

THE

Journal

OF THE AMERICAN
LEATHER CHEMISTS ASSOCIATION



114th Annual Convention

to be held at the
Eaglewood Resort & Spa
Itasca, IL
June 19-22, 2018

For more information go to
[leatherchemists.org/
annual_convention.asp](http://leatherchemists.org/annual_convention.asp)

ISSN: 0002-9726

November 2017

Vol. CXII, No. 11

JALCA 112(11), 360-398, 2017

Contents

Thermodynamic Investigations on Chrome and Aluminum Tanning	360
by Li Wang, Wie-mo Han, Yue Yu, Jian-fei Zhou, Wen-hua Zhang and Bi Shi	
Application of Y-shaped Polyurethane and Polyacrylic Acid as a Complex Retanning Agent in Aldehyde-tanned Goat Leather	367
by Shuangquan Lai, Yong Jin, Hanping Li, Lei Zhang and Xin Yin	
The Durability of Antimicrobial Effect of Leathers Finished with Oregano Oil	377
by E. Bielac, E. Marcinkowska, J. Sygula-Cholewinska	
Nonparametric Bootstrap Method for Estimation Upper Confidence Limits for Exposure Point Concentration of Formaldehyde in Fur Products — A Case Study of Tongxiang City, China	387
by Xuzheng Yuan, Xuechaun Wang, Weina Lu and Sujie Jiang	
Lifelines	395
ALCA and Industry News	
Call for Papers - 114th Annual ALCA Meeting, June 19-21, 2018	396
Statement of Ownership, Management and Circulation	397

Communications for Journal Publication

Manuscripts, Technical Notes and Trade News Releases should contact

MR. ROBERT F. WHITE, *Journal Editor*, 1314 50th Street, Suite 103, Lubbock, TX 79412, USA.

E-mail: jalcaeditor@prodigy.net

Mobile phone: (616) 540-2469

Contributors should consult the Journal Publication Policy at

http://www.leatherchemists.org/journal_publication_policy.asp

JOURNAL OF THE AMERICAN LEATHER CHEMISTS ASSOCIATION

Proceedings, Reports, Notices, and News
of the
AMERICAN LEATHER CHEMISTS ASSOCIATION

OFFICERS

DAVID PETERS, *President*
DLP Advisors
8206 Santa Rosa Court
Sarasota, FL 34243

MIKE BLEY, *Vice-President*
Eagle Ottawa – Lear
2930 Auburn Road
Rochester Hills, MI 48309

COUNCIL

Shawn Brown
Quaker Color
201 S. Hellertown
Quakertown, PA 18951

Joseph Hoelfer
The Dow Chemical Company
400 Arcola Rd.
Collegeville, PA 19426

Jeffrey D. Miller
GST AutoLeather, Inc.
31601 Industrial Road
Livonia, MI 48150

Jose Luis Gallegos
Elementis LTP
546 S. Water St.
Milwaukee, WI 53204

Katie Kutskill
Eagle Ottawa – Lear
2930 Auburn Road
Rochester Hills, MI 48309

John Rodden
Union Specialties, Inc.
3 Malcolm Hoyt Dr.
Newburyport, MA 01950

EDITORIAL BOARD

Dr. Meral Birbir
Department of Biology
Marmara University
Istanbul, Turkey

Dr. Anton Ela'mma
Retired
Perkiomenville, Pennsylvania

Dr. Cheng-Kung Liu
Eastern Regional Research Center
U.S. Department of Agriculture
Wyndmoor, Pennsylvania

Dr. Bi Shi
National Key Laboratories
Sichuan University
Chengdu, China

Chris Black
Consultant
St. Joseph, Missouri

Elton Hurlow
Buckman International
Memphis, Tennessee

John Moore
Retired
Petaluma, California

George Stockman
Retired
Clemson, SC

Dr. Eleanor M. Brown
Eastern Regional
Research Center
U.S. Department of Agriculture
Wyndmoor, Pennsylvania

Prasad V. Inaganti
Wickett and Craig of America
Curwensville, Pennsylvania

Dr. Edwin H. Nungesser
Dow Chemical Company
Spring House, Pennsylvania

Dr. Palanisamy
Thanikaivelan
Central Leather
Research Institute
Chennai, India.

Kadir Donmez
Leather Research Laboratory
University of Cincinnati
Cincinnati, Ohio

Steve Lange
Leather Research Laboratory
University of Cincinnati
Cincinnati, Ohio

Dr. J. Raghava Rao
Central Leather
Research Institute
Chennai, India

Brandon Yoemans
S. B. Foot Tanning Co.
Red Wing, Minnesota

Xue-Pin Liao
National Engineering Laboratories
Sichuan University
Chengdu, China

Andreas W. Rhein
Tyson Foods, Inc.
Dakota Dunes, South Dakota

PAST PRESIDENTS

G. A. KERR, W. H. TEAS, H. C. REED, J. H. YOCUM, F. H. SMALL, H. T. WILSON, J. H. RUSSELL, F. P. VEITCH, W. K. ALSOP, L. E. LEVI, C. R. OBERFELL, R. W. GRIFFITH, C. C. SMOOT, III, J. S. ROGERS, LLOYD BALDERSON, J. A. WILSON, R. W. FREY, G. D. McLAUGHLIN, FRED O'FLAHERTY, A. C. ORTHMANN, H. B. MERRILL, V. J. MLEJNEK, J. H. HIGHBERGER, DEAN WILLIAMS, T. F. OBERLANDER, A. H. WINHEIM, R. M. KOPPENHOEFER, H. G. TURLEY, E. S. FLINN, E. B. THORSTENSEN, M. MAESER, R. G. HENRICH, R. STUBBINGS, D. MEO, Jr., R. M. LOLLAR, B. A. GROTA, M. H. BATTLES, J. NAGHSKI, T. C. THORSTENSEN, J. J. TANCOSU, W. E. DOOLEY, J. M. CONSTANTIN, L. K. BARBER, J. J. TANCOSU, W. C. PRENTISS, S. H. FEAIRHELLER, M. SIEGLER, F. H. RUTLAND, D. G. BAILEY, R. A. LAUNDER, B. D. MILLER, G. W. HANSON, D. G. MORRISON, R. F. WHITE, E. L. HURLLOW, M. M. TAYLOR, J. F. LEVY, D. T. DIDATO, R. HAMMOND, D. G. MORRISON, W. N. MULLINX, D. C. SHELLY, W. N. MARMER, S. S. YANEK, D. LeBLANC, C. G. KEYSER, A. W. RHEIN, S. GILBERG, S. LANGE, S. DRAYNA

THE JOURNAL OF THE AMERICAN LEATHER CHEMISTS ASSOCIATION (USPS #019-334) is published monthly by The American Leather Chemists Association, 1314 50th Street, Suite 103, Lubbock, Texas 79412. Telephone (806)744-1798 Fax (806)744-1785. Single copy price: \$8.50 members, \$17.00 non-member. Subscriptions: \$175 for hard copy plus postage and handling of \$60 for domestic subscribers and \$70 for foreign subscribers; \$175 for ezine only; and \$195 for hard copy and ezine plus postage and handling of \$60 for domestic subscribers and \$70 for foreign subscribers.

Periodical Postage paid at Lubbock, Texas and additional mailing offices. Postmaster send change of addresses to The American Leather Chemists Association, 1314 50th Street, Suite 103, Lubbock, Texas 79412.