fonder over the manner by which the industry withstood, sustained and developed to the

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present form. Now, the time has come to face new challenges thrown up by the changing global frame work. So, a lot of work remains to be done particularly in the small and cottage scale sectors. Technical and materials supply will have to be provided to these segments of the industry to help them better for the changes that have come in the global trade.

The industry must note that to sustain the growth of leather industry in the new challenge global trade frame work factors that influencing is not only dependent on quality of products, its price, timely delivery and good customer relations, but equally important are –

- 1) Work environment & workers safety, health and welfare
- 2) Environment protection
- 3) Consumer safety and welfare.



Alok Kumar Basu  
Hony. Editor, JILTA

## From the Desk of the General Secretary

### ILTA'S YEAR LONG DIAMOND JUBILEE CELEBRATION: REST OF THE PROGRAMMES

The first programme of the year long Diamond Jubilee Celebration, namely the inaugural ceremony on 14<sup>th</sup> August 2010 followed by a national seminar was a grand success with your help, cooperation and support. We sincerely hope that the same will be forthcoming for the remaining programmes listed below:

1. 8<sup>th</sup> Asia International Conference on  
Leather Science and Technology : 12<sup>th</sup>, 13<sup>th</sup> & 14<sup>th</sup> Nov. 2010

Venue: Hotel The Stadel, Yuba Bharati Krirangan, Gate No.3, Salt Lake, Kolkata 700 098

Theme: "Leather 2020: Challenges and Opportunities"

This is the first such conference in India and has been earmarked as the Regional Congress of IULTCS – the foremost body of this kind in the whole world. ILTA is a Member Society of IULTCS representing India since 1956.

The 3 days' programme has been jointly framed and technically enriched by CLRI and has been greatly supported by CLE.

162 number of papers have been received for presentation from various countries abroad and India. 42 have been selected for presentation.

Response from foreign delegates to participate in the conference is overwhelming. Around 70 delegates from countries like China, Taiwan, Mexico, Switzerland, Brazil, Indonesia, Japan, UK and USA are expected to participate out of which 51 have already registered.

Registration by our Members is yet to pick up momentum.

The 3 days' programme will consist of 6 technical sessions. There will be cultural programme on one of the evenings.

IULTCS's Executive Committee Meeting and meeting of the IUE Commission will also take place during these 3 days.

2. Sanjoy Sen Memorial Lecture and  
National Seminar : 14<sup>th</sup> January 2011

Subject: "Water and Energy Conservation and Carbon Reduction"

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## ILTA News

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3. Y. Nayudamma Memorial Lecture  
and National Seminar : 10<sup>th</sup> April 2011

Subject: "Banned Chemicals – Origin and Management"

4. Prof. Moni Banerjee Memorial Lecture,  
National Seminar and Valedictory Programme : 13<sup>th</sup> August 2011

Subject: "Standardization, Designing and Marketability of Leather Goods & Footwear"

During the Diamond Jubilee Year we will publish a book on Treaties on Fatliquors authored by eminent scientist Dr. Samir Dasgupta. We also have plan to conduct several HRD programmes.

**Registration is compulsory** for attending the above four programmes which are all whole day programmes and cover serving of tea/snacks and lunch.

The Association requests all the members, students and all other attached to the leather industry to make themselves registered at the earliest.

Registration fees are as follows:

Non-ILTA Members	:	Rs.3000.00
ILTA Members	:	Rs.1500.00
Students with valid Id	:	Rs. 750.00

Registration forms are available at ILTA office. They can also be down loaded from our website [www.iltaonleather.org](http://www.iltaonleather.org) **Copy of a registration form is attached herewith. Please tear off along the perforated line, fill in and send the completed registration form to ILTA office.**

### ENTREPRENEURSHIP & SKILL DEVELOPMENT PROGRAMME:

MSME Development Institute, 111 & 112 B. T. Road, Kolkata 700 108 in collaboration with Indian Leather Technologists' Association has been organizing an Entrepreneurship and Skill Development Programme on leather products from 9<sup>th</sup> September 2010 at ILTA's premises. The programme will continue up to 21<sup>st</sup> October 2010.

Susanta Mallick  
General Secretary

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



# INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION

## DIAMOND JUBILEE CELEBRATION



### Programs:-

- 14th Aug' 2010 : Inauguration & National Seminar  
 12th-14th Nov' 2010 : 8th Asia International Conference on Leather Science & Technology (AICLST)  
 (3 days International Conference)  
 14th Jan' 2010 : National Seminar  
 10th Apr' 2010 : National Seminar  
 13th Aug' 2010 : National Seminar and Valedictory Program

- \* All programs are inclusive of Lunch and Tea
- \* There will be several HRD programs in between
- \* There will be publications of two books on proceedings of International Conference and National Seminars

## LEATHER 2020 : CHALLENGES AND OPPORTUNITIES

### Registration Form

*(Valid for All programmes of Diamond Jubilee Celebration including 8<sup>th</sup> AICLST)*

**\* All the columns must be filled up in Block Letters :**

1. Dr.  Mr.  Mrs.  Miss

2. Last Name .....

3. Middle Name.....

4. First Name.....

5. Sex : Male  Female

6. Residential Address.....

.....

7. Company/Organization/Institution & Position Held.....

.....

8. Office Address.....

.....

9. Contact Nos. :

Mobile .....

Residence .....

Office .....

Fax .....

10. Email IDs.....

11. No. of Accompanying person(s).....

12. Name of Accompanying person(s).....

13. Category of Participant : Non ILTA delegate  ILTA member  Students

14. Payment Mode of Registration fees : Cheque / Demand Draft  Bank Transfer  Cash

### Appendixes

- A. Registration Fees**
- |                                 |                           |   |             |
|---------------------------------|---------------------------|---|-------------|
| (Up to 7 <sup>th</sup> Aug' 10) | a. Non ILTA delegates     | : | Rs. 3000 /- |
|                                 | b. ILTA members           | : | Rs. 1500 /- |
|                                 | c. Students with valid ID | : | Rs. 750 /-  |

\*\*\* After 07.08.2010, Rs.500 /- will be charged extra.

**B. Process of Payment :**

➤ Cheque or DD must be drawn in favour of 'Indian Leather Technologists' Association (A/c-DJC) and payable at 'Kolkata' only.

➤ Cash Payment must be made to the Office of 'Indian Leather Technologists' Association only.

**C. Details of Bank for Money Transfer :**

Name of the Account Holder	: Indian Leather Technologists' Association (A/c-DJC)
Beneficiary's Address	: Indian Leather Technologist's Association Sanjoy Bhavan, 44, Shanti Pally (3 <sup>rd</sup> Floor) Kolkata – 700107, West Bengal, India
Name of the Bank	: Bank of Baroda
Branch Name	: SSI Kasba Branch
Address of the Bank	: Bank of Baroda 837, Rajdanga Main Road, Kolkata – 700107 West Bengal, India
Account No.	: 25600200000168
MICR Code	: 700012051
RTGS Code	: BARBOSSIKAS
Swift Code	: BARBINBBCMS

Date : \_\_\_\_\_

Place : \_\_\_\_\_

\_\_\_\_\_  
Signature

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## MEMBERS NEWS

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### Congratulations Shantanab!



**Shri Shantanab Debchoudhury** cleared the Higher Secondary Examination 2010 of West Bengal Council with brilliant performance securing 88% marks in the aggregate. He also cleared West Bengal JEE 2010 and other common entrance tests very successfully and got selected for graduate studies at two of our premier institutes like ISI and ISSER (Indian Institute of Science Education and Research). However, Shantanab has bent for things other than statistics. So, he has opted for a career in engineering and joined Jadavpur University to pursue a course in Electronics and Telecommunication. Shantanab did equally well in Madhyamik Examination also which he passed in 2008 securing 95% marks.

Apart from his brilliant performance in board examinations and common admission tests, Shantanab has many achievements to his credit. He represented his school in PUMaC (Princeton University Mathematics Aptitude Contest) 2009 conducted by Princeton University, USA and made his team eighth in the world ranking. He received gold medals and cash awards for holding state rank in several Achievements Cum Diagnostic Tests in Mathematics. He is also a recipient of Kishore Vigyan Protsahan Yojona fellowship awarded by IISC, Bangalore.

Shantanab is not only a devoted student of science. He is a passionate lover of soccer and has a particular interest in artwork. His inventive caption 'Today's gain – Tomorrow's Pain' to highlight the need for leather footwear for healthy foot earned him a distinction in Kolkata Lexpo XXV in 2001.

We offer our heartfelt congratulations and best wishes to Shantanab who happens to be the son of our executive and life member, Shri Shiladitya Debchoudhury and convey our joy and happiness to his parents, Smt. Nandini Debchoudhury and Shri Shiladitya Debchoudhury who must have contributed a lot to his success. We take pride in the brilliant overall performance of Shantanab and wish him still greater success at national as well as international levels. We all are looking forward to the day when Shantanab's thirst for knowledge will come in the aid of our society.

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## ANNOUNCEMENTS

### Export Sales Manager Required

Thomas Ware & Sons Ltd, the traditional British vegetable heavy leather tanner in United Kingdom will be expanding their export markets. To help achieve this aim they are looking for an Export Sales Manager with experience in vegetable leather manufacture and knowledge of markets outside the UK. All replies/enquiries will be treated with complete confidentiality.

For more information please e-mail to: [thomas.ware@btconnect.com](mailto:thomas.ware@btconnect.com)

### Leather Technicians Required for Wet End and Finishing

Clariant's worldwide Leather Business is looking for experienced Travelling Leather Technicians to join their Application department at the earliest possible date at the application center in Germany.

**Responsibilities:** The incumbent's main task will be to service and contact the customers at international level. In addition, he will be working in the modern application lab at company's base in Leinfelden/Germany. Whether fashionably eye-catching or technically sophisticated high-tech leather is involved – he has to provide the customers with convincing solutions. Clariant's carefully co-ordinated product range is a sound basis that guarantees his success. The incumbent will be in close contact with our worldwide affiliates to ensure an up-to-date technical exchange.

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**Profile:** To qualify for this unusual assignment, the person should have experience in wet end or finishing technology and technical sales as well as practical know-how either on the finishing or on the wet end side. The candidate should have a degree as Leather Technician and several years of experience. As Clariant is a multinational company, the candidate should be fluent in English and ability to adapt to different mentalities. Application should be sent with details of availability and salary expectations.

For more information, please contact Dr. Harald Bauer for wet end side and Marcelo Pasquet for finishing [Clariant Produkte (Deutschland) GmbH, Myriam Conzelmann, Benzstrasse 11, D-70771 Leinfelden-Echterdingen, Phone: +49 711 9032-169, E-mail: [Myriam.Conzelmann@clariant.com](mailto:Myriam.Conzelmann@clariant.com)] and visit: [www.clariant.com](http://www.clariant.com)

### **Career at Wollsdorf Leder for Leather Technician**

Located at the crossroads between Western European car producers and Eastern European production companies, Wollsdorf Leder Company has an ideal strategic position in the heart of Europe. Due to excellent infrastructure and settlement in the industrial zone away from residential areas, it is easily reached without impacting on local residents. Wollsdorf Leder has branch offices in Europe, the USA and Australia also to ensure a global presence.

Wollsdorf Leder Schmidt & Co Ges.m.b.H. ( Wollsdorf 80, 8181 Wollsdorf, Austria) requires a leather technician for production. For additional information and application e-mail to: [petra.gauster@wollsdorf.com](mailto:petra.gauster@wollsdorf.com)

### **Situation Vacant at Impactiva**

Impactiva was established in 2003 and has now become the world's leading quality assurance company in the textile industry (leather, footwear and apparel). Major brands such as Görtz, Clarks, Kenneth Cole, Marc O'polo, Nine West, Rockport and Wortmann Group trust Impactiva to ensure that their factories produce "Best-in-World" quality. Impactiva is located at Nan Cheng District, Dong Guan City of Guang Dong Province, China, Postal Code: 523007.

Impactiva requires leather technician for Quality control. The candidate should have a minimum of 5 Years experience in leather industry and willingness to travel throughout China, Vietnam and India. All new Team Members will have to attend a 3-6 month training program to learn Impactiva's leading-edge practices and communicative English. For additional information and application, contact Mr. Vinna Liang at:

E-mail: [vliang@impactiva.com](mailto:vliang@impactiva.com)

Phone: **86-769-23029275**

### **BLC Requires Head of Leather Technology**

BLC(Kings Park Road, Moulton Park, Northampton, NN3 6JD, UK) is a modern, progressive, technical led company and a world leading specialist withIn the leather sector. It is seeking to recruit a dynamic experienced(at least 15 years) leather technologist to head up their leather team. With extensive practical experience working within the leather manufacturing sector. This person will be base in the UK, but will be expected to travel overseas on a regular basis. With a degree in an appropriate branch of science, this person will be articulate with excellent writing skills. Fluency in English is essential, but preference will be given to people with other european language skills. The role will be a mixture of people and project management, sales/business development plus the ability to give on-site practical support to clients all over the world. The salary will reflect the role and include medical cover, pension and relocation support. Application may be sent to Dr. Adam Huges, Commercial Director at: [adam@blcleathertech.com](mailto:adam@blcleathertech.com). For additional information, please visit: [www.blcleathertech.com](http://www.blcleathertech.com).

In addition, BLC Leather Technology Centre Limited is always looking for high calibre, experienced people from industry to join the organisation. People interested in working for the leading independent leather technology centre, may email with CV to [info@blcleathertech.com](mailto:info@blcleathertech.com)

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## **A BRIEF OVERVIEW ON OCCUPATIONAL HEALTH AND PERSONAL HYGIENE IN LEATHER AND OTHER INDUSTRIES**

**Biswajit Debnath\* & Goutam Mukherjee**

GOVT. COLLEGE OF ENGINEERING AND LEATHER TECHNOLOGY  
LB-III, SALT LAKE, KOLKATA - 700 098  
WEST BENGAL

The other modern industries processes present many hazards to the health of the employees. Toxic chemicals and physical factors like heat, noise ventilation, radiation and psychological factors are few to mention. Their effects vary from minor irritation while working to serious lung diseases and even cancer. It is an established fact that there is no any occupation which do not have any hazard. It is also true that there is no effective ways of cure available for many of the occupationally related diseases. But there is rosy part also i.e. there is no occupational disease which cannot be prevented. Preventive management therefore is the key of the success in occupational health programmed in industries. Acute hazards are easily recognized by us as the time jag between the cause and the effect is short. But the chronic long interval between the beginning of exposure to the occurrence of a disease even the symptoms and signs of such disease of occupational origin most of the times are similar to other common diseases of non – occupational origin. The probabilities of occupational exposure, as a cause of the disease therefore is frequently missed not only by the management, the workmen, but also by the attending physician, if they are not familiar with the issues. The chronically ill workforce is certainly less productive and can make mistakes which can be very costly. The common occupational health problems encountered in Indian industries are skin diseases, dust diseases, gas poisoning, noise induced hearing loss, heat strain and few others.

Wealth can be generated even from the wastes by the use of appropriate technology is a well accepted proverb. Animal wastes especially the skin and hides have been processed in the country for ages by the tannery units and variety of leather goods have come to the market. It is the leather goods industry which after globalization and opening up of international trade and commerce have been contributing to earning of foreign exchange for the country. The potential for earning of foreign exchange by the country through export of leather goods is very high since our country has the largest cattle population in the world. However, it is also necessary to have ISO Certification or OSHA standards of safety and health if leather industry desire more business in the world market. Therefore it is necessary that tanning workers are provided with safe and healthy work environment through appropriate Safety, Health & Environment measures. . It is also necessary for them to ensure that the wastes generated by these industries are adequately treated to innocuous before disposal so as to protect the general environment.

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\* Corresponding author; E-mail ID: bi\_db@yahoo.co.in

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## **DISEASE RELATED TO VARIOUS INDUSTRIES:**

### **HEART DISEASES**

The dust diseases rank second to occupational dermatomes and account for 46% of all occupational diseases. DGFASLI's surveys indicate the incidence of 6.5% in the exposed workers. The lung diseases arise due to the inhalation of dust present in the ambient work environment and the nature of its effects will depend upon the type of the dust, the dose and the duration of exposure.

### **ASBESTOSIS**

As far as the use of asbestos is concerned, there are about 90 factories in India and about 7000 persons are reported to be working in hazardous area. The characteristic lungs disease or disability which a worker develops as a result of exposure to asbestos dust is also an established carcinogen for the lung. Complete enclosure of the asbestos processing systems, controlled disposal of its waste personal protection and periodic medical examination of exposed workmen using special diagnostic tests are the essentials of prevention of asbestosis as per asbestos schedule rule that has been framed under section 87 of the factories Act, 1948. Asbestosis is a modifiable as well as a compensable disease.

