Lifelines

Eduard Hernàndez Balada obtained his degree in Chemical Engineering from the University of Barcelona (UB), Spain, in 2002. In 2005, he obtained his Master's in Chemical Engineering from the UB in cooperation with the Ecotechnology Department of the High Council for Scientific Research (CSIC), Barcelona (Spain). Currently he is a PhD candidate from the UB in cooperation with the Fats, Oils and Animal Coproducts Research Unit, at the Eastern Regional Research Center (ERRC) of the U. S. Department of Agriculture, in Wyndmoor, PA. His research has been focused on the preservation of raw hides and skins with the ultimate goal of optimizing brine curing. He is also carrying out studies on the feasibility of using enzymatically modified waste proteins as filling agents for leather.

William N. Marmer, see JALCA **93**, 328, 1998

Karel Kolomaznik, see JALCA **91**, 21, 1996

Peter H. Cooke, see JALCA **101**, 330, 2006

Robert L. Dudley, see JALCA **98**, 238, 2003

Ramon Palop, see JALCA **99**, 429, 2004

Albert M. Manich, see JALCA **93**, 233, 1998

Augustin Marsal, see JALCA **97**, 294, 2002

B. Madhan, see JALCA **100**, 291, 2005

G. Balaji is a B.Tech Leather Technology graduate from the Department of Leather Technology, Anna University located at the Central Leather Research Institute, Chennai, India
R. Aravindhan, see JALCA 99, 95, 2004

Swarna V. Kanth, see JALCA **102**, 435, 2006

S. Sadulla, see JALCA **100**, 61, 2005

J. Raghava Rao, see JALCA **93**, 156, 1998

Shuling Chai received her B.Eng. degree in 1986 from the Department of Macromolecule Material and Engineering, Chengdu University of Science and Technology (now it is Sichuan University). She got her M. Eng. Degree in 1989 from the Department of Leather Science and Engineering, Chendu University of Science and Technology. Since 1989, she has worked at Shandong Institute of Light Industry; at present, she is an associate professor in the School of Light Chemistry and Environment Engineering, Shandong Institute of Light Industry. From 2001-2004, she studied in the School of Material Science and Engineering, Beijing Institute of Technology, and got her Ph. D degree in 2004. Doctor Chai is interested in polymer synthesis and modification, leather chemical materials, and leather finishing technology. She has published more than 40 academic papers.

Lihong Fu received her B.Eng. degree in 1982 from the Department of Pulp and Paper Making Engineering, Shandong Institute of Light Industry. Since 1986, she has worked at Shandong Institute of Light Industry. She received her M. Eng. Degree in 1995 from the Department of Chemistry and Chemical Engineering, Shandong University and from 1999-2002, she studied in the Department of Leather Science and Engineering, Sichuan University; receiving her Ph. D degree in 2002. At present, she is a professor in the School of Light Chemistry and Environment Engineering, Shandong Institute of Light Industry. Doctor Fu is interested in animal and botanical fiber chemistry and has published more than 60 academic papers.

Huimin Tan is a professor, director of the doctoral program and the chief scientist at the School Material Science and Engineering, Beijing Institute of Technology. He received his M. Eng. Degree at the department of Chemical Engineering, Beijing Institute of Technology and has worked there since 1965. He was a visiting scholar at Case Western Reserve University, USA from 1980-1982 and was member of Editorial Board of many periodicals such as Journal of Applied Polymer Science (USA), Chinese Journal of Energetic Materials (China), Journal of Propulsion Technology (china). His research includes investigation in polymer modification, energetic materials and hyperbranched polymer. He has published more than 200 academic papers in china and abroad on these subjects.

The 104th Annual Convention
June 19 - 22, 2008

Grandover Resort and Conference Center
Greensboro, North Carolina

The American Leather Chemists Association will hold its Annual Meeting June 19-22 at the Grandover Resort and Conference Center in Greensboro, NC. The full technical program will begin with the Wilson Memorial Lecture on Friday morning, June 20, and continue through Saturday with approximately twenty-three lectures being presented.

