



AICHE Orange County

NEWSLETTER OF THE ORANGE COUNTY SECTION, AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

No. 140

<http://www.aiche-orangecounty.org>

October 2005

LA-OC Joint Meeting OCTOBER DINNER MEETING

Controlling Protein Folding with Simple Light Illumination

C. Ted Lee, Jr.

Department of Chemical Engineering and
Material Science
The University of Southern California

Tuesday, October 25, 2005
5:30 PM

Proteins are the workhorses of biology. Beginning as simple oligomers formed from the 20 naturally occurring amino acids, proteins fold in response to differing degrees of water affinity of these amino acids. It is this seemingly simple folding event, and the resulting shape that the protein adopts in solution, which gives rise to a functional protein. However, proteins are not static entities and instead regularly undergo conformational changes during the course of activity, particularly upon interaction with other molecules. As such, information on the native state alone will not provide complete understanding of the form-function relationship. Instead, precise knowledge of how a protein unfolds/refolds in response to various stimuli is required. To investigate this phenomenon, we have developed a novel method that allows protein conformation to be reversibly controlled with simple light illumination. This method relies on the interaction of proteins with photo-responsive surfactants that can be switched

from the photo-active to the photo-passive state with light. Surfactants generally disrupt the intramolecular amino acid contacts of a protein, resulting in protein unfolding. In the case of photo-responsive surfactants, however, the surfactant-amino acid associations can be switched "on" or "off" with light illumination. The resulting photo-control of protein conformation will be investigated on several length scales, ranging from the macromolecular (SANS, DLS, absorbance and fluorescence spectroscopy) to small groups of amino acids (FT-IR spectroscopy) to the atomic (NMR spectroscopy). The thorough, mechanistic understanding of protein folding obtained from this work will provide original insight into important biological and biotechnical processes.

Speaker: C. Ted Lee, Jr.
1994 B.S., Chemical Engineering, Clemson University
1996 M.S., Chemical Engineering, Clemson University
2000 Ph.D., Chemical Engineering, The University of Texas at Austin
2000-2001 Post-doctoral researcher, The University of Texas at Austin
2001-2003 Post-doctoral researcher, Massachusetts Institute of Technology
2003- Assistant Professor, Department of Chemical Engineering, University of Southern California

Meeting Schedule:

5:30 p.m.	Social Hour
6:30 p.m.	Dinner
7:20 p.m.	Break
7:30 p.m.	After-Dinner Program



Place: Khoury's Restaurant.

110 North Marina Dr., Long Beach

Directions: From the north, take the 605 south and take the Seventh Street/Long Beach exit. Go 1.4 miles and take the Studebaker Road exit. Continue south on Studebaker Road for 1.4 miles. Turn right on East Second Street. Continue on another 0.6 miles, then Turn left on Marina Drive at the first signal after PCH. Proceed 1 mile and enter the parking lot for Khoury's.

From Torrance/South Bay, take the 405 south and exit on Studebaker Road. Continue south on Studebaker for 2.1 miles. Turn right on East Second Street. Continue on another 0.6 miles, then Turn left on Marina Drive at the first signal after PCH. Proceed 1 mile and enter the parking lot for Khoury's.

From Orange County, take the 405 north and exit on Westminster Ave. West. Go 1.9 miles until Westminster Ave. becomes Westminster Blvd. Go

an additional 3.9 miles until Westminster becomes East Second Street. Continue on another 0.6 miles, then Turn left on Marina Drive at the first signal after PCH. Proceed 1 mile and enter the parking lot for Khoury's.

Reservations: Please make your reservation for diner by sending an e-mail reservation to socal.aiche.feedback@earthlink.net (please cc: your message to Alan.E.Benson@worleyparsons.com) no later than Thursday, 20 Oct., 2005.

Cost: Members and guests, \$20 with a reservation, \$25 at the door; Students \$5 with reservation, \$10 at the door; Unemployed/Retired, \$15 with reservation, and \$20 at the door.

Starting with the month of January 2005, every third meeting a member attends is FREE with reservation

Legal Corner

“KEEPUS” Committee Status (Newsletter FY06-03)

Bob Katin

Since my last newsletter there have been two Stakeholders meetings held by the consultant to the Assembly Business and Professions (B&P) Committee. These meeting will be held to try to pass SB 246 at the B&P hearing currently scheduled for 14 FEB 2006.