### **SILICOSIS**

Exposure to siliceous dust is commonly seen in foundries, refractoriness, ceramic Industry and Mines. The resultant disease due to prolonged exposure is silicosis. The symptoms of the disease are dyspnoea, cough, tightness and pain in chest. The clinical feature and even the x – ray pictures of these workers may be confused with T. B. case and it is very easily misdiagnosed is a modifiable as well as compensable as per factories act, and workmen's compensation act respectively.

### **COAL WORKERS PNEUMOCONIOSIS**

A disease which is common in coal miners is chronic inhalation of coal dusts results into development of this diseases which occurs in two phases. In the first phase the required duration of exposure which is about 12 years, there is progressive lung damage resulting into premature deaths. From the point of views of epidemiology the risk of death among coal miners has been nearly double that of general population.

### **BYSSIONSIS**

Byssionosis is a disease of lung caused by the inhalation of cotton dust and is seen in textile workers particularly the cotton card room workers and the maintenances the affected workers has asthmatic symptoms and latter it is confused with chronic bronchitis. It is also modifiable disease.

### **GASSING (GAS POISONING)**

At the shop floor the workers may be exposed to hazards of toxic gases particularly if it is a chemical industry. In case it has not been possible to eliminate or control the hazards by engineering measures, the respiratory protective equipment do much help to protect the workers particularly during maintenance job. In such a situation if respiratory protective equipment is also not used then we are condemned to see the respiratory accident cases as a byproduct.

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The gases like  $\text{SO}_2$ ,  $\text{Cl}_2$ ,  $\text{NH}_3$ , HF, Phosgene and formaldehyde which are basically irritant by nature and the frequent mild leaks of which are very common in our industries which gives warning symptoms amongst workers and therefore, escape serious consequences most of the times. We are, therefore, trust in a state of delusion and if unfortunately there is sudden leaks of these gases in excessive amount, due to some failure, it can result into if not exactly but similar to tragedies like MTC leaks of Bhopal.

Another group of gases known as the chemical asphyxiates are very dangerous and exposure to these may not give any warning signs and may result in to fatal accidents due to asphyxia. Such accidents are occurred by working in confined spaces, closed vessels. Carbon monoxide poisoning is reported in steel plants hydrogen sulphide gas poisoning in sewer line workers. Cyanides have similar types of effects. Indian factories act (sec. 36) provides special statutory provisions regarding special precautions to be undertaken in such a situation.

A third group of gases are known as narcotic (e.g. ether, carbon tetra chloride, Benzene, Toulene, chloroform etc) actuate exposure to these gases / vapors are not very common in industries but chronic exposures are seen, which produces lethargy amongst the workforce and therefore effects their efficiency.

### **NOISE HAZARDS**

The deafness amongst the working population can be attributed to occupational exposure if the existing levels of noise in the work environment exceed the permissible levels. The acuity of deafness will be proportional to the intensity of noise and duration of exposure. Noise induced deafness is very characteristic by the fact that it effects both the ears and in the initial stage the worker develops inability to hear high frequency sounds only (detectable only by audiometric examination) and it is only in the latter life that the speech range deafness the of called society deafness develops. It is also a painless process and the unawareness of this serious damage amongst the effected workers is very striking. It is notifiable as well as compensable disease. The noise also causes a variety of non – auditory effects like annoyance, tiredness, irritability, decreased efficiency and accident proneness.

### **HEART HAZARDS**

The commonest physical hazards in most of industries, particularly steel plants, textile industries, foundries and mines are heat. The situation becomes worse where strenuous manual work exists. Such a situation becomes further acute when such a condition exists in tropical country like ours. The clinical effects of exposure to excessive heat can be in the form of heat cramps, heat exhaustion, heat syncope and heat stroke. The efficiency of the workmen is also turned down.

For gainful work involving sustained and repeated efforts, a reasonable temperature must be maintained in the workplace. The corrective effective temperature of  $69^{\circ}\text{C}$  to  $72^{\circ}\text{C}$  is said to be the comfort zone for Indian workers which if maintained can be of much help.

The W.H.O. panel of experts (1969) recommended that a deep body temperature of  $38^{\circ}\text{C}$  should be considered as the limited of permissible exposure to work in heat. The provisions for maintenance of comfortable temperature at work place also exists as per section 13 of our factory Act (1977). The role of

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heat protective clothing under Indian conditions is very limited and what can be more helpful is the provision of drinking water facility as near as possible to the place of work and workmen encouraged to make use of it frequently and also the introduction of rest pause system.

## **OTHER DISEASES:**

### **NEUROLOGICAL DISEASES**

Certain workers may be regularly attending the neurological or psychiatric clinics and if we find that they are involved either in handling or dealing with mercurial, manganese, tetraethyl lead, carbon disulphide, pesticides chemicals or exposed to vibrations, then the occupational origin of the problem needs to be excluded.

### **HEART DISEASES**

Beginning of certain ailments related to the heart may be occupational. For example, ischemic heart disease has been found in rayon workers exposed to  $OS_2$  Vapor and these workers mostly belonged to the younger age groups. Similarly chronic exposures to CO gas, ionizing radiation and toluene, carbon tetra chloride, may also result with ischaemia and arrhythmias respectively.

### **EYE DISEASE**

Diminished vision or eye diseases may be the result of some hazardous exposure in the workroom. For example cataract development may be the resultant effects of chronic exposure to excessive illumination, radiation, infrared rays and even electric shock.

### **OCCUPATIONAL CANCER**

In industries we may be dealing with chemicals which are known carcinogens. We must follow the necessary precaution in dealing with such chemicals. Stress can be given on fact which already has been proved beyond doubt that the hazards of carcinogens in the industry is not related to the industrial workers only. This is because the physical or chemical carcinogens from the industry are disseminated in the air produce harmful effects on the population around such industrial complex. It has been proved beyond doubt that the hazards of carcinogens in the industry are disseminated in the air produce harmful effects on the population around such industrial complex. The nickel, chromate, asbestos, coal tar and also the radioactive substances are the proved carcinogens for the lung.

75% of all occupational cancers are nothing but the skin cancers and are the results of chronic exposure to coal tar, pitch, mineral oils and even x-rays. Commonest agent causing blood cancer is radiation and benzene.

Preventive measures in the industrial workers are very important and if they are executed properly will certainly reduce the hazards of developing cancer. Avoiding direct contact or exposure with carcinogens can be accomplished by enclosing the system and process, using personal protective equipment and by maintaining a good personal hygiene. There should also be frequent medical checkups and the adequate evolution treatment of the workers ailments. Anaemia amongst workers can be as a result of chronic exposure to inorganic lead, benzene, xylene, naphtha and radiations.

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Jaundice amongst workers can be the result of chronic exposure to carbon tetrachloride, TNT, arsenic etc. Certain psychological stresses prevailing in the work situation may even affect executives and result into variety of disorders like high blood pressure, peptic ulcer, anxiety neurosis, precipitation of heart troubles and migraine headaches.

There had a declaration at Alma Ata by WHO to which all nations by 2000 AD", we are considering the ways and means for reaching the goal of occupational health care of working community. Let us ask few questions to ourselves:-

- Are we aware of the occupational health risks to which our workforce is exposed to?
- Do we have system of periodically assessing the hazardous factors prevailing in the work environment?
- Have we evolved a system of proper pre-placement and periodic medical examination of our employees ?
- Do our factory medical personnel's have undergone sufficient training and orientation towards occupational health?
- Have we made sufficient efforts to reduce the hazards as such?
- And lastly, have we complied with the statutory provisions related to safety and health prescribed under the factories Act ?

If the answers to all these questions are positive, then we have given an honest bringing to the solution of the problems.

The various production processes in Tanning industry pose many hazards to the health of its employees. Toxic chemicals such as Hydrogen Sulphide, Chromium, Bleaching agents, disinfectants, dyes and physical and biological agents like Anthrax are a few to mention. Their effects vary from minor irritation while working to serious and disabling diseases. Tanning industry is also identified as hazardous and it is included in Schedule I of the Factories Act amended in the year 1987. Available data indicate that there are over 2000 Tanneries in the Country excluding cottage scale units. If Small Scale Tanneries are also included, the number of Tanneries may go beyond 2100. This indicates that the number of employees exposed to the risk of health hazards is quite large. As per the available information the occupational health problems encountered in tanneries of our country can be detailed as under.

### **HEALTH HAZARDS DUE TO DUST**

Dusts of vegetable tanning materials, lime, and leather are generated in many operations carried out in tanneries. It is known that the main exposures to these dusts occur around Rotating drums, at shaving and buffing machines. The most common morbidity as a result of dust exposure is reported to be CHRONIC BRONCHITIS. There is no TLV (threshold limit value) laid down for leather dust and the concentration of the dust varying between 4-24 million particle/cubic ft. was found in a study<sup>2</sup> conducted in Tanneries of

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northern parts of our country. There is no evidence to suggest an association between Leather Tanning and Nasal Cancer. Cancer of the lung, larynx, buccal cavity, pharynx and kidney in leather industry is only reported by hypothetical generating surveys. Lime dust is non-toxic. Inhalation of lime dust does not produce pneumoconiosis. The only effect on respiratory tract is irritation. It is important to remember that lime dust will have serious consequences if proper eye protection is not used. This is because it is known to cause corneal ulceration, opacity and symblephron of the eyes.

### **GASING**

Risk of exposure to H<sub>2</sub>S gas is reported especially during cleaning out of tanning pits if strict precautions are not undertaken. The main source of this chemical asphyxiant gas is the decomposition and degradation of Sulphur containing protein of tanned waste. The gas remains dissolved in tan pits and the gas is released in high concentration into the atmosphere if this tan liquor is stirred. The TLV of H<sub>2</sub>S gas is 10 PPM. At lower concentration of about 200 PPM, morbid symptoms like watering of eyes, sneezing, sore throat, headache, giddiness and loss of energy are produced. At 1000 PPM, the gas produces asphyxia and the exposed person drops dead like a hot potato.

### **ANTHRAX**

It is a disease caused by a biological agent *Bacillus anthracis*. Infection to the workmen occur when the infected hides or skins are handled when the *Anthracis* spores find their way through skin abrasions resulting in skin ulcerations commonly known as cutaneous anthrax or Malignant pustule. Inhalation of spores does occur rarely and the worker may develop Hemorrhagic Pneumonia of Lungs known as pulmonary anthrax. It is a fatal disease. Anthrax is a notifiable disease under the Factories Act. It is also a compensable disease prescribed under Workmen's Compensation and ESI Acts. Risk of contracting the disease is more likely during operations such as Handling, Transferring, Curing, Soaking, Trimming, and weighing of infected hides and skins.

### **SKIN PROBLEMS**

Chrome ulceration is specific skin lesions caused as a result of direct contact with Trivalent or Hexavalent chromium compounds and is especially observed among chrome tanners. The affected workmen have painless, multiple ulcer or holes on the skin of the exposed parts of the body, especially hands and feet. In a study conducted in Tanneries of Northern parts of our country, the prevalence of ulcers of fingers and toes among chrome tanners was found to be 10.6%. Like Anthrax, Chrome ulcer of the skin is also a notifiable disease under the Factories Act. It is a compensable disease as well.

### **Dermatitis**

Many types of chemicals are used in different stages of tannery operations which include lime, disinfectants, bleaching agents and dyes. The most viable condition that aggravates the risk of developing dermatitis is the constant wetting of the skin. That is why in the study<sup>3</sup> conducted in Northern India those workmen engaged around soaking operations were found to be maximally affected (10.46%) with dermatitis, even though the overall prevalence among tannery workers was only 3.18%.

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## **CALLOSITIES**

Callosities (thickening of skin at pressure points), especially of shoulder and palm is caused due to repeated pressure and motion effects while the hides and skins are handled and transported manually by the workers. It can also be caused by the use of hand tools. The prevalence rate of callosity of hands and shoulder in a study indicated above was found to be 7%. Improper studies on ergonomics for particular works are the main reason for that.

## **LEUCODERMA**

Leucoderma i. e. white patch on the skin is reported among the tannery workers but the cause of this disorder was due to wearing of rubber gloves and boots containing mono-benzene as antioxidant. The common site of leucoderma is hands and feet.

## **INJURIES**

Fatal injuries by drowning and scalds are reported in Tanneries. This is due to wet, greasy, slippery floor and unfenced pits and vats. The risk is further increased due to poor illumination of work rooms. Finger injuries are common especially when fleshing and dehairing operations are carried out manually using sharp long knives.

## **HAZARDS OF UNTREATED EFFLUENTS**

The liquid wastes from Tanneries have high pH and alkalinity. It also contains toxic chemicals like chromium, arsenic, lime etc. It was noticed that tannery waste could cause choking of corporation sewers also. The waste is toxic to fish and aquatic life. Bathers may get anthrax if the tanning waste is discharged into rivers without appropriate treatment.

## **PREVENTION & CONTROL**

- a. Efficient exhaust ventilation should be provided at the point of dust generation especially at buffing and shaving machines and at rotating drums.
- b. More frequent replenishing of tanning liquor is required during hot weather to prevent its putrefaction and generation of H<sub>2</sub>S gas.
- c. Tests for toxic gases like H<sub>2</sub>S to be made before workers are permitted to enter tan pits and the worker must wear respiratory protective devices and safety belts attached to a rope, the free end of which is held by a person standing outside. These precautions are essential and obligatory on the part of management as prescribed under Section 36 of the Factories Act.
- d. The raw hides and skins should be disinfected using proper disinfectants before processing those for tanning.
- e. Suitable barrier creams and lotions for application on the exposed body parts before start of work to be provided to the workmen. This will help in preventing occupational dermatitis and chrome ulceration.

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- f. Impervious long gloves made up of either washable leather or fabric lined rubber, sleeves, aprons and boots of impervious material to be worn by the workmen to avoid direct contact with chemicals.
  - g. Separate cloakroom facilities for out-door clothing and work clothing with interposed adequate washing facilities are the arrangement of choice for tannery workmen.
  - h. Display of precautionary notices in each department against risk of occupational injuries and diseases in a simple lucid language would be of great help to the workers. The display should include especially the following:
    - Prohibition of eating in the workrooms.
    - Washing hands and scrub under the nails before eating.
    - Bleach and strong alkali soaps not to be used for removing dyes from hands.
    - Workers warned against scratching their skin or even touching their faces without cleaning their hands.
    - Workers trained to seek immediate first-aid for injuries and to report any signs of anthrax at once.
  - i. Adequate first-aid facilities to be provided and the workers trained in first-aid especially with respect to:
    - Artificial respiration
    - Emergency care for eye problems due to lime dust.
    - First-aid for injuries.
    - Training of workers to use the facilities for even slight abrasions is essential if Anthrax is to be avoided.
  - j. Periodic medical examination of workers once in 6 months is to be carried out by a qualified medical officer trained in occupational health. The medical records of workers are to be maintained and updated as specified in the relevant model rules under the Factories Act.
  - k. Isolation of cases of chrome ulceration and occupational dermatitis is necessary to prevent aggravation of the diseases.
  - l. Adequate lighting in the workrooms to be provided to reduce chances of accidental injuries.
  - m. Lastly, the tannery wastes must be adequately treated and the effluent should be rendered innocuous before being discharged into the drain. This is also one of the statutory requirements prescribed under the Factories Act.

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### **PREVIEW OF STAHL'S COLOURS FOR SPRING AND SUMMER 2012**

Previews of Stahl forecasts of colours for the Spring and Summer seasons of 2012 have recently been issued in poster and booklet forms.

The emphasis in both is on the predicted basis for colours for leather throughout the world to match with anticipated fashions.

Warm sunshine, the sound of the sea beyond golden sand and the shade of a luxurious palm tree could be the ideal spot for a young lady to dream of the warm sunny colours that will take over from the previous winter, mixing with neutrals to bring a sense of being alive and real optimism. No doubt it is the inspiration for the season's poster.

Just as Stahl's colours are lively, so too the names of the four groups, Fast food, Fast game, Fast life and Fast web, give a sense of vibrancy and speed for the year of the next Olympic Games.

Colours for the Fast-food group are inspired by nature. They are bright and warm. Red, orange, green and yellow contrast with brown and cream, all in shades derived from spices, vegetable, wood and other sources in nature. Dress styles are those of "old country" as seen in the city, a feeling of retro British. Cuts and materials are new. Both matt and gloss give a casual elegance to the sporty look. Mother-of-pearl may provide additional enhancement.