This year's Wilson Lecturer will be Professor Bi Shi. Professor Bi Shi is the professor and director of The Key Laboratory of Leather Chemistry and Engineering of Ministry of Education in Sichuan University, the Chairman of Science and Technology Committee of China Leather Industry Association (CLIA), and the vice president of IULTCS. He is also a Member of National Congress of China. The title of his presentation will be "Diversified Applications of Tanning Principles." This year's technical program offers a wide array of leather technologies covering tanning to finishing and environmental issues. There will be an array of international presenters from around the world.

There will be numerous opportunities for social interaction and fun activities beginning with the Opening Reception and dinner on Thursday, June 19. A shotgun golf tournament will be held prior to the Opening Reception beginning at 1 pm. The Annual Fun Run will commence at 5:30 pm on Friday, June 20, followed at 7 pm by a Country BBQ Buffet on the lawn with music by the Shady Grove Band. The Annual Awards Banquet will be held on Saturday evening with entertainment after the banquet provided by hypnotist Dan Sanders.

The full program, detailed schedule, ALCA registration form, Grandover reservation form and travel information plus many other details will be constantly updated on the ALCA website, www.leatherchemists.org. If you are unable to access the internet, please feel free to contact Carol Adcock, Executive Secretary of the ALCA, 1314 50th Street, Suite 103, Lubbock, TX. 79412-2940. The full program with abstracts will be available in early May. Travel details and information on the amenities available at Grandover located at 1000 Club Road, Greensboro, NC can be found at www.grandoverresort.com or call 1-336-294-1800.

Contact for further information:
Sarah Drayna, ALCA Convention Vice-Chair
414-559-1104
sarah.drayna@lanxess.com

The 49th John Arthur Wilson Memorial Lecture Summary: Diversified Applications of Tanning Principles

by
Bi Shi
The Key Laboratory of Leather Chemistry and Engineering of Ministry of Education,
Sichuan University,
Chengdu 610065, P. R. China

Tanning is the basic chemical reaction which can transform hide or skin into leather. Some tannages, like vegetable tanning, aldehyde tanning and metal tanning, have been used by tanners for several thousand years. The chemical principles of these tannages have been clearly revealed in the last decades, which have extremely improved technologies of leather processing. At the same time, the scientific essences involved in these principles are enlightening our inspirations of diversified applications of tanning methods to create a series of novel functional materials based on skin collagen. Herein, some ingenious applications of the tanning principles were reported, which might inspire more scientific ideas and imaginations of leather chemists.

1. Based on the principle of vegetable tanning, a novel adsorbent which can selectively remove tannins from natural beverages and medicinal plant extracts was devised. It was prepared by processing skin into collagen fibers with proper size. This new adsorbent showed to be more effective for this purpose in comparison with commonly used polyamides and macroreticular resins.
2. According to the principle of vegetable-aldehyde combination tanning, tannins which are able to complex with metal ions were immobilized onto collagen matrix. As a result, the tannin-immobilized adsorbent and membrane materials were prepared. Both of them presented high adsorption capacity for heavy metal ions, such as Hg^{2+}, Pd^{2+}, Au^{3+}, UO_2^{2+} and Cu^{2+}, in aqueous solutions and therefore, are expected to be used for removing toxic metal ions from wastewaters or separating precious metals from mixed solutions.
3. By utilizing the principle of metal tanning, a series of functional materials were prepared by loading metal ions, such as Zr^{4+}, Fe^{3+} and Pt^{4+}, onto collagen fiber. The Zr^{4+} and Fe^{3+} loaded materials exhibited strong adsorption to inorganic anions, such as F^-, PO_4^{3-}, AsO_4^{3-}, CrO_4^{2-} and $V_2O_7^{4-}$, in aqueous solutions, showing potential to be used in environmental protection. At the same time, Fe^{3+} and Pt^{4+} loaded materials have been experimentally proven to be the heterogeneous catalysts with high catalytic activity. Meanwhile, as a special kind of metal-loaded collagen fiber, the adsorption behaviors of chrome-containing leather waste to organic compounds in wastewater were also investigated. It presented high adsorption capacity to dyes, surfactants and aromatic acids.
4. In terms of the principles of versatile metal-organic combination tannages, a series of novel carbon fiber and metal fiber materials with controllable mesoporous structures were prepared by using collagen fiber as the template. They are believed to have great potentialities in selective adsorption, chemical sensor and catalyst support.

