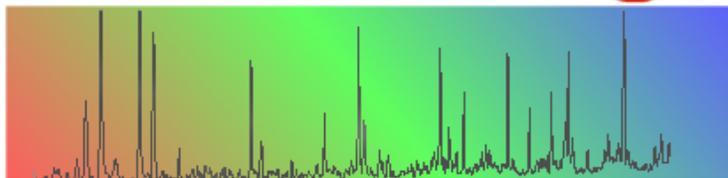




# SAS-Chicago



Please visit our linked business cards on the [last page](#) of this flyer.

## October Meeting

Tuesday, October 9, 2007

The October 2007 meeting will be held at the Wellington Restaurant, located at 2121 S Arlington Heights Rd, Arlington Heights, IL 60005. See the map on the following page.

Social Hour: 5:30 PM

Dinner: 6:30 PM

Speaker: 7:30 PM

### Fast Kinetics Raman: Investigation of Inhibition Effects in Acrylate/Epoxy Hybrid Systems Using Raman Spectroscopy

by

**Julie Jessop, Ph.D.**

*The University of Iowa, Iowa City*

Hybrid photopolymerizations have tremendous promise for solving the oxygen inhibition and moisture problems that plague free-radical and cationic polymerizations, respectively; however, there is an important need for fundamental knowledge about the reactions in these systems. The goal of this research is to characterize the fundamental kinetics of epoxy and acrylate hybrid systems and to correlate the chemical distribution of the species with the resulting physical properties.

The hybrid monomer 3,4-epoxy-cyclohexyl-methyl methacrylate, which contains both acrylate double-bond and epoxide ring moieties, was photopolymerized by free-radical and/or cationic photoinitiators to produce a thin coating. The Raman scattering technique, which is based upon changes in the wavelength of the incident light after interaction with the rotational and vibrational energy levels in molecules, was used to detect chemical bonds and their changes during and after photopolymerization in these single and dual reaction systems. Conversion and chemical composition at the surface and different depths were obtained by Raman confocal microscopy, and the effect of formulation, oxygen and moisture upon surface quality and chemical composition was investigated. Conversion depth profiles approached bulk values, which were obtained by Raman spectroscopy in real time. Cross-linking at epoxide sites decreased sensitivity to oxygen and improved film-forming properties. The dual-initiation scheme reduced sensitivity to moisture by removing the cationic induction time and capping the ultimate epoxide conversion; however, physical testing of the films suggests that the cross-linking density decreased.

Please make your dinner reservations for the upcoming meeting by email at [sas.chicago@bigfoot.com](mailto:sas.chicago@bigfoot.com), by using the form on our web page < <http://www.sas-chicago.org/Online%20Registration%20at%20Wellington.htm> > or by calling Slav Stepanovich at 630-515-5353. Leave your name company affiliation, a telephone number, the number of reservation and your choice of entree. Please call by noon Friday, October 5th, so that proper arrangements can be made with the restaurant. If you can't attend, cancel by Friday noon: SAS is charged for no shows.

**Entree choices: London Broil with Bordelaise Sauce, Breast of Chicken with Teriyaki Sauce, or Vegetarian Fettuccine.**

Dinner Cost Members: \$25

Students and Unemployed Members: \$10

Non-members: \$30

## Biography of Professor Julie Jessop

Julie Jessop is an Assistant Professor of Chemical & Biochemical Engineering at the University of Iowa. Her research interests revolve around polymers and the use of spectroscopic techniques (fluorescence, absorption, Raman scattering, etc.) for in-situ and on-line characterization of these systems. Some applications of her research include identification of volatile components in UV-cured coatings, the monitoring of acid concentration and free volume evolution in photoresists used in microlithography, the investigation of polymers produced through cationic ring-opening photopolymerizations of cyclic ethers, and understanding the effects of leaching in photopolymerized dental composites. She is actively involved in the American Chemical Society as the secretary for the Polymeric Materials: Science and Engineering Division and as a technical committee member for RadTech. She enjoys participating in engineering outreach to middle and high school students, and she is an instructor for Project Lead the Way, which helps high school teachers deliver pre-engineering courses. She received her Ph.D. in chemical engineering from Michigan State University.