Fast game moves into a world of almost primitive primary colours, the vivacious colours of childhood. Blue is added to the spectrum. The trend is young and modern. A simple and showy way of dressing leads into a world of playtime for adults and "small boys".

The monochromatic colours are reminiscent of the 80s and, like then, they contrast with a pinkish beige background and with black.

Toning down the colours leads into Fast life, a range of gentler, softer tones that are more neutral and more passive. They are ideal for the tangled mix of contrast between handmade and manufactured while giving a slightly past retro that looks into the future. Sobriety and luxury join in a fluidity of images.

Finally, as might be expected, Fast web is the world of tomorrow with techno effects and minimalist styling. Colours are cold and lack emotion. White is used for contrast to break monotony. Both style and colours look towards the simple and towards futuristic art.

The Colour Preview booklet is lavishly illustrated, providing the reader with a wide-ranging insight into the look of the colours for Spring and Summer 2012. Here is clothing, footwear, furniture, décor and much more. There is something everywhere to catch the eye and hold the interest.

## NEWS CORNER

### EXPORT OF LEATHER & LEATHER PRODUCTS - ALL INDIA BASIS - APRIL-JUNE 2010 VIS-À-VIS APRIL-JUNE 2009

As per data compiled by the Council on the basis of monthly returns of members and customs data, the export of leather and leather products during April-June 2010 reached a value of Rs.34,553.08 million as against the value of Rs.32779.47 million during April-June 2009, thereby showing a positive growth of -16.06%, -6.15% and -2.57% respectively.

In dollar terms, the export during April-June 2010 registered a value of US \$ 757.31 million as against the value of US \$ 671.86 million registered during April-June 2009, showing a growth of 12.72%. In dollar terms, footwear components and saddlery & harness items showed a negative growth of -10.24% and -33.88% respectively, as detailed below.

(Value in Million Rs)

PRODUCT	APRIL-JUNE 2009	APRIL-JUNE 2010	% VARIATION 09 VS 10
Finished Leather	6789.40	7958.91	17.23%
Leather Footwear	11776.53	12705.21	7.89%
Footwear Components	2757.13	2314.28	-16.06%
Leather Garments	3960.62	3717.13	-6.15%
Leather Goods & Gloves	6854.23	7386.37	7.76%
Saddlery & Harness	432.28	267.28	-38.17%
Non-Leather Footwear	209.28	203.90	-2.57%
<b>Total</b>	<b>32779.47</b>	<b>34553.08</b>	<b>5.41%</b>

(Value in Million US\$)

PRODUCT	APRIL-JUNE 2009	APRIL-JUNE 2010	% VARIATION 09 VS 10
Finished Leather	139.16	174.44	25.35%
Leather Footwear	241.38	278.46	15.36%
Footwear Components	56.51	50.72	-10.24%
Leather Garments	81.18	81.47	0.36%
Leather Goods & Gloves	140.49	161.89	15.23%
Saddlery & Harness	8.86	5.86	-33.88%
Non-Leather Footwear	4.29	4.47	4.18%
<b>Total</b>	<b>671.86</b>	<b>757.31</b>	<b>12.72%</b>

Source: Monthly data of Customs/Members data  
- India News Leather  
- August 2010

### **GLOBAL LEATHER INDUSTRY NEWS**

#### **PAKISTAN LEATHER PRODUCTION RISES**

Pakistan's finished leather production grew 25% in March 2010. Footwear production grew 21.5% and sole leather production was flat with figures for March 2009.

In March, Pakistan produced 1.7 million sq.mtrs. of finished leather compared with 1.5 million sq.mtrs. during the same month last year. It produced 1.5 tonnes of sole leather during both months.

Footwear production totalled 3.1 million pairs compared with 2.6 million pairs. For the first nine months of the financial, leather production was 17.2 mn. sq.mtrs. compared with 14.7 mn. sq.mtrs during the same period last year, a rise of 17.3%.

Sole leather production rose 59% to 159 tonnes from 100 tonnes, while footwear production rose 7.4% during the nine month period to 23.4 million pairs from 21.8 million pairs.

- Indian Leather

#### **BANGLADESH LEATHER EXPORTS GROWS**

According to Bangladesh's Export Promotion Bureau (EPB), the country's total leather exports grew 10.9% to \$354.8 million between July 2009 and April 2010 from \$320 million during the same period last year. The breakdown showed that Bangladesh exported finished leather worth \$174.9 million compared with \$151.2 million during the prior-year period, a rise of 15.7%.

Footwear exports grew 4.2% to \$161.6 million from \$155 million and leather bags and purse exports rose 33.8% to \$18.3 million from \$13.7 million.

Bangladesh has fixed an export target of \$22 million for leather bag and purse exports for the year ended June 30, 20120. The target for footwear exports is \$224.3 million.

- Indian Leather

#### **88% OF IMPORTED FOOTWEAR IN CHILE SOURCES FROM CHINA**

Footwear imported from China plays a key role on boosting Chilean footwear trade, 47.2% increasing in April's imported varieties of shoes, sales amount to 68 million pairs annually. Chile heavily depends on imported footwear because only 10 million pairs of them made in local industry. China is the main footwear sourcing country from Chile, footwear imports grew 7.6% during the first four months to 21.1 pairs, among them 88% came from China.

- Indian Leather

### **HANDS THAT HELD GUNS MAKE SHOES**

Hands that once wielded guns to rule three districts of West Bengal are now engaged in making jute slippers which will hit the markets before Puja.

About 30 Maoist under trials lodged in Midnapore jail are producing an average of 250 pairs of slippers a week. The jail department is trying to market the slippers through an NGO.

Production began in June following a training session for the 30 inmates. On any given day, at least 15 to 18 former rebels are involved in crafting footwear.

“Vocational training and rehabilitation packages are normally offered only to convicted prisoners. But we’ve made an exception and have introduced a package for Maoists under trial. They’re now making jute products in prison and earning money as well,” said B. D. Sharma, Additional Director-General, State Correctional Services Department.

The programme has been implemented at Midnapore jail about 150 km west of Kolkata, since most Maoist suspects are being held here. “We’ve tied up with the National Bank for Agriculture and Rural Development for financial support. We provide all the raw materials and designs. However, some of our more creative charges are already developing their own designs,” said Satyajit Ganguly head of the NGO Bolivara Offer, the cluster development agency for the National Jute Board.

“We’re planning to market the slippers in a big way and are talking with dealers. At present, they are priced at Rs.100 per pair,” Ganguly said.

The low cost is only possible because the jail authorities provide several overheads, such as electricity and space, free of cost.

The footwear is already being sold through outlets at Uttarapan and Dakshinapan, two shopping complexes. However, the slippers do not carry a brand that highlights their origin. Usually, a small banner stating that Maoists in jail produce them is put up in the stores.

The Maoists inmates, though under trial, are also paid a wage of Rs.15 per slipper, depending on the number they make. In Bengal’s other jails, Maoists are growing tomatoes and cabbages. The government is also providing them with free education. For example, Maoist leader Telugu Deepak is studying Sanskrit and painting in Alipore jail. CPI (Maoist) squad members Sukshanti Baskey, Prasanto Mahato and Dhritiranjana Mahato are preparing for the higher secondary exams.

- Hindustan Times  
21<sup>st</sup> August 2010

### **GOVERNMENT DECLARES SOPS FOR EXPORTERS**

The government extended sops worth Rs.1,052 crore to exporters, particularly for the labour-intensive textile, handicrafts and leather sectors to help them see through the fragile economic recovery globally.

“We are not yet out of the woods,” Central Commerce and Industry Minister Anand Sharma said while extending the schemes like Duty Entitlement Pass Book (DEPB), under which taxes are reimbursed to exporters, subsidised interest and sops for import of capital goods.

Releasing the annual supplement to the Foreign Trade Policy 2009-14, he said the revenue implication of these measures would be Rs.1,052 crore. The government made it clear that the popular DEPB scheme which has been in vogue for over a decade, is being extended for the last time.

“Recognising the fragile recovery and the prevailing uncertainties (in the global markets), I have been able to obtain extension of DEPB one last time for a further period of six months till June 30, 2011,” Sharma said.

Experts said drawing the curtains on the DEPB scheme was inevitable as it was considered incompatible with the global trade rules under WTO.

However, Commerce Secretary, Rahul Khullar indicated to reporters that the ministry might formulate an alternative scheme.

A number of additional products from sectors like engineering, leather, textiles and jute have also been added to the existing two per cent interest subvention scheme. Handloom, handicrafts, carpet and the SMEs have been getting this facility, which will now be available till March 31, 2011.

### **CHINA'S FAKE SHOES SO 'GOOD' THEY'RE ALMOST REAL**

A shopkeeper in Italy placed an order with a Chinese sneaker factory in Putian for 3,000 pairs of white Nike Tiempo indoor soccer shoes. It was early February and the shopkeeper wanted the Tiempos pronto. Neither he nor Lin, the factory manager, were authorised to make Nikes. They would have no blue prints or instructions to follow. But Lin didn't mind. He was used to working from scratch. A week later, Lin, who asked that I only use his first name, received a pair of authentic Tiempos, took them apart, studied their stitching and molding, drew up his own design and oversaw the production of 3,000 Nike clones.

A month later, he shipped the shoes to Italy. “He'll order more when there's none left,” Lin told me recently, with confidence.

Lin has spent most of his adult life making sneakers, though he only entered the counterfeit business about

## **NEWS CORNER**

five years ago. “What we make depends on the order,” he said “But if some one wants Nikes, we’ll make them Nikes.” Putian, a “nest” for counterfeit sneaker manufacturing as one China-based intellectual-property lawyer put it, is in the south-eastern Chinese province of Fujian, just across the strait from Taiwan. In the late 1980s, multinational companies from all industries started outsourcing production to factories in the coastal provinces of Fujian, Guangdong and Zhejiang. Industries tended to cluster in specific cities and sub-regions.

For Putian, it was sneakers. By the mid 1990s, a new brand of factory, specialising in fakes, began copying authentic Nike, Adidas, Puma and Reebok shoes. Counterfeiters played a low-budget game of industrial espionage, bribing employees at the licensed factories to lift samples or copy blueprints. Shoes were even chucked over a factory wall, according to a worker at one of Nike’s Putian factories.

“There’s no way to get inside anymore,” Lin told me, describing the enhanced security measures at the licensed factories: guards, cameras and secondary outer walls. “Now we just go to a shop that sells the real shoes, buy a pair from the store and duplicate them.” Counterfeits come in varying levels of quality depending on their intended market. Shoes from Putian are designed primarily for export, and in corporate-footwear and intellectual property-rights circles. Putian has become synonymous with high-end fakes, shoes so sophisticated that it is difficult to distinguish the real ones from the counterfeits.

In the last fiscal year, UUS Customs and Border Protection seized more than \$260 million worth of counterfeit goods. The goods included counterfeit Snuggies, DCDs, brake pads, computer parts and baby formula. But for four years, counterfeit footwear has topped the seizure list of the customs service.

- Indian Express  
New Delhi, 24.08.10

### **ANNUAL SUPPLEMENT 2010-11 TO FOREIGN TRADE POLICY 2009-14**

Shri Anand Sharma, Hon’ble Union Minister for Commerce and Industry announced the Annual Supplement 2010-11 to the Foreign Trade Policy 2009-14 on August 23, 2010. We are please to inform you that the Hon’ble Minister has made the following announcements for the Leather Sector in this Annual Supplement.

1. Duty Credit Scrip benefit under Focus Product Scheme (FPS) notified under Chapter 3 of the Foreign Trade Policy has been enhanced from 2% to 4% for leather products and footwear notified in table 7 of Appendix 37 D the Handbook of Procedures (HBP) – Vol. 1.

The DGFT has issued a Public Notice No. 2/ (RE 2010)/2009-14 dated 23<sup>rd</sup> August 2010 in this regard thereby adding the leather products and footwear previously notified in Table 1 of Appendix 37 D of HBP in Table 7, thereby providing the enhanced duty credit scrip of 4%. As per this Public Notice, the enhanced benefit will be applicable for exports from 1.4.2010 onwards.

2. In speech of the Hon'ble Union Minister for Commerce and Industry, the following announcements have been made. However, the Notification on these announcements are expected to be issued in due course.
  - Leather sector shall be allowed re-export of unsold imported raw hides and skins and semi-finished leather from Public bonded warehouses, without payment of any export duty. This will facilitate the logistics for establishment of such warehouses and easy access to raw material for the leather sector.
  - Finished Leather export shall be entitled for Duty Credit Scrip @2% under Focus Product Scheme (FPS).
3. Agra has been notified as a Town of Export Excellence for Leather Products vide the DGFT Public Notice No.2/(RE 2010)/2009-14 dated 23.8.2010.
4. Zero duty EPCG scheme, introduced in August 2009 and valid for only two years up to 31.3.2011, has been extended by one more year till 31.3.2012. The Leather Sector is one of the sectors eligible for availing this scheme.
5. The Status Holders Incentive Scrip Scheme (SHIS) was announced in the Foreign Trade Policy 2009-14. SHIS provided additional Duty Credit Scripts to Status Holders @ 1% of the FOB value of past exports, which can be used for procurement of capital goods with Actual User condition. This facility was available for sectors of leather (excluding finished leather), textiles and jute, handicrafts, engineering (excluding Iron & steel & non-ferrous metals) etc., This scheme which was valid for exports only during two years 2009-10 and 2010-11, has now been extended by one more year for 2011-12 exports also.
6. Duty Entitlement Passbook (DEPB) scheme has been extended beyond 31.12.2010 till 30.06.2011.
7. Interest subvention of 2% for pre-shipment credit for export sectors namely, Handloom, Handicraft, Carpet and SMEs for all export sectors, have been allowed till 31.3.2011 in the budget 2010-11. This facility has now been extended to a number of additional products pertaining to sectors like engineering, leather, textiles, jute. The Reserve Bank of India has already issued a Circular No. RBI/2010-11/165 date August 9, 2010 in this regard, which has been circulated by the Council earlier.

**The Hon'ble Minister also announced the following procedural simplification and transaction cost reduction measures and also EDI initiatives in the aforesaid Annual Supplement.**

**Procedural Simplification and Reduction of Transaction Cost:**

- Exporters shall now have the flexibility to get a high value EPCG authorisation by filing their EPCG application on Annual basis, without the need to file the application for individual capital goods from time to time. It will reduce transaction time and cost.

## **NEWS CORNER**

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- Exporters shall now have the flexibility to Club Advance authorisation with Advance Authorisation for Annual Requirement for the purpose of account closure.
- To impart flexibility to exporters and to facilitate smooth clearance of consignments, a Single customs notification for the two variants of Advance Authorisation scheme namely advance authorisation for physical exports and deemed exports shall be issued. It will also eliminate the ambiguity in clubbing of such exports.
- Adhoc Norms ratified under Advance Authorisation scheme shall henceforth apply to all cases for the same export product up to one year not only prospectively but also retrospectively.
- Chartered Engineer Certificate for Advance Authorisation on self declared basis, has been dispensed with. This will reduce documentation and the transaction cost. The DGFT has issued a Public Notice No. 3/RE:2010/2009-14 dated 23.8.2010 in this regard.

### **EDI Initiatives:**

- To reduce the transaction cost and time, the scope and domain of EDI is endeavoured to be continuously broadened. To remove redundancy of repeated submissions of RCMC, an 'e-RCMC' initiative has been commenced. Under this, the Export Promotion Councils would upload the RCMC data of their members on DGFT's website only once, thus reducing the procedural burden of repeated submissions and associated cost and time.
- Facility of a data preparation module for Advance Authorisation and Export Promotion Capital Good (EPCG) has been provided on an offline mode, which would reduce the need of continuous online interaction for long and address the connectivity and server response issues significantly.
- In order to provide wider choice to the users and enlarge access for online filing, additional licenced certifying authorities for digital signatures and banks for electronic fund transfer (EFT) operations have been included in the gamut of EDI operations.
- The online message exchange for Annual Advance Authorisation and Duty Free Import Authorisation (DFIA) shall also be made operational with Customs w.e.f. 1.12.2010.

The Annual Supplement 2010-11 to the Foreign Trade Policy 2009-14 has also been hosted in the website of DGFT <http://dgftcom.nic.in> which members may refer. Also the aforementioned DGFT Public Notices are hosted in the CLE website [www.leatherindia.org](http://www.leatherindia.org), which members may refer.