[This Wilson lecture will be presented at the ALCA Annual Meeting, June 19-22, 2008. See our April issue, *JALCA* 103(4), 2008, for the Dr. Bi Shi biography]

Submissions for the 104th Annual Meeting Technical Program American Leather Chemists Association, June 2008

Partial Listing of Oral Presentations (Subject to Change)

An Efficient Method to Remove Hair using Sulfide Impregnated Biocompatible Vesicles by S. Sadulla, CLRI, India

Biodiesel from Tannery Waste by Karel Kolomaznik University of Zlin, Czech Republic

Use of Collagen Nanofibrils in Lost Protein Technology by Gennaro Maffia, Widener University, West Chester, PA

A Study of Patent Finishing with Pull-up Effect by Anna Bacardit, Igualada Tech Eng School, Spain

Recent Developments in the Short Term Preservation of Cattle Hides by Dean Didato, Buckman Laboratories, Memphis, TN

Microfiber Nonwovens with High Surface Area by N. Anantharamaiah and B. Pourdeyhimi, North Carolina State University

Polymeric Coatings Containing Antioxidants to Improve UV and Heat Resistance of Chrome Free Leather by CK Liu, United States Department of Agriculture, Eastern Regional Research Center, Wyndmoor, PA.

Advancements in Basecoat Technology for High Performance Leathers by Mike Tomkin, Stahl Holland b.v. Netherlands

Identification of Decorin and other Proteins in Bovine Hide during its Processing into Leather by Mila Ramos, United States Department of Agriculture, Eastern Regional Research Center, Wyndmoor, PA

Low Float Oxidative Dehairing by Bob Dudley, United States Department of Agriculture, Eastern Regional Research Center, Wyndmoor, PA

Potential Application for Genepin Modified Collagen in Leather Processing by Maryann Taylor, United States Department of Agriculture, Eastern Regional Research Center, Wyndmoor, PA

Mechanistic Study of the Interaction of an Aluminum-genipin Tannage with Hide Protein by Eleanor Brown, United States Department of Agriculture, Eastern Regional Research Center, Wyndmoor, PA

Evaluation of Commercially Available Degreasers as Brine-curing Enhancers by Eduard Hernandez, United States Department of Agriculture, Eastern Regional Research Center, Wyndmoor, PA

A Novel Eco-friendly Approach for the Production of Upholstery Leather by Samir DasGupta, LASRA

Advancements in Drum Technology by Steven Gilberg, Tan-Mach Ltd Ontario, Canada

Leather Care and Concerns by Lonnie McDonald, Textile Care Group

Splitting Revolution - New Technology for Safety, Accuracy, Productivity, and Automation by Giulio Tandura, Linta SRL

(Please see the ALCA web site, leatherchemists.org, for the latest listing of Annual Meeting papers)

ABSTRACTS

The following abstracts have been copyrighted by Chemical Abstracts (CA) and are reprinted with permission of the American Chemical Society. Photocopies or loans of most documents cited in these abstracts are available from the Chemical Abstracts Service (CAS) Document Delivery Service. For more information, write to: CAS Document Delivery Service, P.O. Box 3012, Columbus, Ohio 43210-0012, U.S.A. The phone number for this service is (800) 848-6538 extension 2956. There is a charge for this service.

Processing of leather for garments - an overview. Sasikala, L.; Ganesan, P.; Hariharan, S. Department of Textile Technology, Kumaraguru College of Technology, Coimbatore, India. *Man-Made Textiles in India* (2007), **50**(10), 356-360. Synthetic & Art Silk Mills' Research Association, ISSN: 0377-7537. AN 2007:1408524 In the past two decades leather has been used to great extent for fashionable clothing like coats, jackets, trousers, shirts, skirts, swimming suits etc., Leather and fur making is the one of the oldest trades of mankind. In the early days, the skins of animals killed for food were made fast to putrefaction by kneading them with grease, which also made them supple and soft. In addition, the skins were smoked over an open fire to prevent from rotting. The skins treated in this way, complete with coat of hair, were mainly used for fur garments to protect the wearer against the adversities of the weather. Over the centuries, further methods were developed, often as a result of chance discoveries.