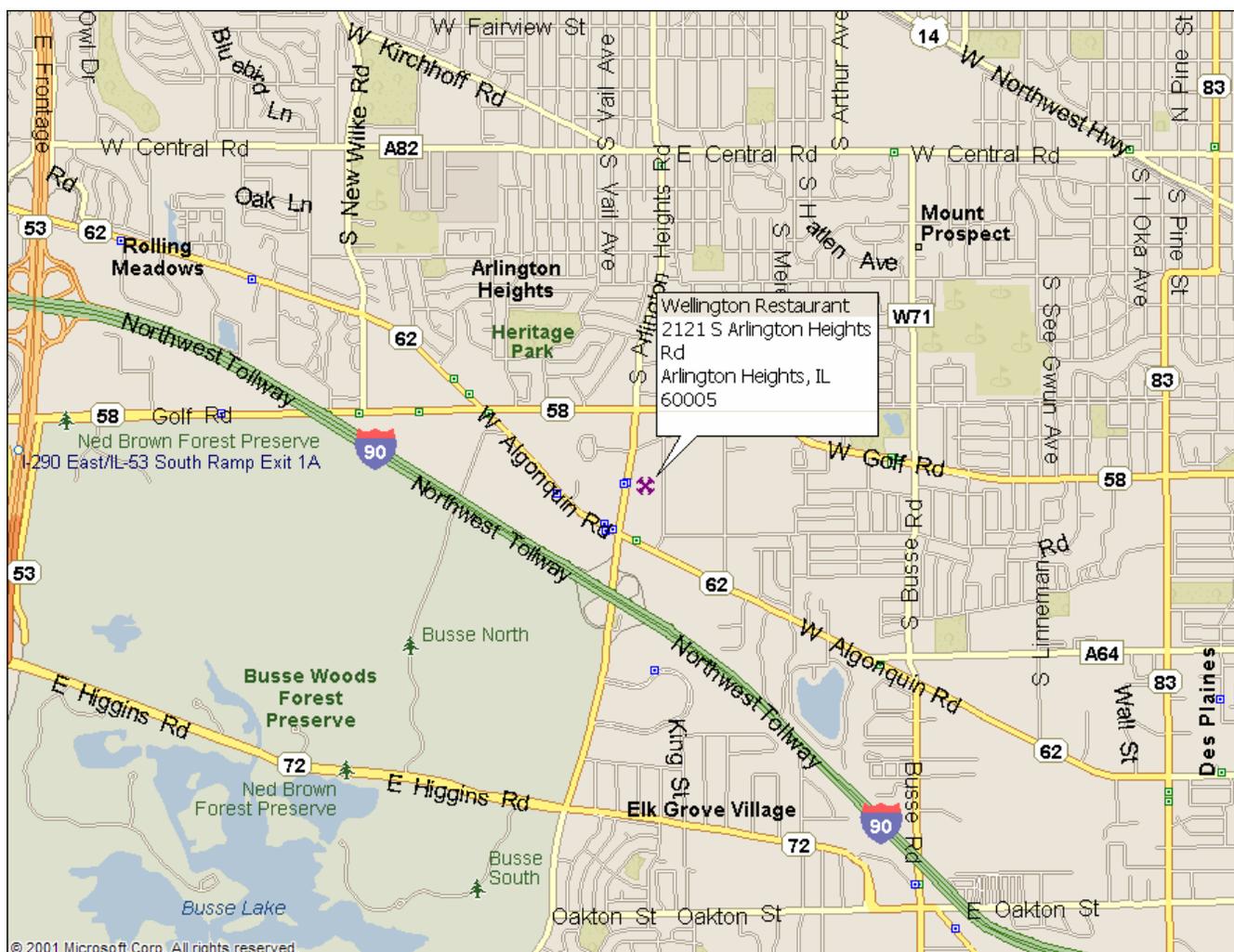
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## DIRECTIONS TO THE WELLINGTON RESTAURANT

From Chicago: Take Interstate 90 (Northwest Tollway) west to Arlington Heights Road exit. Proceed north to the restaurant.

From the southwest: Take 355 north to Route 53 north and exit at Algonquin Road east. Go to Arlington Heights Road. Turn left (north) and proceed to the restaurant.



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