Members may kindly note the above. In the event of any further clarification, members may approach the Council.

- Indian – News Leather  
August 2010

### **RBI CIRCULAR ON EXTENSION OF 2% INTEREST SUBVENTION SCHEME**

As members are aware, the 2% interest subvention scheme on rupee export credit was extended only to the Small and Medium Enterprises (SME) for a further period of one year from April 1, 2010, in the Union Budget 2010-11. Considering that the leather sector has been adversely affected by the global crisis, the Council requested the Government of India to extend this facility to the entire leather sector.

The Reserve Bank of India (RBI) has issued a Circular No. RBI/2010-11/165 dated August 9, 2010 extending the 2% subvention benefit to leather and leather manufactures. However, the Annex-I of the RBI circular listed only "Gloves for Use in Industry" in the list of Sectors/Sub-Sectors on which interest subvention is to be extended. The Council has hence sought a clarification in this regard.

The aforesaid RBI circular also states that with the change over to the Base Rate System, the interest rates applicable for all tenors of rupee export credit advances with effect from July 1, 2010 will be at or above Base Rate in respect of all fresh/renewed advances. Accordingly, banks may reduce the interest rate chargeable to the exporters as per Base Rate system for sectors eligible for export credit subvention by the amount of subvention available subject to a floor rate of 7%.

Members may kindly note the above.

- India – News Leather  
August 2010

### **TAMIL NADU FOOTWEAR SEZ TRIPS ON LABOUR WOES**

The footwear and leather products SEZ at Irungattukottai – promoted by the State Industries Promotion Corporation of Tamil Nadu (SIPCOT) has been languishing since its inception, owing to the luke warm response from firms scheduled to set up shop there.

Of the 101.55 acre to be allotted, out of the total 153.68 acre, the state government undertaking has so far managed to allot only 15 acre to the Footwear Design & Development Institute (FDDI) for setting up a centre and a one-acre plot to a leather goods manufacturing company.

Though the project is located close to the footwear component park, it has failed to attract investments from leather manufacturing units. SIPCOT still has to allot 85.55 acre to companies which wish to set up their footwear and other leather products production units despite the fact that units which operate within the SEZ are eligible for several incentives.

A leather exporter told Financial Express, "Leather is a very labour intensive industry. The park at Irungattukottai is not very attractive to manufacturers because of the non availability of labour in and around that area. Irungattukottai and the surrounding areas have developed very fast in the recent past

because many manufacturing units across various sectors have set up their base there and have attracted talent,” he said. “These days, no one is willing to travel for a few hours every day to eke out a living. So, sourcing manpower is difficult and on the other hand, it would not be sustainable in the long run,” he added. “It is necessary that the state government takes a relook at these business initiatives. We should identify areas where labour is available and simultaneously build necessary infrastructure for the benefit of the industry,” he said.

-Financial Express  
11.09.2010

### **LEATHER INDUSTRY MULLS PRODUCT CENTRE TO SPRUCE UP EXPORTS**

**The facility will help footwear manufacturers, specially small and medium business entrepreneurs, with design and engineering capabilities and enhance production and exports.**

The leather industry is planning to have a product engineering development facility at Ambur Trade Centre (ATC). They want such a facility to help footwear manufacturers, specially small and medium business entrepreneurs, with design and engineering capabilities and enhance production and exports.

Generally, leather footwear accounts for nearly 45% of the overall leather exports from the country. The footwear exports from Ambur alone works out to be nearly Rs.1,500 crore. The southern leather belt in Tamil Nadu which covers locations like Ambur, Ranipet and Vaniambadi alone houses nearly 250-300 small and medium manufacturing units.

According to M. Rafeeqe Ahmed, chairman of Farida group of companies, one of the leading leather product exporters in the country, ATC is a well designed and fully air-conditioned structure constructed with contributions from the Centre and industry.

“We are planning to have a professionally-run design and engineering facility within the centre. We have approached both the central and state governments, besides some industry players for financial assistance to fund the project. Though the overall investment is estimated to be only Rs. 4 crore to Rs. 5 crore, it should be established with the joint efforts. Once we get some kind of consent from the governments, we will call out for tenders from interested parties for setting up the facility at the ATC. The selected design and engineering firm will manage the facility professionally and offer services to leather product manufacturing units in and around that area for a fee”, said Rafeeqe, who is also the chairman of Ambur Economic Development Organisation Ltd.

Several domestic and international firms would be interested in setting up the facility. In fact, a couple of firms from Italy, a leader in leather footwear, have shown keen interest in establishing the facility. “But we would want an Indian company to run the show to have the necessary domestic touch. However, the selected firm could source technical expertise from international companies especially from Italy, to offer

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world class design and services to the local manufacturers,” he said.

“We are working on the model best suited to operate and run the design and engineering development facility. The purpose is to manage the facility more efficiently and effectively for the benefit of the industry as well as the firm which is going to run the facility,” he added.

He said the industry with the help of the new facility hopes to double the exports from Ambur alone in the near future.

- Financial Express  
11.09.2010

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# LEATHER SCIENCE ABSTRACTS

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VOLUME 43

NUMBER 9

SEPTEMBER 2010

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

**CENTRAL LEATHER RESEARCH INSTITUTE**

ADYAR, CHENNAI 600 020, INDIA

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

It is a monthly abstracting periodical covering significant papers/articles published in the fields of Leather Science and Technology, Footwear Technology, Leatherware and Leathergoods, Leather chemicals, Leather machinery, Leather economics etc., appearing in about 500 scientific and technical periodicals published all over the world. The abstracts are presented under well defined subject headings and include indexes.

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

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## LEATHER SCIENCE AND TECHNOLOGY

### LEATHER INDUSTRY. HISTORY. MANAGEMENT. ECONOMICS. EDUCATION

#### 43.9526

Directed basic research or science for sustainable development. ABROL (I), (Center for Advancement of Sustainable Agriculture, NASC Complex, Dev Prakash Shastri Marg, Todapur, Pusa, New Delhi - 110 012, India). (Curr. Sci.; 93, 7; 2007, Oct., 10; 902-4).

Science in India needs to undergo a paradigm change whereby it is viewed to an explicit and a more direct relationship to building a knowledge economy for sustainable development. Progress in solving complex sustainability problems will be increasingly demanding on both basic understanding and learning as to the way of applying the existing knowledge in problem-solving mode-bridging the artificial and unending divide between basic and applied research. Building a shared vision, amongst the Science and Technology(S&T) community of the critical role that science play and promoting a science agenda for sustainable development is a challenge where the science academies and similar institutions have a role to play. (13 Ref.).

#### 43.9527

Basic research/Applied research - What is all this fuss about? PADMANABHAN (G), (Department of Biochemistry, Indian Institute of Science, Malleshwaram, Bangalore - 560 012, Karnataka State, India). (Biotech News; 2, 6; 2007, Dec.; 3-4&11).

The translational research, which is a very different process and which is needed to convert a lead from a Research and Development(R&D) laboratory into a commercial reality, is discussed. Both the basic research and applied research, that can be done in a seamless fashion and when proof of principle has been generated to substantiate a claim, a team effort is needed to translate the laboratory findings into a viable technology. One needs to realize that it is much easier to publish papers than to translate a discovery into a reality and failure rate is high in the latter case. But, at the end of it all, even if 5% of the laboratory findings get translated, it would make a lot of difference to the quality of life of the people. Scientists owe it to society. (1 Tab.; 4 Photos).

#### 43.9528

Research Methodology : slips, gaps and some philosophical issues. MISHRA (PN), JAIN (P), (Institute of Management Studies, Devi Ahilya University, Takshashila Campus, Khandwa Road, Indore - 452 017, Madhya Pradesh State, India).(Univ. News; 45, 45; 2007, Nov., 5-11; 11-4).

Certain philosophical issues, pertaining to the database research in social sciences alone, are discussed. (1 Tab.).

#### 43.9529

Inspire and motivate people to improve organizational performance. RASTOGI (P), (M/s. ORPIP Global, No. : 502, Crystal Paradise, Opposite Veera Desai Road, Salvi Road, Andheri West, Mumbai - 400 053, India). (Colourage; 54, 10; 2007, Oct.; 40-3).

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Organizational capability is therefore directly linked with how people in organizations think and conduct the business. Organizational productivity comes when all the employees work as per agreed and transparent work processes. Each organization has a wealth of knowledge and experience. Every organization has potential for transforming personal knowledge into organizational knowledge and making it usable by every one. The realignment, of organizational energy, effective utilization and development of human resource are in the changing business environment are the key opportunities for sustainable competitive advantage. The right way to develop organizational capability is to look internally at the people who work and implement effective steps to improve their motivation, knowledge and skills.(3 Tab.).

#### **43.9530**

How non-European companies can comply with REACH. VALCEANU (D), (REACH ClemAdvice GmbH, Leibigstrasse 33, D 60323 Frankfurt am Main, Germany).(Chem. Wkly.; 53, 11; 2007, Oct., 30; 213-4).

The importance, of “REACH” which is an abbreviation of the term viz. : Registration, Evaluation, Authorisation and Restriction of Chemicals and is the new chemicals regulation of the European Parliament and Council and has come into force from 1st June, 2007. Various persons such as manufacturers, importers and downstream users within the European Community have been applied along the chemical supply chain with the obligation under REACH. Generally, the non-European companies are disallowed to pre-register/register substances under REACH. This regulation has offered few options for maintaining and continuing business as a non-European producer - within the European Community. (1 Fig.).

#### **43.9531**

Modern patenting - Quality and Quantity. ROBERTS (G), (M/s. Kilburn and Strode, 20 Red Lion Street, London WC1R 4PJ, England).(J. Intellect. Proper. Rights; 12, 6; 2007, Nov.; 562-71).

The current debate, on ‘quality patents’ against the backdrop of a practical assessment of the considerations that go into drafting patent applications together with an example of how the drafting process might go forward, is discussed. The amount, of care that needs to go into these documents, is demonstrated. An undermining, of the suggestion that there is a problem with the quality of patents, is attempted. The delicate balance, that needs to be struck between commercial and legal requirements in a patent application which stresses that although numerous considerations need to be taken into account simultaneously such as the manageability of those considerations is also highlighted. The skill, that the attorney must demonstrate, is clearly shown.

#### **43.9532**

Human resource strategy and challenges in the leather sector. KAMALANABHAN (TJ), (Department of Management Studies, Indian Institute of Technology(IIT) of Madras, Sardar Vallabhai Patel Road, Chennai - 600 036, India). (Leathers; 23, 12; 2007, Dec.; 46-50).

The major challenge to the leather sector is managing and developing human resources. The increasing global competition demands a lot from the industry. The industry needs people with dedicated efforts, culturally sensitive and people who are sensitive to environmental issues. Emphasis should be on laid on people participation in the fairs organized at the National and International level and attend training

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programs on changing trends and technology to provide low cost and high quality products. Finally, employees need exposures on filing of patents and copyrights in the leather sector. A highlight, of the human resource challenges, functions, strategy and roles in leather sector, is aimed. The leather in total produces about 18 billion square feet of leather a year and the total value of this is estimated at about \$40 billion. It is really important to look into the human resource challenges prevailing in the leather sector that has an economic value.

#### **43.9533**

Market research plan for castor oil and derivatives. (Chem. Wkly.; 53, 15; 2007, Nov., 27;( 99-206).

A plan is formulated for conducting a research on the marketing strategy for castor oil and derivatives. The meaning of the term viz. : market research is given and the problems, that are encountered with the market research, are discussed. The results, of the market research, are presented in a report format.(1 Tab.; 1 Fig.).

#### **43.9534**

An overview of polyurethanes - Part 2 : Market scenario. (Chem. Wkly.; 53, 13; 2007, Nov., 13; 183-8).

The trade prospects, of the polyurethanes which have been utilised for foams, elastomers etc. in the universal markets, are discussed. (10 Tab.; 2 Fig.).

#### **43.9535**

Trade secrets vs. patents in biotech industry: The Indian scenario. SINGH (PK), DUBEY (S), (High Court, Delhi, Sher Shah Road, New Delhi - 110 003, India). (ICFAI J. Intellect. Rights; 6, 4; 2007, Nov.; 9-24).

An analysis, of advantages and disadvantages associated with the trade secrets in biotech industry, is proposed.(71 Ref.; 2 Tab.).

#### **43.9536**

Best procurement practices - Cost reduction through purchasing. GANDHI (PG), (Corporate Procurement, M/s. Cadila Pharmaceuticals Limited, Cadila Corporate Campus, Sarkhej Dholka Road, Bhat, Ahmedabad - 382 210, Gujarat State, India). (Chem. Wkly.; 53, 17; 2007, Dec., 11; 187-8).

The imperativeness and high critical, that are essential, for an organization to understand, examine and evaluate different approaches to cost reduction in purchasing. are very firmly stressed. Two types namely direct and indirect approaches for cost reduction in purchasing, are briefly discussed. Various techniques for cost reduction in purchasing are indicated and the pitfalls that should have to be avoided for achieving success through those techniques are briefly analysed.

#### **43.9537**

Tailor made. SETTER (S), (Leather; 209, 4780; 2007, Nov./Dec.; 16&18).

Various problems, such as political and macro economic instead of the industrial problems that very much affect the smooth progresses of the leather industries in larger countries of the African Continents, are briefly described.

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**43.9538**

Carbon credits and environment management - Scope for carbon trading. MURUGANATHAM (G), (Department of Management Studies, National Institute of Technology(NIT), Thanjavur Main Road, National Highway No. : 67, Thiruchirapalli - 620 015, Tamil Nadu State, India).(Environ. Sci. Engg.; 5, 4; 2007-8, Dec.-Feb.; 1-5).

The scope, of carbon trading in India for the global market, is focused.(17 Ref.; 5 Photos).

**43.9539**

Value stream mapping for firms performance improvement : case study of a tannery firm in Naples. GUERRA (L), NAVIGLIO (G), ZOPPOLI (P), (Departimento di Ingegneria dei Materiali e della Prodeizione, Settore Impianti Universita degli Studi di Napoli "Feerico II", Facolta di Ingegneria, Piazza Roma, 82100 Benevento, Napoli, Italy).(Cuoio Pelli Mater. Concian.; 83, 5-6; 2007, Nov.-Dec.; 321-40).(Italian).

The Value Stream Mapping(VSM) is a technical approach for business processes survey and definition that aims to determine how value stream for final customers, is created. It is particularly suitable for the reengineering of production process or for the application of the "lean organization" principles to a generic firm. The successful application of VSM even to a medium sized firm characterized by limited technological level and automation degree, is demonstrated. Drawing up the current state map, required a careful examination of production process phases and a deep data analysis of cycle times, set-up times, employed workers, stock level etc. Firm's processes mapping to analyze value stream creation and define the related times, classified along the time-line as "with added value" or "with added value", concurred to point out problems and opportunities such as stock growth, idle-time, overproduction, productive capacity, unbalancing, etc. A detailed analysis of considered firm led to some preliminary project to improve the value stream, having an effect on two critical phases of the production process namely finishing step and dry step. The possibility, of defining a future state map, which concurs to pursue "lean production" principles, determining immediate and concrete improvements in terms of lead-time and costs reduction.(26 Ref.; 2 Tab.; 12 Fig.).

**43.9540**

Role of Indian educational and R&D institutions in knowledge sharing. HASAN (SA), PAL (AK), DHAWAN (SC), LUTHRA (R), (Human Resource Development Group(HRDG), Council of Scientific and Industrial Research(CSIR), Library Avenue, Pusa, New Delhi - 110 012, India). (J. Sci. Ind. Res. ; 67, 8; 2008, Aug.; 589-98).

The provision, of the financial support to Indian institutions including universities, Research and Development(R&D) institutions of national importance and colleges by Human Resource Development Group(HRDG) of Council of Scientific and Industrial Research(CSIR) to promote interaction and knowledge sharing through organization of conferences, is discussed. Universities organized maximum conferences (593, 40.4%), followed by R&D Institutions(34, 24.8%), colleges(264, 18.0%), scientific societies(127, 8.6%) and institutions of national importance(121, 8.2%) during 2003-04 to 2005-06. Maximum conferences per institution, however, had been organized by institutions of national importance followed by universities, R&D institutions and colleges. A positive correlation had been noted between the

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number of universities/institutions of national importance and conferences organized, whereas a negative correlation had been observed for R&D institutions/colleges and conferences organized. Institutions of national importance and deemed universities played a proactive role in promoting knowledge sharing (in terms of conferences organized) in engineering sciences and central and state universities, R&D institutions, colleges, scientific societies in life sciences. (10 Ref.; 5 Tab.; 4 Fig.).