Assessment of tannery industrial effluents from Kano metropolis, Kano state, Nigeria. Akan, J. C.; Moses, E. A.; Ogugbuaja, V. O.; Abah, J. Department of Chemistry, Faculty of Science, University of Maiduguri, Maiduguri, Nigeria. *Journal of Applied Sciences* (2007), **7**(19), 2788-2793. ISSN: 1812-5654. AN 2007:1388182. The aim and objective of the study was to determine pollutant levels in tannery industrial effluent from kano metropolis, Nigeria. Effluents from five tannery industries were characterized and the major sources of industrial pollution determined. Levels of heavy metals (Cu, Zn, Co, Mn, Fe, Pb and Cr) were detd. using At. absorption Spectrophotometric method, while pH, Eh, DO, TDS, Temp., sulfate, nitrate and phosphate were also determined using std. procedure. The results of the study showed that effluent quality discharged between tanneries differed significantly. Effluent chromium concentrations varied between 1.02 +/- 0.13 to 1.56 +/- 0.06 mg L-1, which are above WHO and FEPA limit of 1.0 mg L-1. Hafawa Enterprise Tannery, Unique Leather Finishing had significantly high lead concentrations, while Great Northern Tannery could be a potential source of Iron contamination in this area. Mean levels of Zn for Tannorth Tannery Limited were above max. permissible limits set by FEPA and WHO. Mean levels of sulfate, nitrate and dissolved Oxygen were also above max. permissible limits for the entire tanneries studied. Mean values of pH total dissolved solid, phosphate, temp., Cu, Co, Mn and Redox potential generally were below max. and min. permissible limits for effluent discharged into rivers. The monthly variations in the entire tannery fell within the range set up by FEPA and WHO for the discharged of tannery effluent into river. The study serves to generate relevant baseline information for Kano industrial estate.

Study on relationship of shrinkage temperature and molecular size of novel chrome-free tanning agent. Dong, Qiujing; Xia, Xiuyang; Zheng, Jianwei; Tang, Jialing. Department of Material and Chemical Engineering, Annuli Institute of Architecture and Industry, Hefei, Peop. Rep. China. *Zhongguo Pige* (2007), **36**(3), 12-15. ISSN: 1001-6813. AN 2007:1383702. A series of novel chrome-free tanning agents were synthesized with urea, glyoxal, glycine and melamine. Their structures were confirmed by FT-IR. The mol. structures of these chrome-free tanning agents were simulated by computer. The shrinkage temp.(Ts) of the leathers tanned by the above agents were tested, and the differences of Ts were explained from the point of view of mol. size.

Method for preparing waterproof natural gelatin fibers from chromium-containing shaving scraps produced during leather manufacture. Kim, Won Ju; Shin, Eun Cheol; Kim, Hun Hui; Lee, Sang Cheol. (Lee, Hyeong Gyeong, S. Korea; Park, Gyeong Ae). Repub. Korea (2007), KR 765549 **B1 20071011** Patent written in Korean. Application: KR 2006-45210 20060519. AN 2007:1374330. The title method comprises the steps of: (1) performing alkali treatment on chromium-containing shaving scraps, filtering to remove low-mol.-wt. gelatin, and extracting residual gelatin, (2) mixing extracted gelatin and water-sol. poly(vinyl alcohol), and dissolving in acidic aqueous solution to prevent coacervation phenomenon caused by colloid concentration difference, (3) wet-spinning the mixture of gelatin and poly(vinyl alcohol) through a nozzle into a coagulation bath, (4) passing coagulated gelatin fibers through a crosslinking bath for crosslinking, and drawing to improve the productivity and strength, and (5) pre-trying and aging to stabilize crosslinked gelatin fibers. The obtained gelatin fibers have high waterproof performance.