The 1st meeting was held on 31 AUG 05. Attendees included the B&P consultants, BPELS staff (Cindi & Joanne); BPELS Board EE member; PECG (Steve Baker, lobbyist; Art Duffy & Bruce Blanning); CELSOC (Richard Markuson); and CLCPE. CELSOC tried to say the purpose of the State Engineers' Act was for consumer protection and since the public only hires civil engineers, only civil engineering needs to be recognized. PECG was the major opposition, saying the purpose is public health & safety. CELSOC said that industry hires ChE's; industry is smart therefore, there is no need to recognize ChE's. PECG disagreed and said that recognizing specific engineering disciplines is not a function of the numbers of engineers in that discipline.

The 2nd Stakeholders meeting occurred on 29 SEP 05. Attendance was similar to the last meeting except there were representatives from the marketplace, including agriculture. PECG and CELSOC continue to claim the present law causes no problem and does not need to change. The consultants to the B&P Committee provided a 2-page list of problems with the State Engineers Act, including:

1. The definition of civil engineering in the law is very broad, causing other disciplines the risk of being arrested for practicing CE.
2. Therefore other engineers are inhibited from providing services that would protect the public health and safety.
3. Other disciplines would have to get a Civil PE to perform their work or run the risk of being penalized for practicing CE.
4. Strict enforcement of the State Engineers' Act would lead to endless “turf battles” over who can or is required to do certain engineering tasks. This distracts from the issue of whether or not an engineer is competent and qualified to do a given task.

The next Stakeholders meeting is 13 OCT 2005 in Sacramento. If you are an employee of the marketplace



and can represent a Fortune 500 firm such as bio (Genentech or Genencor) or refining (ChevronTexaco or ConocoPhillips) or Silicon Valley semiconductor firm and can express how your company hires ChE's to protect the public health and safety, please let me know.

We still need support letters. Proponents are listed on the NorCal AIChE website <http://aiche-norcal.org/Government/lettervolsSep05.pdf> . If your company is not listed, write a letter on company letterhead and copy Bob Katin at P. O. Box 4727, Antioch, CA 94509. If you do not have the authority to sign a letter on company letterhead, show the requested letter <http://aiche-norcal.org/Government/letterJuly05.doc> to your boss and ask your boss to sign a support letter. If you know of another company that is not listed, won't you please call your colleague and ask them to write a letter to **support ChE's RIGHT TO WORK!** If you are a State employee and you have not already signed a petition saying you do not agree with the PECG position, please contact me.

Thanks,
Bob Katin, PE
Chair, AIChE's California Government Relations Committee (aka KeepUs)
phone (925) 755-1150
fax (925) 754-8524
rakatin@pacbell.net

STUDENT CORNER

Please contact the newsletter editor if you would like to publish any AIChE student chapter meeting summary or contribute any articles related to science/engineering.

Newsletter Contributors Wanted

The newsletter editor would like to hear from you if you have one or more brief articles to contribute, especially a review or brief discussion of a good website, technical book, etc.

Professional Engineering Employment Update

Job Seeking Members can receive a list of web sites of area companies that sometimes hire ChEs. Contact the Senior Member Everett Knell at EWKnell@aol.com to receive this list by e-mail. Put "OCAICHE Company List" in the subject line of your email request.

- ① If you have an employment opportunity in Southern California for a chemical engineer, the newsletter will advertise it for free.

2005 Orange County AIChE Officers

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Webmaster	Cheryl Zheng e-mail: cherylzheng01@yahoo.com
Program Committee Member	Dale Botts - DeMenno/Kerdoon (714) 686-2791 e-mail: dalebotts@adelphia.net



Got Environmental Headaches?

- *Contaminated Soil & Ground Water?*
- *Health Risk Issues?*
- *Compliance Issues?*
- *Suing?*
- *Being Sued?*

We Can Help

- *Turnkey RI, FS, RA*
- *Quantify & Manage Risk*
- *Negotiate with Agencies*
- *Air, Waste Water, Storm Water Permitting*
- *Expert Witness/Litigation Support*



15375 Barranca Parkway • Suite F-106 • Irvine, California 92618-2207
info@englandgeosystem.com • www.englandgeosystem.com
(949) 453-8085 • FAX (949) 453-0733

American Institute of Chemical Engineers
ORANGE COUNTY SECTION
P.O. Box 19362
Irvine, CA 92623

DATED MATERIAL

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