## **RAW HIDES AND SKINS**

### **43.9541**

Antilithiatic activity of *Hibiscus sabdariffa* Linn. on ethylene glycol-induced lithiasis in rats. BETANABHATLA (KB), CHRISTINA (AJM), SYAMA SUNDAR (B), SELVAKUMAR (S), SUNDARA SARAVANAN (K), (Division of Pharmacology, KM College of Pharmacy, Uthangudi, Melur Road, Madurai – 625 107, Tamil Nadu State, India). (Nat. Prod. Rad.; 8, 1; 2009, Jan.-Feb.; 43-7).

The ethanolic extract of leaves of *Hibiscus subdariffa* Linn. (EEHS) was evaluated for its antilithiatic activity in rats. Lithiasis was induced by oral administration of ethylene glycolated water (0.75%) in adult male albino Wistar rats for 28 days. The ionic chemistry of urine was altered by ethylene glycol (EG), which elevated the urinary concentration of crucial ions, viz. calcium, phosphate, uric acid and oxalate thereby contributory to renal stone formation. The EEHS, however, significantly ( $P < 0.05$ ) reduced the elevated level of the ions in urine. Also, it elevated concentration of urinary magnesium, which is considered as one of the inhibitors of crystallization. All the observations revealed that EEHS has curative effect on stone formation induced by ethylene glycol. (19 Ref.; 3 Tab.; 3 Fig.).

### **43.9542**

An eco-friendly method for short term preservation of skins/hides. SUGUNA (L), IYAPPAN (K), RATHINASAMY (V), CHANDRA BABU (NK), MANDAL (AK), (Department of Biochemistry, Central Leather Research Institute, Adyar, Chennai - 600 020, India). (Indian Leather; 43, 1; 2009, Mar.; 35-42).

The first step in leather processing is the preservation or curing of hides and skins. Normally, 40-50% of common salt is used to preserve the skins and hides, which leads to an increase in the Total Dissolved Solids (TDS) and chlorides (Cl) in the tannery effluent. Hence, researchers are forced to look for alternative methods of preservation with less salt or without salt. The results, of the investigations carried out for preserving skins by reducing the moisture content of the skins using acetone, are reported. The properties and qualities of the crust leather are in par with the salt preserved skins. Also, this method reduces the TDS of the tannery effluent significantly. The results, obtained, substantiated that reducing the moisture content of the skins and hides helps in preserving them for more than a month. (17 Ref.; 5 Tab.).

## **PROTEINS AND COLLAGEN**

### **43.9543**

Approaching the megadalton : NMR spectroscopy of protein complexes. LUY (B), (Department Chemie,

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LS OCII Technische Universität München, Lichtenbergstrasse 4, 85747, Garching, Germany). (Angewand. Chem.; 46, 23; 2007, Aug. (I); 4214-6).

The quantitative nuclear magnetic resonance (NMR)-relaxation studies, of the 670-kDa 20S proteasome core particle, are reported and identified its binding site in the 1.1-MDa 11S activator-proteasome complex. The results have not only represented the largest molecular complex even studied by high-resolution NMR spectroscopy, but also give insight into the function of the central molecular machine for removing damaged and misfolded proteins from the cell which is a cluster of flexible residues with fast motion can be found outside the barrel between individual or subunits and residues under-going slow concerted motion can be found inside the  $\alpha_7$  ring, which most likely facilitates transport of proteins into the center of the complex. This work has made the possibility of applying a number of recently developed techniques which have been described. (13 Ref.; 5 Fig.).

#### **43.9544**

Identification of proteins expressed at extremely low level in Arabidopsis leaves. XU (Y), WANG (B), ZHU (Y), (The National Laboratory of Protein Engineering and Plant Genetic Engineering, College of Life Sciences, Peking University, Beijing 100871, China). (Biochem. Biophys. Res. Commun.; 358, 3; 2007, Jul., 6; 808-12).

2-DE related techniques have been broadly used for protein separation and identification in recent years. However, many important cellular components often escape detection by 2-DE due to its inherent low resolution. A polyU-affinity column is used to enrich proteins with nucleotide-binding motifs. As a result, 26 enriched protein spots, including three new Arabidopsis ribonucleic acid (RNA)-binding proteins viz. : cp31A, cp31B and CSP41, are identified by MALDI-TOF-MS. In the sum, 15 protein spots encoded by 12 individual genes are observed on the 2-DE only after binding to the polyU-affinity column. Two of these genes are expressed at lower than 0.1% the level of TUB4 that had been mainly considered as non-expressed genes in several ATH1 microarray analysis of Arabidopsis leaf samples. The results have suggested that polyU or similar media may be combined with 2-DE techniques to identify cellular proteins with extremely low transcription levels to fulfill specific research needs. (16 Ref.; 2 Tab.; 5 Fig.).

#### **43.9545**

Inducing and sensing protein-protein interactions in living cells by selective cross-linking. LEMERCIER (G), GENDREIZIG (S), KINDERMANN (M), JOHNSON (K), (Institut des Sciences et Ingénierie Chimiques (ISIC), Ecole Polytechnique Fédérale de Lausanne (EPFL), CH B3 391 Station 6, 1015 Lausanne, Switzerland). (Angewand. Chem.; 46, 23; 2007, Aug. (I); 4281-4).

Small molecules, that enable the covalent and irreversible dimerization of fusion proteins of O<sup>6</sup>-alkylguanine-dinucleic acid (DNA) alkyltransferase (AGT or SNAP-Tag) in living cells, is provided. The approach is being used to control the quaternary state of AGT fusion proteins as well as to sense the proximity and interactions of protein pairs in living cells by measuring their cross-linking efficiency through simple Western blotting. The AGT fusion proteins in living cells which are being labeled with a wide variety of small molecules by using O<sup>6</sup>-benzylguanine (BG) derivatives, are already shown. The use, of molecules which are abbreviated as COD is in which two BG subunits are connected by a flexible linker, is envisioned for the covalent dimerization of AGT fusion proteins. (17 Ref.; 6 Fig.).

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**43.9546**

Mechanism of coupled folding and binding of an intrinsically disordered protein. SUGASE (K), DYSON (HJ), WRIGHT (PE), (Department of Molecular Biology and Skaggs Institute for Chemical Biology, The Scripps Research Institute, 10550 North Torrey Road, La Jolla, California 92037, USA). (Nature; 447, 7147; 2007, Jun., 21; 1021-5).

Protein folding and binding are analogous processes, in which the protein 'searches' for favourable intramolecular or intermolecular interactions on a funnelled energy landscape. Many eukaryotic proteins are disordered under physiological conditions and fold into ordered structures only on binding to their cellular targets. The mechanism by which folding is coupled to binding is poorly understood, but it has been hypothesized on theoretical grounds that the binding kinetics may be enhanced by a 'fly-casting' effect, where the disordered protein binds weakly and non-specifically to its target and folds as it approaches the cognate binding site. The phosphorylated kinase inducible activation domain (pKID) of the transcription factor CREB that forms an ensemble of transient encounter complexes on binding to the K1X domain of the CREB binding protein by using nuclear magnetic resonance (NMR) titrations and  $^{15}\text{N}$  relaxation dispersion, is shown. The encounter complexes are stabilized primarily by non-specific hydrophobic contacts and evolve by way of an intermediate to the fully bound state without dissociation from K1X. The carboxy-terminal helix of pKID is only partially folded in the intermediate and becomes stabilized by intermolecular interactions which are final bound state. Future applications of this method provide new understanding of the molecular mechanisms by which intrinsically disordered proteins perform their diverse biological functions. (29 Ref.; 1 Tab.; 7 Fig.).

**43.9547**

Coupling of the orientations of thermotropic lipid crystals to protein binding events at lipid-decorated interfaces. BARKE (JM), ABBOTT (NL), (Department of Chemical Engineering, University of Wisconsin-Madison, 1415 Engineering Drive, Madison, Wisconsin 53706, USA). (Langmuir; 23, 16; 2007, Jul., 31; 8497-507).

A study, of the interactions of proteins with monolayers of phospholipids (D/L- $\alpha$ -dipalmitoyl phosphatidylcholine and L- $\alpha$ -dilauroyl phosphatidylcholine) spontaneously assembled at an interface between an aqueous phase and a 20- $\mu\text{m}$ -thick film of a nematic liquid crystal (4'-pentyl-4-cyanobiphenyl). Specific interactions between phospholipase  $A_2$  and the lipids (binding and/or hydrolysis) that lead to reorganization of the lipids are optically reported (using polarized light) as dynamic orientation transitions in the liquid crystal as the orientation of the lipid crystal is coupled to the organization of the lipids. In contrast, nonspecific interactions between proteins such as albumin, lysozyme and cytochrome-c and the lipid-laden interface of the lipid crystal have not been reported as orientational transitions in the liquid crystals. Concurrent epifluorescence and polarized light imaging of labeled lipids and proteins at the aqueous-liquid crystal interface demonstrate that spatially patterned orientations of the liquid crystals that have been observed during specific binding of phospholipase  $A_2$  to the interface, as well as during the subsequent hydrolysis of lipids by phospholipase  $A_2$ , reflect the lateral organization (micrometer-sized domains) of the proteins and lipids, respectively at the aqueous- crystal interface. (59 Ref.; 44 Fig.).

**43.9548**

Controlling crystallization and its absence : proteins, colloids and patchy models. DOYE (JPK), LOUIS

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(AA), LIN (I), ALLEN (LR), NOYA (EG), WILBER (AW), KOK (HC), LYUS (R), (Physical and Theoretical Chemistry Laboratory, Oxford University, South Parks Road, Oxford, UK OX1 3QZ). (Phys. Chem. Chem. Phys.; 9, 18; 2007, Jun., 14; 2157-296).

The ability, to control the crystallization behaviour that includes its absence of particles, be they biomolecules such as globular proteins, inorganic colloids, nanoparticles or metal atoms in an alloy, is of both fundamental and technological importance. Much can be learnt from the exquisite control that biological systems exert over the behaviour of proteins, where protein crystallization and aggregation are generally suppressed, but where in particular instances complex crystalline assemblies can be formed that have a functional purpose. The insights, that can be obtained from computational modelling are explored with a focus on the subtle interplay between the interparticle interactions, the preferred local order and the resulting crystallization kinetics. Particularly, the role, played by “frustration”, where there is an incompatibility between the preferred local order and the global crystalline order by using examples from atomic glass formers and model anisotropic particles, is highlighted. (82 Ref.; 14 Fig.).

#### **43.9549**

Imaging proteins in vivo using fluorescence lifetime microscopy. FESTY (F), AMEER-BEG (SM), NG (T), SUHLING (K), (Department of Physics, King’s College of London, Strand, London-WC2R 2LS, England). (Mol. BioSyst.; 3, 6; 2007, Jun.; 381-91).

Fluorescence lifetime imaging (FLIM) represents a key optical technique for imaging proteins and protein interaction in vivo. The principles and recent advances, in applying the technique, instrumentation and molecular probe development, are reviewed. (116 Ref.; 8 Fig.).

#### **43.9550**

Micro/nanopatterning of proteins via contact printing using high aspect ratio PMMA stamps and nanoImprint apparatus. PLA-ROCA (M), FERNANDEZ (JG), MILLS (CA), MARTINEZ (E), SAMITIER (J), (Nao-bio-engineering Laboratory-Institut de Bioenginyeria de Catalunya (IBEC) and Nanotechnology Platform, Barcelona Science Park, C/Joep Samitier 1-5, 08028 Barcelona, Spain). (Langmuir; 23, 16; 2007, Jul., 31; 8614-8).

The development, of a new contact printing technique for patterning proteins on surfaces at the micro/nanoscale by using stamps with aspect ratios much higher than those used in conventional microcontact printing ( $\mu$ CP), is discussed. Poly(methyl methacrylate) (PMMA) stamps and pressure that is applied by nanoimprint lithography apparatus are used to achieve it. (25 Ref.; 24 Fig.).

#### **43.9551**

Bone morphogenic proteins in the early development of zebrafish. KONDO (M), (Graduate School of Frontier Sciences, Department of Biological Sciences, The University of Tokyo, Chiba, Japan). (FEBS J.; 274, 12; 2007, Jun.; 2960-7).

The roles and functions of bone morphogenic proteins (BMPs) in embryogenesis from insects to mammals, mostly during the early stages have received wide interests from many scientists. The recent findings by

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using zebrafish, *Danio rerio*, are focused. Zebrafish has established the position as a major model species for early development studies during the past decade. Large-scale metagenesis screens with zebrafish have been performed. The strains, that carry mutation for genes that are involved in early development have been identified and much knowledge, mostly about the function of genes and the relationship among them is being accumulated. (44 Ref.; 3 Fig.).

#### **43.9552**

Real-time monitoring of cell-free protein synthesis on a surface plasmon resonance chip. LEE (K), JOUNG (H), AHN (J), KIM (K), OH (I), SHIN (Y), KIM (M), KIM (D), (Department of Fine Chemical Engineering and Chemistry, Chungnam National University, 220 Gung-dong, Yuseong-gu, Daejeon 305-764, Korea). (Anal. Biochem.; 366, 2; 2006, Jul., 15; 170-4).

The direct analysis, of protein is investigated by using a surface plasmon resonance sensor by taking advantage of the "open" nature of cell-free protein synthesis. The expressed protein molecules have been immobilized onto the surface of the chip during the on-chip incubation of the reaction mixture for cell-free protein synthesis which have enabled on-line monitoring of protein expression. Additionally, it is found that the expression of the aggregation-prone proteins could be effectively monitored. The ability to monitor these proteins is most likely through the instant isolation of the expressed protein molecules onto the solid surface of the chip. (8 Ref.; 8 Fig.).

#### **43.9553**

Quantum Dot/Bioluminescence Resonance Energy Transfer based highly sensitive detection of proteases. YAO (H), ZHANG (Y), XIAO (F), XIA (Z), RAO (J), (Molecular Imaging Program at Stanford, Department of Radiology, Biophysics, Cancer Biology Programs, Stanford University School of Medicine, 1201 Welch Road, Stanford, California-94305-5484, USA). (Angewand. Chem.; 46, 23; 2007, Aug. (II); 4346-9).

Quantum dots, which can also serve as an energy acceptor for a light-emitting protein such as the bioluminescent protein viz. : *Renilla luciferase* in bioluminescence resonance energy transfer (BRET), are demonstrated. The energy, which released in the oxidation of the substrate is transferred to the quantum dots through BRET that generates light emission from the quantum dots when the quantum dot conjugates are exposed to the luciferase substrate. The QD BRET has been shown to have high sensitivity for in vivo imaging and detection. A BRET-based QD biosensor is designed for detection of the activity of matrix metalloproteinases (MMPs). (28 Ref.; 7 Fig.).

#### **43.9554**

Wnt induces LRP6 signalosomes and promotes dishevelled dependent LRP6 phosphorylation. BILIC (J), HUANG (Y), DAVIDSON (G), ZIMMERMANN (T), CRUCIAT (C), BIENZ (M), NIEHRS (C), (Division of Molecular Embryology, Deutsches Krebsforschungszentrum, Im Neuenheimer Feld 280, D-69120 Heidelberg, Germany). (Science; 316, 5821; 2007, Jun., 15; 1619-22).

Multiple signaling pathways, including Wnt signaling, participate in animal development, stem cell biology and human cancer, are described. Unsolved questions remain as to the mechanism by which Wnt binding to its receptors Frizzled and Low-density lipoprotein receptor-related protein 6 (LRP6) triggers downstream

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signaling events even though many components of the Wnt pathway have been identified. Wnt treatment, which quickly induces plasma-membrane-associated LRP 6 aggregates is shown with live imaging of vertebrate cells. LRP6 aggregates are phosphorylated and can be detergent-solubilized as ribosome-sized multiprotein complexes. Phospho-LRP 6 aggregates contain Wnt-pathway components but no-common vesicular traffic markers except caveolin. The scaffold protein Dishevelled Dvl is required for LRP 6 phosphorylation and aggregation. Wnts, that induce coclustering of receptors and Dvl in LRP 6 - signalosomes, which in turn triggers LRP 6 phosphorylation to promote Axin recruitment and  $\beta$ -catenin stabilization, are proposed. (28 Ref.; 15 Fig.).

#### **43.9555**

Bioseparations - Sorting it out. LALI (A), (Mumbai University Institute of Chemical Technology, Nathelal Parekh Marg, Matunga (East), Mumbai - 400 019, India). (Biotech News; 2, 3; 2007, Jun.; 4-5&12).