Effect of salinity (as NaCl) on physical properties of leather. Taraphdar, Asutosh; Bhaumik, H. P. Lecture in Leather Technology (Sr.), Govt. College of Engineering and Leather Technology, Kolkata, India. *Journal of the Indian Leather Technologists' Association* (2007), **57**(8), 657-680.

ISSN: 0019-5758. AN 2007:1362319. 15-pieces of wet-salted raw goat-skins have been taken for the study. Right-sides of all goat-skins have been processed for Cr.-tanned shoe-lining leather followed by conventional soaking and from left sides, 11-pieces were able to process for shoe-lining leather with the same recipe as followed for right-sides, except the soaking operation. Here the same soak liquor has been recycled for one by one soaking of 11-pieces left-side raw goat skins of gradually reduced wt. up to the completely exhausted condition of the soak water for further accumulation of salt, dirt, mud etc. from wet-salted raw goat-skins. In this process, 1-kg wet salted raw goat-skin would be able to soak with the 1-kg fresh water within more or less same time of conventional soaking instead of 6-9 kg fresh water which is normally used for washing and soaking purpose in conventional process. Thus, in this way 5-8 kg fresh water per kg of wet-salted raw goat-skin can be saved from soaking operation. On the other hand, in spite of gradual increment of salt content in soaked skins due to recycling of soak-liquor, they are limed together as a lot and followed the same recipe for the preparation of shoe lining leather. After finishing, different phys. properties of both conventional and experimental samples have been measured and compared. The properties what have been found for the experimental samples are very much interesting and encouraging and all these are shown and discussed in this paper.

Method for manufacturing regenerated protein fibers from collagen and water-soluble polymer complex. Kim, Hun Hui; Lee, Sang Cheol; Shin, Eun Cheol; Kim, Won Ju. (Korea Institute of Footwear & Leather Technology, S. Korea). Repub. Korea (2007), KR 750780 **B1 20070820** Patent written in Korean. Application: KR 2006-24614 20060317. AN 2007:1299394. The title method comprises the steps of: (1) extracting collagen from chromium-containing shaving scrap, which is the waste of leather manufacturing process, through hydrolysis (physical treatment and biochemical treatment), (2) adding polyvinyl alcohol and alginic acid to increase spinning stability and physical properties, (3) preparing spinning solution, (4) performing wet-spinning through spitting to a coagulation bath containing more than two coagulating materials by a spinning nozzle, and (5) performing chemical cross-linking through a cross-linking bath containing a cross-linking material. The regenerated protein fibers have good water resistance and multiple purposes.

Influence of fatliquor on the physical and chemical properties of leather. Ramon, Palop; Liu, Xiankui; Wu, Xionghu; Shi, Hongyue. Spain. Zhongguo Pige (2007), 36(3), 42-45. Publisher: Zhongguo Pige Zazhishe, ISSN: 1001-6813. Journal written in Chinese. AN 2007:1383709. The optimal application conditions of three different fatliquors were investigated and the leather with good quality was obtained. A sulfated triglyceride was considered to be a ref. fatliquor in the experiments. The performances of three different kinds of fatliquoring agents, namely, sulfited fish oil, fatliquoring polymer and sulfited phosphoric ester were studied and compared. The influence of the three fatliquors on the following properties was reviewed: degree of softness, wt., thickness, compactness, intensity of color, tensile strength, tear resistance, extractable fatty matter and volatile fat. The optimal application technology was gained by using statistical design to compare various fatliquors with the ref. sulfated fatliquor.

