AMERICAN CHEMICAL SOCIETY
KENTUCKY LAKE SECTION

KLS-ACS
2010 Officers

Chair
Harry Fannin
MSU
Harry.fannin@murraystate.edu

Chair Elect
Robbie Montgomery
UTM
rmontgomery@utm.edu

Past Chair
Sandra Ashford
Honeywell
sandra.thompson@honeywell.com

Secretary/Treasurer
Brent Montgomery
USEC
montgomeryjb@pgdp.usec.com

Councilor
S. K. Airee
UTM
skaire@utm.edu

Alternate Councilor
Charles Baldwin
Union University
cbaldwin@uu.edu

April 2010 Kentucky Lake Section Meeting
@
The Ole West Steakhouse
Martin, TN
Thursday, April 22, 2010

Social @ 5:30, Dinner @ 6:00, Presentation @ 7:00

The Ole West Steakhouse is located at 943 East Main St (Hwy 431)

The price is $10 (Students $5)

Menu:
Country Style Salad, Dinner & Dessert Buffet

Presentation:
"Polymers: the Stuff of Commerce and Life"
By
Alan Tonelli
North Carolina State University

See Reverse Side for Biographical Sketch and Abstract

Dear Members

Although it has been a long winter, spring is nearly here. It is hard to believe but the section's programming for 2010 is already a quarter over. If you have a chance please visit the section's website at http://kentucklake.site.acs.org for additional information on activities in the section. Additionally, if you wish to receive meeting announcements by email rather than post to save the section the postage cost, please contact Brent at montgomeryjb@pgdp.usec.com. I hope to see you at the April meeting. Harry Fannin – KLS-ACS 2010 Chair

Biographical Sketch

B.S. in Chemical Engineering from the University of Kansas in 1964 and a Ph.D. in Polymer Chemistry from Stanford in 1968, where he was associated with the late Professor Paul J. Flory. He was a member of the Polymer Chemistry Research Department at AT&T Bell Laboratories, Murry Hill, N.J. for 23 years, and in 1991 joined the Fiber and Polymer Science Program in the College of Textiles at North Carolina State University in Raleigh

Abstract

The high molecular weight, long-chain natures of polymers are used to explain why polymer materials dominate commerce and nature. Unlike materials made exclusively from small-molecules or atoms, polymeric materials possess an additional degree of freedom by which they can respond to their environments. Their long-chains have the ability to dramatically alter both their over all sizes and shapes in response to the environment in which they are placed and/or the stresses to which they are subjected. Facile rotation about their backbone bonds confers upon polymers an internal degree of freedom which allows them to adopt a myriad of sizes and shapes. Unlike small-molecule and atomic materials, which may only respond by altering their intermolecular or interatomic spatial arrangements, polymer chains can in addition uniquely respond internally by changing their intramolecular sizes and shapes. The singular internal flexibility of polymers is utilized to explain their unique properties as exhibited by both man-made synthetic polymers and naturally-occurring biopolymers. For example, it is concluded that life is critically dependent upon the ability of biopolymers to undergo intramolecular, single-chain conformational phase transitions in order to organize into the complex bio-
materials found in nature.