An increasing number of drugs will be biomolecules with the expectation of the further understanding of the role of proteins and sugar molecules in cell metabolism. The development, of new biological entities (NBEs) may outpace development of new chemical entities (NCEs) in the coming decades. Unfortunately, characterization and purification of biologicals is more rigorous and tedious than that for synthetic small molecules. Biopharmaceuticals hence end up being far more expensive than chemical drugs. Newer methods for their processing, both at laboratory scale and production scale, need to be desired in order to change this scenario. This is essential if life saving drugs are to be made available to weaker sections of the world. Design of inexpensive, selective, robust and high throughput adsorbents is the modern day bioseparation challenge to which answers must be found through large investments in research in both industrial and academic laboratories. (3 Fig.).

#### **43.9556**

Detection of pathogenic leptospire in animals by PCR based on lipL21 and lipL32 genes. CHEEMA (PS), SRIVASTAVA (SK), AMUTHA (R), SINGH (S), SINGH (H), SANDEY (M), (Division of Bacteriology and Mycology, Indian Veterinary Research Institute, Izatnagar - 243 122, Uttar Pradesh State, India). (Indian J. Exp. Biol.; 45, 6; 2007, Jun.; 568-73).

The efficacy of primers which are capable of amplifying conserved outer membrane proteins (OMP) genes ie. a lipL21 and lipL32, has been tested by using serum and tissue samples that have been collected from cattle, buffaloes and experimentally infected guinea pigs. These genes have been targeted as they are reported to be present in all the pathogenic *Leptospira serovars* and possess extensive sequence homology. (16 Ref.; 2 Tab.; 8 Fig.).

#### **43.9557**

TORC-SIK cascade regulates CREB activity through the basic leucine zipper domain. TAKEMORI (H), KAJIMURA (J), OKAMOTO (M), (Laboratory of Cell Signaling and Metabolism, National Institute of Biomedical Innovation, 7-6-8, Asagi, Saito, Ibaraki, Osaka - 567-0085, Japan). (FEBS J.; 274, 13; 2007, Jul.; 3202-9).

The transcription factor cAMP response element binding protein (CREB) plays important roles in gene

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expression that is induced by cAMP and is believed to be activated when its Ser 133 is phosphorylated. However, the discovery of Ser 133-independent activation by activation of transducer of regulated CREB activity coactivators (TORC) and repression by salt inducible kinase cascades suggests that Ser 133-independent regulation of CREB is also important. The activation and repression are mediated by the basic leucine zipper domain of CREB. The basic leucine zipper domain, in the regulation of transcriptional activity of CREB, is focused and the functions of TORC and salt inducible kinase, are described. (52 Ref.; 1 Fig.).

#### **43.9558**

Systems biology of embryonic morphogens. PLOUHINEC (J), De ROBERTIS (EM), (Howard Hughes Medical Institute and Department of Biological Chemistry University of California, Los Angeles, No. : 675 Charles E. Young Drive South, California 90095-1662, USA). (Mol. BioSyst.; 3, 7; 2007, Jul.; 454-7).

A network, of secreted proteins that interact with each other in the extra-cellular space regulates embryonic morphogenesis. Mathematical modeling offers an excellent opportunity to understand how morphogens signal and self-regenerate pattern. (47 Ref.; 4 Fig.).

#### **43.9559**

Coherence dynamics in photosynthesis : protein protection of excitonic coherence. LEE (H), CHENG (Y), FLEMING (GR), (Department of Chemistry and QB3 Institute, University of California, Berkeley Stanley Hall, California 94720 and Physicl Bioscience Division, Lawrence Berkeley National Laboratory, Cyclotrom Road, Berkeley, California 94720, USA). (Science; 316, 5830; 2007, Jun, 8; 1462-5).

The role, of quantum coherence, in promoting the efficiency of the initial stages of photosynthesis, is an open and intriguing question. A two-colour photo echo experiment is performed on a bacterial reaction center that enabled direct visualization of the coherence dynamics in the reaction center. The data have revealed long-lasting coherence between two electronic states that are formed by mixing of the bacteriopheophytin and accessory bacteriochlorophyll excited states. This coherence can only be explained by strong correlation between the protein-induced fluctuations in the transition energy of neighbouring chromophores. The results have suggested that correlated protein environment pressure electronic coherence in photosynthetic complexes and have allowed the excitation to move coherently in space, which enable the highly efficient energy harvesting and trapping in photosynthesis. (31 Ref.; 8 Fig.)

#### **43.9560**

Routine fluorescence microscopy of single untethered protein molecules confined to a planar zone. GAI (H), GRIESS (GA), DEMELLER (B), WEINTRAUB (ST), SERWER (P), (Department of Biochemistry, The University of Texas Health Science Center 7703 Floyd Curl Drive, Sant Antonio, Texas 78229-3900, USA). (J. Microsc.; 226, 3; 2007, Jun.; 256-62).

Single protein molecules that are diffusing in aqueous solution which are needed to microscopy-based detection and tracking to bypass limitations of ensemble averaging biochemical analysis. The confinement, of the molecules to a planar zone dramatically assists tracking. Procedures of microscopy should be routine enough so that effort is focused on the biochemistry. Fluorescence microscopy and partial planar

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confinement of single, untethered, aqueous protein molecules have been achieved by using a routine procedure and with this procedure, multiple thermally diffusing Alexa 488-stained bovine serum albumin molecules have been observed during partial confinement to a thin aqueous zone next to the cover slip. The procedure produces confinement by partial re-swelling of a previously dried agarose gel on the microscope slide. The confinement has been confirmed through analysis that revealed thermal motion lower in the third dimension than it has been in the plane of observation. (30 Ref.; 13 Fig.).

#### **43.9561**

Tagged library approach facilitates forward chemical genetics. KIM (YK), CHANG (Y), (Department of Chemistry, New York University, No. : 20 Copper Square, 6th Floor, New York 10003, USA). (Mol. BioSyst.; 3, 6; 2007, Jun.; 392-7).

Forward chemical genetics has been highlighted as a new method for studying various biological pathways by using exogenous ligands. However, limited success in the field has demonstrated that, in many cases, the non-feasibility for determining the protein targets of small-molecule probes. Protein targets are identified as an integral part of forward chemical genetics and also as the most challenging. Over the past decade, several biochemical and genetic methods have been developed for facilitating target identification processes. Even so, one of the major difficulties is that these methods require the chemical modification of active compounds, with a significant amount of structure-activity relationship(SAR) study to ensure the small-molecule tags do not comprise bioactivity. A new strategy, for small molecule libraries that have built-in-linkers in order to avoid this well-known problem, is highlighted and their successful use in forward chemical genetics. (46 Ref.; 11 Fig.).

## **ENZYMOLGY**

#### **43.9562**

Influence of solubility-enhancing fusion proteins and organic solvents on the in vitro biocatalytic performance of the carotenoid cleavage dioxygenase At CCD1 in a micellar reaction system. SCHILLING (M), PATETT (F), SCHWAB (W), SCHRADER (J), (Biochemical Engineering Group, DECHEMA e.V, Theoder-Hauss-Allee 25, 64086 Frankfurt, Germany).(Appl. Microbiol. Biotechnol.; 75, 4; 2007, Jun.; 829-36).

The influence, of the solubility-enhancing fusion proteins glutathione-S-transferase(GST) and NusA on the heterologous expression and in vitro biocatalytic performance of the carotenoid cleavage dioxygenase At CCD1 from *Arabidopsis thaliana* had been investigated. A micellar dispersion of the water-insoluble model substrate  $\beta$ -apo-8'-carotenal in combination with Triton X-100 had been used for the spectrophotometric in vitro assays. Specific activity in the cellular extract had been two fold increased by the use of GST as a carrier protein, whereas it had been decreased by 70% when fused with NusA. The reduced molar activity, of the purified fusion proteins which could not be regained by proteolytic removal of the carrier protein, had been observed. The addition of organic solvents in the form of short-chain aliphatic alcohols positively influenced the enzyme activity. Optimization of the reaction medium led to an 18-fold activation and a clear correlation could be found between the organic solvent concentration required for maximum activation and the log P of the solvent. The results provide a foundation for the development towards the

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application of carotenoid cleavage dioxygenases as in vitro biocatalysts for producing norisoprenoids and apocarotenals from carotenoids. (26 Ref.; 1 Tab.; 6 Fig.).

#### **43.9563**

Characterization of the dsz ABC genes of *Gordonia amicalis* F.5.25.8 and identification of conserved protein and DNA sequences. KILBANE II (JJ), ROBBINS (J), (Department of Biological, Chemical and Physical Sciences, Illinois Institute of Technology, 3101 South Dearborn Street, Chicago, Illinois 60616-3793, USA). (Appl. Microbiol. Biotechnol.; 75, 4; 2007, Jun.; 843-51).

*Gordonia amicalis* F.5.25.8 has the unique ability to desulfurize dibenzothiophene and to metabolize carbazole. Efforts to amplify the dsz genes from *Gordonia amicalis* F.5.25.8 based on polymerase chain reaction (PCR) primers designed by using the dsz gene sequences of *Rhodococcus erythropolis* IGTS8 have been mostly unsuccessful. A comparison, of the protein sequences of dissimilar desulfurization enzyme such as Dsz ABC, Bds ABC and Tds ABC has revealed multiple conserved regions. PCR primers targeting some of the most highly conserved regions of the desulfurization genes have allowed the amplification of dsz genes from *Gordonia amicalis* F.5.25.8 deoxyribonucleic acid (DNA) sequence data that include nearly the entirety of the desulfurization operon as well as the promoter region have been obtained. The most closely related dfrz genes are those of *Gordonia alkinovorans* strain 1B at 85% identity. The PCR primers should be useful in microbial ecology studies and the amplification of desulfurization genes from previously uncharacterized microbial cultures. (24 Ref.; 3 Tab.).

#### **43.9564**

Visualizing RNA splicing in viro. GOWRISHANKAR (G), RAO (J), (Molecular Imaging Program at Stanford University School of Medicine, 1201 Welch Road, Stanford, California 94305-5484, USA). (Mol. BioSyst.; 3, 5; 2007, May; 301-7).

Ribozymes are ribonucleic acid (RNA) molecules that are capable of associating with other RNA molecules through base-pairing and catalyzing various reactions that involve phosphate group transfer. The well known ribozyme from *Tetrahymena thermophila* that is capable of catalyzing RNA splicing in eukaryotic systems is of a particular interest chiefly because of its potential use as a gene therapy agent. The progress, made towards visualizing the RNA splicing mediated by the *Tetrahymena* ribozyme in single living mammalian cells with the  $\beta$ -lactamase reporter system, is reviewed and the development, that is made in imaging RNA splicing with the luciferase reporter system in living animals, is highlighted. (42 Ref.; 14 Fig.).

#### **43.9565**

Phage display evolution of a peptide substrate for yeast biotin lipase and application to two-colour quantum dot labeling of cell surface proteins. CHEN (I), CHOI (Y), TING (AY), (Department of Massachusetts Institute of Technology, No. 77 Massachusetts Avenue, Cambridge, Massachusetts 02139-4307, USA). (J. Am. Chem. Soc.; 129, 20; 2007, May, 23; 6619-25).

A new 15-amino acid substrate for yeast biotin ligase, which is called as the yeast acceptor peptide (yAP) is discovered by using this approach. The kinetics of yAP biotinylation are characterized and found that the yAP sequence is transposable and can be fused to many different proteins and demonstrated labeling

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of the yAP with streptavidin-probe conjugates in vitro, on the surfaces of both yeast cells and living mammalian cells. The yeast biotin ligase(yBL)-yAP system is orthogonal to the *Escherichia coli* biotin ligase(Bia A)-AP pair which enables the labeling of yAP and AP fusion proteins that are expressed in the same cell selectively with differently coloured quantum dots(QDs). This new technology should be useful for multicolour labeling and imaging applications and it establishes a general approach to the engineering of new biotin ligase-peptide substrate pairs.(40 Ref.; 10 Fig.).

#### 43.9566

A manganese(IV)/Iron (III) cofactor in *Chlamydia trachomatis* Ribonucleotide Reductase. JIANG (W), YUN (D), SALEH (L), BARR (EW), XING (G), HOFFART (LM), MASLAK (M), KREBS (C), BOLLINGER, JR. (JM), (Department of Biochemistry and Molecular Biology, Pennsylvania State University, University Park, Pennsylvania 16802, USA).(Science; 316, 5828; 2007, May, 17; 1188-91).

A diiron(II/II) cofactor in the R2 subunit reacts with oxygen to produce a diiron(III/IV) intermediate in a conventional class I ribonucleotide reductase(RNR), which generates a stable tyrosyl radical(Y.). The Y. reversibly oxidizes a cysteine residue in the R1 subunit to a cyseiny radical(C.), which abstracts the 3'-hydrogen of the substrate to initiate its reduction. The RNR from *Chlamydia trachomatis* lacks the Y. and it has been proposed that the diiron(III/IV) complex in R2 directly generates the C. in R1. This RNR, which actually uses a previously unknown stable manganese(IV)/iron(III) cofactor for radical initiation by enzyme activity measurements and spectroscopic methods, is shown. (31 Ref.; 3 Fig.; 1 Scheme).

#### 43.9567

OGG1 initiates age-dependent CAG trinucleotide expansion in somatic cells.KOVTUN (IV), LIU (Y), BJORAS (M), KLUNGLAND (A), WILSON (SH), McMURRAY (CT), (Department of Pharmacology and Experimental Therapeutics, Neuroscience Program Mayo Clinic and Foundation, 200 First Street South West, Rochester, Minnesota 55905, USA).(Nature; 447, 7143; 2007, May, 24; 447-52).

The age-dependent somatic mutation that is associated with Huntington's disease occurs in the process of removing oxidized base lesions and which is remarkably dependent on a single base excision repair enzyme, 7,8-dihydro-8-oxoguanine-Deoxyribonucleic acid(DNA) glycosylase(OGG1), is shown. Both in vivo and in vitro results support a 'toxic oxidation' model in which OGG1 initiates an escalating oxidation-excision cycle that leads to progressive age-dependent expansion. age-dependent CAG expansion provides a direct molecular link between oxidative damage and toxicity in post-nutotic neurons through a DNA damage response and error-prone repair of single-strand breaks. (42 Ref.; 17 Fig.).

#### 43.9568

Determination of kinetic parameters for interfacial enzymatic reactions on self-assembled monolayers. NAYAK (S), YEO (W), MRKSICH (M), (Department of Chemistry, Howard Hughes Medical Institute, The University of Chicago, No. : 929 East 57th Street, Chicago, Illinois 60637-1454, USA).(Langmuir; 23, 10; 2007, May, 8; 5578-83).

An electrochemical method, for obtaining kinetic information on an interfacial enzyme reaction, is demonstrated. This approach is employed to develop methods for determining the kinetic parameters for the

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interfacial reaction the  $k_{cat}/K_m$  value- and that allow for a clear comparison of enzymes that act on the immobilized substrates.(55 Ref.; 1 Tab.; 8 Fig.).

#### **43.9569**

Use of enzymes in textile processing. MAHAPATRA, (Colourage; 54, 6; 2007, Jun.; 64-6&68-9).

The various uses, of enzymes, which are very widely applied in numerous industries that include organic waste, leather, detergents, proteins, textiles and effluent treatment, due to their unique properties of specificity, ability to perform the reaction under normal conditions of eg-temperature, pressure, pH and minimum by-products, are described.

#### **43.9570**

Long serial analyses of gene expression for transcriptome profiling during the initiation of ligninolytic enzymes production in *Phanerochaete chrysosporium*. MINAMI (M), KUREHA (O), MORI (M), KAMITSUJI (H), SUZUKI (K), IRIE (T), (Department of Environmental Science, The University of Shiga Prefecture, 2500 Hassaka-cho, Hikone, Shiga 522-8533, Japan).(Appl. Microbiol. Biotechnol.; 75, 3; 2007, Jun.; 609-18).

The long serial analysis of gene expression which is known as Long SAGE libraries is constructed to analyze the transcriptome profile during the initiation of manganese peroxidase(MnP) and lignin peroxidase(LiP) production in *Phanerochaete chrysosporium*. A total number of cumulative counted tags viz. : 13,066 tags that included 6,945 unique distinctive tags have been isolated from the day-3 culture, which just started the enzymes production and is 24 hours after veratryl alcohol addition and oxygen-purge into the culture(day-2 culture). A total of 12,402 tags that included 6,396 unique tags have been isolated from the day-2 culture, in which the activity of enzymes is not detected. The comparison of the two libraries have suggested that 38 genes have shown the significant( $p \leq 0.01$ ) fourfold or greater upgradation which included the MnP gene(mnp2, mnp3) and LcP H8 gene. On the other hand, 43 genes have shown the significant ( $p = 0.01$ ) fourfold or greater down-regulation. this Long SAGE analysis has found many new candidate genes that regulate the enzymes production.(33 Ref.; 4 Tab.; 2 Fig.).