Composition for treating leather employing detergent component comprising stearic acid, emulsifier, surfactant, glycerin and flowing paraffin, and reinforcing component comprising neutral fat, organic acid and amino-modified silicone. Kwack, Chung Shin.(S. Korea).Repub. Korea (2007), KR 732178 B1 20070625 Patent written in Korean. KR 2007-3353 20070111. AN 2007:1345711. Provided are a compound for treating leather to improve the gloss and flexibility of leather, a method for treating the surface of leather by using the compound, and a method for cleaning leather by using the compound. The compound comprises a detergent component and a reinforcing component, wherein the detergent component comprises 45-70 parts by wt. of stearic acid, 5-25 parts by wt. of an emulsifier, 8-30 parts by wt. of a surfactant, 1.0-10 parts by wt. of glycerin, 1.0-15 parts by wt. of flowing paraffin and optionally 2-15 parts by wt. of an antifoaming agent; and the reinforcing component comprises a neutral fat, an org. acid and an amino-modified silicone. Preferably the compound has a pH of 4.0-5.5.

Antioxidant fermenting microorganism agent reducing smell and volatile organic compounds from leathers, leathers comprising the antibacterial agent, and preparation of leathers. Lim, Taek; Ko, Jae Yong; Lee, Eun Ju; Kim, In Sung; Lee, Chang Hong. (Dymos Inc., S. Korea; Seoul National University Industry Foundation). PCT Int. Appl. (2007), 17pp.WO 2007129862 **A1 20071115** Patent written in English. Application: WO 2007-KR2269 20070509.KR 4203-6 20060510.
AN 2007:1302970.The antioxidant fermenting microorganism agent is used to reduce an odor and a volatile org. compd. generated from leather so that humans are protected from noxious substances generated from leather. Leather is used as a seat for vehicles or a material for the interior of a vehicle. An antioxidant fermenting microorganism agent comprises a microorganism mixture that contains photosynthetic bacteria, yeast, actinomyces, and lactobacillus at a germ no. ratio of 50-150:0.5-1.5:0.5-1.5:3-7, water, an org. carbon source, and a natural salt.

Retirement Announced

Dr. William N. Marmer, Research Leader of the Fats, Oils and Animal Coproducts Research Unit (FOAC), Eastern Regional Research Center (ERRC), Wyndmoor, Pennsylvania, and current ALCA President, retired from the ERRC as of March 31, 2008, almost thirty-eight years since he began his research career there. The ALCA wishes to congratulate Bill and has sent him the following letter:

THE AMERICAN LEATHER CHEMISTS ASSOCIATION

1314 50th St., Suite 103, Lubbock, TX 79412-2940

Ph: 806-744-1798 **Fax:** 806-744-1785 **Web:** leatherchemists.org **Email:** alca@leatherchemists.org

Carol Adcock, Executive Secretary

March 28, 2008

Dr. William N. Marmer
United States Department of Agriculture
Eastern Regional Research Center
600 East Mermaid Lane
Wyndmoor, PA 19038

Dear Bill:

The American Leather Chemists Association would like to congratulate you on your retirement from service to the United States Department of Agriculture. Your tremendous career in producing cutting-edge leather research has enabled you to become one of the most prominent and effective leaders in our Association's 105-year history.

Your service and achievements have been impressive to say the least. During your 20 years of membership in the ALCA, you have served as President, Vice President, and Vice President Elect. As Vice President you arranged a spectacular technical program for the joint IULTCS / ALCA meeting that was held in our nation's capital last year. You attracted the top leather science researchers from around the world, which made for an unforgettable experience for all.

The ALCA is proud to recognize the numerous leadership positions that you held in our Association, including your service as Councilor during the period 2002-2005 (for which as I recall, you beat me on a tie-breaking vote held during the meeting). Obviously, there are no hard feelings and it has been my pleasure to serve under you these past two years!

We will not forget your efforts as Chair of the John Arthur Wilson lecture committee (1991, 2005), as well as your service on the Alsop Award committee (1998, 2002), and the O'Flaherty Award committee (2002). Furthermore, you served on the Research Liaison Committee since 1988 and were recognized for the Lollar Prize Paper in 2007.

Bill, please accept our deepest gratitude for dedicating so much of your time and energy to ensure the success of our Association for the past two decades. We will continue to thrive on the strong foundation that you have built for us, and hope that you will make plans to attend our Annual Meetings for many years to come.

Sincerely yours,

Stephen S. Yanek
Stephen S. Yanek
Vice President