#### **43.9571**

The pydA-pydB fusion gene produces an active dioxygenase-hydrolase that degrades 3-hydroxy-4-pyridone, an intermediate of minosine metabolism. AWAYA (JD), WALTON (C), BORTHAKUR (D), (Department of Molecular Biosciences and Bioengineering, University of Hawaii at Manoa, 1955 East-West Road, Honolulu, HI 96822, USA).(Appl. Microbiol. Biotechnol.; 75, 3; 2007, Jun.; 583-8).

A construction, of a pydA-pydB hybrid gene that encodes a functional dioxygenase-hydrolase(PydA-PydB) fusion protein for degradation of 3-hydroxy-4-pyridone(HP) which is an intermediate in both synthesis and degradation of a toxic amino acid viz. : minosine which is produced by the tree legume *Leucaena leucocephala*. Computer-generated models of the fusion proteins that have suggested that joining of PydA and PydB with 0,3 or 7 glycone residues as a linker should produce a functional PydA-PydB fusion protein. Accordingly, three hybrid genes namely GO, G3 and G7, have been constructed in which oydA and pydB have been constructed with 0, 9 and 21 nucleotides, respectively that encode the glycine residues of the linker region.

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Only one of the genes viz. : G3 has produced a functional PydA-PydB fusion protein which possesses both the dioxygenase and hydrolase activities when these hybrid genes have been expressed in *Rhizobium* and *Escherichia coli*. The G3 hybrid gene could complement both *pydA* and *pydB* mutants of *Rhizobium* and *Escherichia coli* lysate that contains the overexpressed G3 protein is able to degrade HP. This hybrid gene may be useful for developing minosine-free *Leucasna leucocephala* plants in the future. (25 Ref.; 2 Tab.; 7 Fig.).

#### **43.9572**

Inhibition of *Escherichia coli* RecA by rationally redesigned N-terminal helix. CLINE (DJ), HOLT (SL), SINGLETON (SF), (School of Pharmacy, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-7360, USA).(Org. Biomolec. Chem.; 5, 10; 2007, May, 21; 1525-8).

A peptide inhibitor, that is designed to prevent the assembly of RecA-deoxyribonucleic acid(DNA) filaments - an obligatory early intermediate in all of RecA activities - by disrupting the monomer-monomer interfacial contact region, is described.(56 Ref.; 6 Fig.).

#### **43.9573**

Metals in membranes.LIANG (X), CAMPOPIANO (DJ), SADLER (PJ), (School of Chemistry, University of Edinburgh, Kings' Buildings, West Mains Road, Edinburgh - EH9 3JJ, UK). (Chem. Soc. Rev.; 36, 6; 2007, Jun.; 968-92).

The recent advances, in understanding the modes of interaction of metal ions with membrane proteins that include channels, pumps, transporters, ATP-binding cassette proteins, G-protein coupled receptors, kinases and respiratory enzymes, are discussed. Such knowledge provides a basis for elucidating the mechanism of action of some classes of metallodrugs and a stimulus for the further exploration of the coordination chemistry of metal ions in membranes. Such research offers promise for the discovery of new drugs with unusual modes of action.(247 Ref.; 3 Tab.; 48 Fig.).

#### **43.9574**

A robust metallo-oxidase from the hyperthermophilic bacterium *Aquifex aeolicus*. FERNANDES (AT), SOARES (CM), PEREIRA (MM), HUBER (R), GRASS (G), MARTINS (LO), (Instituto de Tecnologia Quimica e Biologica, Universidade Nova de Lisboa, Avenida da Republica, 2781-901, Oeiras, Portugal). (FEBS J.; 274, 11; 2007, Jun.; 2683-94).

The spectroscopic properties and biochemical characterization, of the recombinant multicopper oxidase from *Aquifex aeolicus* AACO7157.1(McoA) which is shown as a hyperthermostable copper-activated metallo-oxidase, with features that are typical of the well-known MCOs, are reported. However, one aspect of McoA is the presence of a Met-rich segment that is absent in the 'classic' MCOs. A kinetic analysis of a mutant enzyme viz. : McoAtriangleP31-V363 from which this segment is deleted which indicates that this region occludes the substrate to binding site. These results agree with the proposed structural model and its involvement in the catalytic mechanism of the enzyme is suggested. The involvement of the Met-rich region in copper binding is shown. The cuprous and ferrous oxidation competence of McoA may have a role in the suppression of copper and iron cytotoxicity together with the observation that McoA appears to be encoded in a copper-resistance determinant. (37 Ref.; 1 Tab.; 14 Fig.).

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### 43.9575

Characterization and structural modeling of a new type of thermostable esterase from *Thermotoga maritima*. LEVISSON (M), van der OOST (J), KENGEN (SWM), (Laboratory of Microbiology, Wageningen University, Hesselink van Suchtelenweg 4, 6703 CT, Wageningen, The Netherlands). (FEBS J.; 274, 11; 2007, Jun.; 2832-42).

A bioinformatic analysis of the genome of the hyperthermophilic bacterium *Thermotoga maritima* has been performed to find new thermostable esterases. Several ORFs that potentially encode esterases or lipases have been identified including one (est D, TM0336) that has been annotated as a conserved hypothetical protein, although it does possess characteristics of an ester hydrolyzing enzyme. Interestingly EstD belongs to a clusters of orthologous groups (COGs) (1073) that comprises proteins only predicted to have an  $\alpha$ -hydrolase fold, whose function has not yet been experimentally determined. estD has been both cloned and expressed in *Escherichia coli* for confirming the anticipated function of EstD and to support COD 1073 with experimental evidence. The recombinant enzyme is characterized that includes structural modeling and experimental analysis of the catalytic triad. (41 Ref.; 3 Tab.; 6 Fig.).

## LEATHER CHEMICALS AND AUXILIARIES

### 43.9576

Chiral Brønsted acid catalyzed enantioselective Mannich-type reaction. YAMANAKA (M), ITOH (J), FUCHIBE (K), AKIYAMA (T), (Department of Chemistry, Faculty of Science, Gakushuin University, 1-5-1 Mejiro Toshima-ku, Tokyo 171-8588 and Rikkyo University, 3-34-1 Nishi-Ikebuckuro, Toshima-ku, Tokyo 171-8501, Japan). (J. Am. Chem. Soc.; 129, 21; 2007, May, 30; 6756-64).

The design, of the chiral Brønsted acid catalyst and its application to the enantioselective Mannich-type reaction, is described. A quantum chemical study is carried out to elucidate the reaction mechanism as well as the origin of the enantioselectivity. (33 Ref.; 3 Tab.; 7 Fig.; 5 Schemes).

### 43.9577

Development of an electrolytic system for Non-Kolbe electrolysis based on the acid-base reaction between carboxylic acids as a substrate and solid-supported bases. TAJIMA (T), KURIHARA (H), FUCHIGAMI (T), (Global Edge Institute, Tokyo Institute of Technology, 4259 - G1 - 32 Nagatsuta, Midori-ku, Yokohama 226-8502, Japan). (J. Am. Chem. Soc.; 129, 21; 2007, May, 30; 6680-1).

The successful development, of a novel electrolytic system, for non-Kolbe electrolysis based on the acid-base reaction between carboxylic acids as a substrate and solid-supported bases, is reported. The acid-base reaction, between carboxylic acids and solid-supported bases preferentially takes place to reduce the cell voltage in MeOH, is found. It is hoped that this will make a significant contribution to green chemistry and open a new aspect of electroorganic synthesis. (5 Ref.; 3 Tab.; 2 Fig.).

### 43.9578

Electronic structure of the PYP chromophore in its native protein environment. GROMOV (EV), BURGHARDT

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(I), KOPPEL (H), CEDERBHAUM (LS), (Theoretische Chemie, Physikalisch-Chemisches Institut Universität Heidelberg, Im Neuenheimer Feld 229, D-69120 Heidelberg, Germany). (*J. Am. Chem. Soc.*; 129, 21; 2007, May, 30; 6798-806).

The supermolecular ab initio calculations, which clarify the role of the local amino acid environment in determining the unique electronic structure properties of the photoactive yellow protein (PYP) chromophore, are reported. The extensive ab initio calculations, at the level of the coupled cluster singles and doubles (CC2) and equation-of-motion coupled cluster singles and doubles (EOM-CCSD) methods have allowed the explicit address of how the interactions between the deprotonated p-coumaric thio-methyl ester (pCTM-) chromophore and the surrounding amino acids act together to create a specifically stabilized pCTM-species. Particularly noteworthy is the role of the Arg52 amino acid in stabilizing the chromophore against autoionization and the role of the Tyr-42 and Glu46 amino acids in determining the hydrogen-bonding properties that carry the dominant energetic effects. (64 Ref.; 1 Tab.; 10 Fig.).

#### **43.9579**

Singlet oxygen production by peptide-coated quantum dot-photosensitizer conjugates. TSAY (JM), TRZOSS (M), SHI (L), KONG (X), SELKE (M), JUNG (ME), WEISS (S), (Department of Chemistry and Biochemistry, California NanoSystems Institute, University of California at Los Angeles, Los Angeles, California 90095, USA). (*J. Am. Chem. Soc.*; 129, 21; 2007, May, 30; 6865-71).

The peptide-coated quantum dots (pcQDs), which form extremely stable conjugates with photosensitizers (PSs), which may be used as multi-functional probes for live cell targeting, imaging and photodynamic therapy, are shown. (24 Ref.; 2 Tab.; 9 Fig.).

#### **43.9580**

Synthetic Biology (Life 2.0)- The next revolution. JOGDAND (SN), (Karmaveer Bhaurao Patil College, Vashi, Navi Mumbai - 400 703, India). (*Chem. Wkly.*; 53, 15; 2007, Nov., 17; 191-8).

The meaning, of the term, viz. : 'synthetic biology', is explained. The aim, that exists behind the synthetic biology, which builds on advances in molecular, cellular and systems biology, is to transform biology in the same way that synthesis has transformed chemistry and integrated circuit design transformed computing. (2 Tab.).

#### **43.9581**

Functional characterization of HSP33 protein from *Bacillus psychrosaccharolyticus*; additional function of HSP33 on resistance to solvent stress. KANG (H), HEO (D), CHOI (S), KIM (K), SHIM (J), KIM (C), SUNG (H), YUN (C), (School of Life Sciences and Biotechnology, Korea University, Anam-dong, Sungbuk-gu, Seoul, Republic of Korea). (*Biochem. Biophys. Res. Commun.*; 358, 3; 2007, Jul., 6; 743-50).

Psychrophiles have been known as efficient organism to degrade organic solvent. One of the psychrophiles, namely *Bacillus psychrosaccharolyticus*, is selected and two-dimensional gas electrophoresis is performed for investigating the mechanism of solvent stress and identifying the factors that affect the solvent in psychrophiles. Five spots induced in 3% isopropyl alcohol (IPA) stress conditions among the protein spots

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analyzed by 2-DE had been identified by mass spectroscopy/mass spectroscopy(MS/MS) and one of these spots had been identified as a Hsp33 family. The Hsp 33 protein sequence of *Bacillus psychrosaccharolyticus* exhibited a high similarity with the corresponding proteins of other bacteria. The Hsp protein of *Bacillus psychrosaccharolyticus* has a highly conserved zinc-binding protein(CXCX, CXXC) that includes for cysteine residues in the C-terminus. Additionally, Northern blot analysis has confirmed the transcriptional induction of the HSP33 of *Bacillus psychrosaccharolyticus* and formation of free thiol linkage had been induced under stress conditions such as exposure to solvents, heat-shock and oxidative stress. Furthermore, over-expressed strains of HSP33 of *Bacillus psychrosaccharolyticus* in *Escherichia coli* improved stress tolerance to the organic solvent when compared with the wild-type. These data suggest that the solvent stress condition had been similar to heat-shock or oxidative stress, especially through the triggering of induction and activation of a redox-regulatory chaperone, Hsp33 and Hsp33 plays a crucial role in the tolerance to stress.(30 Ref.; 10 Fig.).

#### **43.9582**

Recent developments in the Indian Hydrocarbon industry. SRINIVASAN (MS), (Ministry of Petroleum and Natural gas, Government of India, "A" Wing, Second Floor, Shastri Bhawan, Dr. Rajendra Prasad Road, New Delhi 110 001, India).(Chem. Wkly. ;53, 15; 2007, Nov., 27; 215-7).

Various efforts, that have been pursued, for accelerating exploration and production of oil and natural gas by the Ministry of Petroleum and Natural Gas, Government of India, are discussed.

#### **43.9583**

Fluorescence probe of Trp-Cage protein conformation in solution and in gas phase. LAVARONE (AT), PATRIKSSON (A), van der SPOEL (D), PARKS (JH), (Rowland Institute at Harvard, 100 Edwin H. Land Boulevard, Cambridge, Massachusetts 02142, USA). (J. Am. Chem. Soc.; 129, 21; 2008, May, 30; 6726-35).

The power of combined solution and gas-phase studies and of single-point mutations is demonstrated to identify specific noncovalent interactions which contribute to protein-fold stability. The combination of experiment and simulation is particularly useful because these approaches yield complementary information which is being used to deduce the details of structural changes of proteins in the gas phase. (91 Ref.; 2 Tab.; 19 Fig.).

### **FINISHING MATERIALS**

#### **43.9584**

Encapsulation technology. SHYAM SUNDAR (P), (Department of Fibres and Textile Processing Technology, National Institute of Chemical Technology(NICT), University of Mumbai, Nathelal Parekh Marg, Matunga(C.Rly.), Mumbai - 400 019, India).(Colourage; 56, 3;2009, Mar.; 43-9).

Microcapsulation is a growing field that is finding application in many technological disciplines. The encapsulation of materials has evolved from examples in Nature, wherein numerous examples exist, ranging

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from macroscale. Nature envelops materials to product from environmental influences; the simplest example on a macroscopic scale is a bird's egg or a seed, while on a microscopic scale the best example is that of a cell along with its contents. The development of microencapsulation began with the preparation of capsules containing dyes, perfumes, medicine etc. Microencapsulation provides the possibility of combining the properties of different types of material such as inorganic and organic, which is difficult to achieve using other techniques. (11 Ref.; 2 Tab.; 12 Fig.).

#### **43.5985**

Phototropism. PARKES (D), (Colourage; 56, 4; 2009, Apr.; 35-9).

The differences, in the meanings of the various items such as (a) phototropism; (b) photochromism; (c) dichroism and (d) metamerism, are explained. The term called phototropism is believed to be a phenomenon confined to reddish yellow dyes. Chromism is a process which induces a reversible colour change in a chemical compound. It is based on changes in the excitation levels of electron levels within the molecule. The difference, between dichroism metamerism is that while the former is an ABSOLUTE property while the latter is a RELATIVE property. Dichroism is the property of a substance to exhibit a different hue under different conditions such as light source, concentration on the fibre etc. Metamerism is a psychophysical phenomenon. It is commonly defined as the situation in which two dyed samples match in colour under one set of conditions, but fail to match in another set of conditions. The most common form of metamerism is "Illuminant Metamerism" while the other forms are the "Geometric Metamerism", "Observer Metamerism" and "Field-size Metamerism". It is concluded that no problem can be possibly solved, if it is not correctly defined in any study, of any kind. Hence, the importance, of correcting common misconceptions, is arisen. The term called Dichroism is wrongly described as meant as colour separation in a dyeing. In the same way, both phototropism and photochromism are also being used for describing the same phenomenon which- in contrary to it should never be done at any time. (8 Photos).

#### **43.9586**

Diels-Alder reaction of 9-anthracenemethanol and dimethylacetylene-dicarboxylate; potential route for the synthesis of regiospecific products of 9-substituted anthracene with unsymmetrical acetylenes. DHANESHWAR SINGH (M), NINGOMBAM (A), (Department of Chemistry, Manipur University, Canchipur, Imphal-795 003, Manipur State, India). (Indian J. Chem.-Section B : (Organic including medicinal); 49B, 1; 2010, Jan.; 77-83).

Diels-Alder reaction of 9-anthracenemethanol with dimethylacetylene-dicarboxylate gives rise to the formation of a lactone derivative by condensation of the alcoholic function of the 9-substituent with the nearby carboxylate group in the Diels-Alder adduct. Opening of the lactone derivative with an alcohol yields the desired Diels-Alder adduct. If the alcohol used for opening the lactone is different from the alcohol part of the dicarboxylate, the reaction gives the regiospecific adduct in which the alkoxy group(used for opening lactone) is ortho to the 9-substituent. (13 Ref.; 5 Schemes).

#### **43.9587**

Carbohydrates in the leather manufacturing. NAVIGLIO (B), TORTORA (G), LANZETTA (R), PARRILLI (M), FABBRICINO (M), (Stazione Sperimentale per l'Industria delle Pelli e delle Materie Concianti, Via Nuova Poggioreale, 39 801 43, Napoli, Italy). (Cuoio Pelli. Mater. Conciante.; 85, 4; 2009, Jul./Aug.; 195-206).(Italian).

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The use of polymer materials of natural origins in the leather manufacturing like carboxyhydrates as an example can be considered as an innovative technology that could be useful either to reduce the environmental impact as regarding the productive process and the leather life cycle. In fact, carbohydrates are biodegradable, no-toxic, easily to retrieve and not expensive natural products. The use of carbohydrates in the tanning technology is not at all unknown and in fact, the suggestion of making use of carbohydrates, even in chemically modified, indifferent phases of the tanning technology are already prescribed. As an example, the products deriving from starch oxidation(dialdehyde starch) were used in the '50s as tanning agent due to their similar reactivity as to the glyoxal. Several times, the subject of studies was analogously the chitosan as aminosugar which had been used for the pre-treatment and post-treatment of the chrome tanned leather because it seems to give fullness, brightness and stability to the dye. The ability, of the carbohydrates for acting as scavengers of metallic cations, despite of the few studies regarding chromium in this role, is described. The results, that are obtained by using different polysaccharides like starch, arabic gum and so on to stabilize and/or to tan ovine skins besides the state of the art about use of carbohydrates in tanning technology and the experimental results concerning the treatment of the exhausted floats after the chrome tanning using shrimp shells, that are made of a material characterized by a high presence of a well-known polysaccharide called chitin, are presented.(14 Ref.; 3 Tab.; 10 Fig.).

#### **43.9588**

Tailoring of guam gum for desert sand stabilization. GUPTA (SC), HOODA (KS), MATHUR (NK), GUPTA (S), (Defence Institute of Advanced Technology, Defence Research Development Organization, Giri Nagar, Pune - 411 025, Maharashtra State, India). (Indian J. Chem. Technol.; 16, 6; 2009, Nov.; 507-12).

A low viscosity grade guar gum has been developed by two techniques namely ie. gamma irradiation and  $H_2O_2$  treatment. The desired viscosity is achieved by controlling the quantity of hydrogen peroxide solution or the gamma-irradiation dose. The viscosity of one percent guar gum was reduced from 3240 cps to 116 cps using 10%  $H_2O_2$ -solution(50% volume/volume(v/v)) and from 3203 cps to 222 cps using 6 kGy gamma-irradiation dose. The reduced viscosity was stabilized by adding 0.5% solution of formaldehyde(37% v/v) or by using 0.5% cobalt naphthenate. The low viscosity grade guar gum powder and the solutions stabilized with cobalt naphthenate or formaldehyde could be stored for long periods without loss of viscosity. The reduced viscosity guar gum is used for grouting stabilization of sand for construction works across desert. (14 Ref.; 4 Tab.; 3 Fig.).

#### **43.9589**

Study of variation of thermal diffusivity of advanced composite materials of E-glass fibre reinforced plastic(GFRP) in temperature range 5-300 K.DAS (K), KAMARUZZAMAN (SM), MIDDYA (TR), DATTA (S), (Department of Physics, Jadavpur University, Aurobindo Bhawan, 188, Raja S.C. Mallick Road, Kolkata-700 032, India). (Bull. Mater. Sci.; 32, 1; 2009, Feb.; 89-92).

Modified Angstrom method is applied to study the variation of thermal diffusivity of plain woven fabric composite is closed cycle cryo-refrigerator(CCR) based set up in the temperature range 5-300K. The set up used is plug in type and its small size offers portability. The set up works without use of any liquid oxygen. The temperature versus thermal diffusivity curve shows three distinct regions viz. 5-30 K, 30-120 K and 120-300 K. In the first region thermal diffusivity varies exponentially and rapidly. In the second region

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thermal diffusivity changes exponentially but relatively slowly than that in the first region. In the last region the change in thermal diffusivity with temperature is exponential in nature but very slow. (10 Ref.; 1 Tab.; 8 Fig.).

## **LEATHER PROCESSING MACHINES**

### **43.9590**

Stenter IC10-IC8 of Icomatex, Spain. NAIR (GP), PANDIAN (SP), (No. : B2/12, Technocrat Society, Twin Tower Road, Off. V.S. Marg, Prabhadevi, Mumbai - 400 025, India). (Colourage; 56, 4-Suppl.; 2009, Apr.; 8&11).

This series of machines have been developed by M/s. Icomatex, Spain for dyeing, various types of heating such as direct gas heating, oil circulating heating, steam heating or combined electric/steam heating etc. Few machines have been utilised for padding, vacuuming, dyeing, pre-drying, entry and exit systems and high speed winding. (2 Ref.; 1 Tab.; 40 Fig.).

## **BY-PRODUCTS**

### **43.9591**

Copper and cadmium adsorption on pellets made from fired coal fly ash. PAPANDREOU (A), STOURNARAS (CJ), PANIAS (P), (National Technical University of Athens, School of Mining and Metallurgical Engineering, Laboratory of Metallurgy, 9 Heroon Polytechniou Street, Zografos Campus, 15780 Athens, Greece). (J. Hazard. Mater.; 143, 3; 2007, Sep., 30; 538-47).

The developments, of cost effective adsorption media from raw pulverized fly ash for treating industrial effluents containing heavy metals and the methods for the safe management of saturated adsorption media after the end of their life cycle, are aimed. The exploitation, of the adsorptive and the hydraulic properties of fly ash for achieving the said two targets, is discussed. The agglomeration, of the raw pulverized fly ash into porous pullets which comprise the shaped adsorption media, is also discussed. The adsorption properties of pellets have been studied in the cases of copper and cadmium sorption from synthetic aqueous solutions. The metal releasing capacities of pellets saturated in copper and cadmium also have been studied and the results have proved the high mobilization of both metals in aqueous acedic media. The stabilization of metal saturated pellets has been studied through their exploitation in different concrete blocks in order to effectively face this problem. (33 Ref.; 6 Tab.; 13 Fig.).

### **43.9592**

Heavy metal mapORIZATION and abatement during thermal treatment of modified wastes. RIO (S), VERWILGHEN (C), RAMAROSON (J), NZIHOU (A), SHARROCK (P), (Centre RAPSODEE, UMR Central National Recherche Scientifique(CNRS) 2392, Ecole des Mines d'Albi, Campus Jarland, 81000 Albi, France). (J. Hazard. Mater.; 148, 3; 2007, Sep., 30; 521-8).

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The vaporization percentage and partitioning, of heavy metals Cd, Pb and Zn during thermal treatment of wastes with added polyvinyl chloride(PVC), heavy metals or phosphate and the efficiency of sorbents for removal of those metallic compounds in flue gas of an industrial solid waste incinerator, are examined. Firstly, vaporization experiments have been done to determine the behaviour of heavy metals during combustion under various conditions such as type of waste, temperature, presence of chloride or phosphate...). The experimental results have shown the relatively high vaporization percentage of metallic compounds within fly ash and limestone matrix while heavy metals within sediments treated with phosphoric acid are less volatile. Vaporization of metals increases with increasing temperature and with chloride addition. The thermal behaviour of the selected heavy metals and their removal by sorbents such as sodium bicarbonate, activated carbon has also been studied in an industrial solid waste incinerator. These pilot scale experiments confirm that heavy metals are concentrated in fly ashes and cyclone residues, thus effectively controlling their release to the atmosphere. (32 Ref.; 7 Tab.; 10 Fig.).

#### **43.9593**

Application of a microbial toxicity assay for monitoring treatment effectiveness of pentachlorophenol in water using UV photolysis and TiO<sub>2</sub> photocatalysis. KIM (J), CHOI (K), CHO (I), SON (H), ZOH (K), (Institute of Health and Environment, School of Public Health, Seoul National University, 28 Yunkeon, Chongro, Seoul 110-799, Republic of Korea).(J. Hazard. Mater.; 148, 1-2; 2007, Sep., 5; 281-6).

Conventional approaches for monitoring the effectiveness of wastewater treatment process include evaluating the degradation of the target compound and/or generation of its nontoxic byproducts. These approaches, are, however, limited because routine chemical analyses alone are neither able to fully address potential hazard to biological receptors nor characterize potential synergistic interactions. The degradation effectiveness, of pentachlorophenol(PCP) by treatment with ultraviolet(UV)-A, UV-B photolysis, sunlight, TiO<sub>2</sub>, photocatalysis and/or their combinations, is investigated. The parent compound and its selected byproducts, are chemically analysed as well as acute toxicity is assessed by using the luminescent bacteria viz. : *Vibrio(fischeri(Microtox(R)))* during and after the various photolytic and photocatalytic treatments. Generally, the toxicity reduction pattern is observed after treatment is well corresponded with the chemical degradation data. However, it should be noted that there have been occasions that acute microbial toxicity is observed even from the treated water samples, some of which have shown the complete removal of the parent compound. This post-treatment toxicity must be due to toxic PCP byproducts, which may include polychlorinated dibenzodioxins/furans, tetrachloro-p-benzo-quinone and other intermediates. The TiO<sub>2</sub> photocatalysis with UV-B photolysis has been the most effective method to remove both PCP and its toxic derivatives in the water. The Microtox assay is an easy to use and promising approach for evaluating the effectiveness of wastewater treatment processes. (25 Ref.; 1 Tab.; 9 Fig.).

#### **43.9594**

Bio-treatment of oily sludge : The contribution of amendment material to the content of target contaminants and the biodegradation dynamics. KRIIPSALU (M), NAMMARI (DR), HOGLAND (W), (Department of Kalmar, Norravagan 47, Kalmar 39182, Sweden). (J. Hazard. Mater.; 148, 3; 2007, Sep., 30; 616-22).

An investigation, of the aerobic biodegradation of oily sludge which is generated by a flocculation-flocculation unit(FFU) of an oily refinery wastewater treatment plant, is aimed. Four 1 m<sup>3</sup> pilot bioreactors with con-

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trolled air-flow have been filled with FFU sludge mixed with one of the amendments such as sand(M1); matured oil compost(M2); kitchen waste compost(M3) and shredded waste wood(M4). The monitored variables have been pH, total petroleum hydrocarbons(TPH), polycyclic aromatic hydrocarbons(PAHs), total carbon( $C_{tot}$ ), total nitrogen( $N_{tot}$ ) and total phosphorus ( $P_{tot}$ ). The reduction of TPH, based on mass balance in M1, M2, M3 and M4 after 373 days of treatment, has been 62, 51, 74 and 49%, the reduction of PAHs has been 97% + 13%(increase), 92 and 88%, respectively. The following mechanisms alone or in combination may explain the results. (i) most organics added with amendments biodegrade faster than most petroleum hydrocarbons, resulting in a relative increase in concentration of these re-calcitrant contaminants; (ii) some amendments result in increased amounts of TPH and PAHs to be degraded in the mixture; (iii) sorption-desorption mechanisms involving hydrophobic compounds in the organic matrix reduce bioavailability, biodegradability and eventually extractability; (iv) mixture heterogeneity affecting sampling. Total contaminant mass reduction seems to be a better parameter than concentration to assess degradation efficiency in mixtures with high content of biodegradable amendments. (29 Ref.; 3 Tab.; 5 Fig.).

## **WOOL TECHNOLOGY**

### **43.9595**

Changes in shade and ultraviolet protection of pastel dyed cotton fabrics during laundering with fluorescent compounds. PUSIC (T), SOLJACIC (I), (University of Zagreb, Faculty of Textile Technology, Prilaz baruna, Filipovica 28 a, Zagreb, Croatia).(Colourage; 56, 1; 2009, Jan.; 42-8).

Ultraviolet(UV) protection of textiles is quite actual and recommended by dermatologists especially during summer. A research, which is to be conducted on the ultraviolet protective compounds in the processes of finishing and laundering. The UV protection of bleached, optical whitened and pastel dyed fabrics, such as cotton during laundering with ECE detergent containing fluorescent whitening agent(FWA) and UV absorber(UVA). The improvement of the UV protective properties after repeated laundering cycles is characterized by UPF. The presence of FWA and UVA in the detergent causes change in whiteness and shade. The intensity of these changes depends on the colour hue and chromacity. Wool textiles give better protection than silk and cotton. Generally, tightly woven and loose fitting fabrics in dark and bold colours provide sun protection as most of synthetic fibres have better UV protective ability than natural ones, mostly due to the additives added during production. (16 Ref.; 8 Tab.; 9 Fig.)

## **TANNERY. ENVIRONMENTAL PRODUCTS**

### **43.9596**

Performance evaluation of energy-intensive sectors through environmental management. CHAKRABORTY (D), (Department of Commerce, Netaji Nagar College, No. : 70/436, Netaji Subhas Chandra Bose Road, P.O. : Regent Estate, Kolkata - 700 092, India). (ICFAI J. Environ. Econ.; 6, 1; 2008, Feb.; 34-54).

World climate change is one of the chief and current environmental concerns. In the recent years,

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increased attention has been given by the industrial sector to the use of efficient and environmental friendly measures to reduce the emissions of greenhouse gases. The recent awareness of the Indian business communities towards environmental responsibility to reduce both local and global pollution, is discussed. The performance evaluation, with regard to reduction of both local and pollution, is mentioned by acting a few examples from energy-intensive Indian industrial sectors.(32 Ref.; 1 Tab.).

#### **43.9597**

Chanakya's Arthshastra : Focus on environment protection. SATHE (A), (The ICFAI Business School, No. : 71, Nirton Complex, Off. Western Express Highway, Goregaon (East), Mumbai - 400 063, India).(ICFAI J. Environ. Econ.; 6, 1; 2008, Feb.; 70-6).

The capture, of the foresighted attitude of Chanakya in conserving the environment for posterity, is attempted. The sustainable management, of natural resources as well as the agricultural sector, which had been considered as very important by Chanakya and had been implemented in practice, while conducting economic activities, is very clearly seen. Arthshastra clearly displayed a keen awareness to preserve the environment, along with the systems to enable the same.

#### **43.9598**

Effluent treatments : Membrane technologies. SIVARAMAKRISHNAN (CN), (Colourage; 55, 6; 2008, Jun.;42, 46&48).

Membrane technology is a generic term for a number of different, very characteristic separation process. Membrane separation process is based on the presence of semi permeable membranes. Membrane technologies are recognised as alternatives to conventional water treatment and as a means of polishing treated waste water effluent for reuse applications and they are energy sensitive. New membrane technologies feature the use of low pressure systems that significantly reduce energy use and operation and maintenance costs of membranes. Two keys to membrane filtration are briefly described. Four common membrane types are listed and each and every one of these types, is also briefly described. (1 Tab.).

## **LEATHER PRODUCTS**

### **FOOTWEAR**

#### **43.9599**

Internal estimates of bullwhip effect based on bootstrapping technique. HSIEH (K), CHEN (Y), SHEN (C), (Department of Information Management, National Taitung University, 654, Chung Hua Road, Sector 1, Taitung, Taiwan, Republic of China). (J. Sci. Ind. Res.; 66, 10; 2007, Oct.; 805-10).

A simulation study, on the behaviour of 95% bootstrap confidence interval for estimating bullwhip effect, is presented. The effects, of sample size, autocorrelation coefficient of customer demand, lead-time and bootstrap methods on 95% bootstrap confidence interval of bullwhip effect are presented and discussed. (20 Ref.; 5 Tab.).

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**43.9600**

US footwear market and opportunities for India. MANGIONE (P), (Footwear Distributors and Retailers of America(FDRA), 1319 First Street, Northwest 700, Washington - 20004, District of Columbia, USA).(Leathers; 24, 7; 2008, Jul.; 19-23).

India is building its strength in men's leather dress and casuals as it increases its investment in new factory productivity, capacity and infrastructure can look forward to significant new business in the United States(U.S.) market, as it also capitalizes on branded athletic shoes and women's leather products. (6 Tab.).

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