



University of New Hampshire and Emulsion
Polymers Consulting and Education, LLC present:

Core-Shell Latex Particles- Fundamental Aspects of Morphology Control



***3.5 Day Interactive Workshop
June 2-5, 2014
On the Campus of the University of
New Hampshire
Durham, New Hampshire USA***

Faculty

***Donald C. Sundberg, PhD
John G. Tsavalas, PhD
Jeffrey M. Stubbs, PhD***

OBJECTIVES This intensive workshop deals with the basic factors controlling particle morphology in synthetic latices used for coatings, adhesives, impact modifiers and biomedical applications.

Thermodynamic principles are applied to investigate the effect of experimental recipe and process variables. Computer simulations are used to design latex particles and analyze the morphology via TEM. Non-equilibrium morphologies and emulsion polymerization kinetics are treated in detail through experimental design and computer simulation. Participants should be familiar with operating computers in a windows environment.

INTENDED AUDIENCE: This workshop is directed towards scientists and engineers involved in product development and latex processing operations, and who produce or use water based latices for architectural and paper coatings, textiles and carpet backings, pressure sensitive adhesives, printing inks, impact modifiers, etc.

STRUCTURE OF THE WORKSHOP: This 3.5 day workshop will be conducted in a ***highly interactive manner*** with participants being engaged in discussions, demonstrations, and problem solving.

REGISTRATION INFORMATION

The registration fee includes the full book of slides for the workshop, coffee breaks, lunches and Tuesday evening dinner. It does not include accommodations or travel. Early registration is recommended due to the workshop size limitation of 24 participants.

Registration Fee: \$1850 USD
Registration Form --> Go to page 4

Contact for further information:

don.sundberg@unh.edu.

HOTELS, TRAVEL, LOCAL ATTRACTIONS

Hotels in the local area are listed on the last page. Each has a link to its website for on-line reservations. The Durham, NH area is well served by Logan Airport in Boston, Massachusetts and Manchester Airport in Manchester, NH. Durham is located in the seacoast region of New Hampshire and many tourist options are available. www.visitnh.gov/. Also see the UNH website www.unh.edu.

Core-Shell Latex Particles- Fundamental Aspects of Morphology Control

Day 1

AM:

1. Goals of the Workshop
2. Examples of particle morphologies
3. Equilibrium and kinetic structures
4. Emulsion polymerization principles
5. Preparation of first stage (seed) latex
6. Post-polymerization treatment

PM:

1. Design of seed latex recipe/process
2. Morphology characterization of structured latex particles
3. Determination of particle structure from analytical data

Day 2

AM:

1. Equilibrium morphologies
2. Free energy concepts/applications
3. Interfacial tensions
4. Effect of cross-linking
5. Effect of functional additives

PM:

1. Use of interactive software for predicting equilibrium morphology
2. Computation of interfacial polymer
3. Morphology predictions through examples
4. Hands-on use of UNHLATEX[®] Eqmorph software – design problem

Day 3

AM:

1. Kinetic controlled morphology
2. Multi-phase polymerization
3. Phase diagrams
4. Diffusion in polymers
5. Phase separation, latex aging

PM:

1. Use of interactive software for predicting kinetic morphology
2. Morphology predictions through examples
3. Hands-on use of UNHLATEX[®] Kmorph software – design problem

Day 4

AM:

1. Structural evolution of latex particle morphology during polymerization
2. Interactive session – developing a morphology matrix
3. Multi-lobed particles – a new equilibrium basis
4. Morphology decision matrix and closing comments

Faculty Profiles

Professor Donald C. Sundberg has been working in the field of emulsion polymers for 47 years. He received a bachelor's degree in chemical engineering from Worcester Polytechnic Institute (Massachusetts) and his Ph.D. from the University of Delaware. He spent 5 years working on impact modifiers for ABS resins with the Monsanto Company prior to pursuing a career in the university setting. He has extensive research experience in emulsion polymerization and is widely recognized for his work on structured latex particles. This has resulted in nearly 100 peer reviewed publications and he has presented many conference papers. He spent a sabbatical year at the Institute for Surface Chemistry in Stockholm and was Chair of the Gordon Research Conference on Polymer Colloids. He maintains active research interests in emulsion polymerization kinetics, interfacial science and polymer morphology control, diffusion in polymers, microencapsulation, and coatings. He is an Emeritus Professor of Materials Science at the University of New Hampshire and is the founder of Emulsion Polymers Consulting and Education, LLC.

Professor John G. Tsavalas is a Research Assistant Professor in the Nanostructured Polymers Research Center and the Materials Science Program at UNH. He came to UNH after 5 years as Senior Research Scientist in Dow Latex R&D at Dow Chemical in Midland, Michigan. There he worked on a wide variety of latex product and process development with particular emphasis on structured latex particles. He holds a B.S. in Chemical Engineering from the University of Virginia and both the M.S. and PhD in Chemical Engineering from Georgia Tech. His active areas of research are structured latex particles, micro- and nano-encapsulation, hybrid/acrylic latices, smart multi-functional coatings, diffusion and phase separation in reactive polymer systems.

Dr. Jeffrey M. Stubbs is a Senior Research Scientist at DSM NeoResins in Wilmington, Massachusetts where he works on acrylic latices and polyurethane dispersions. He spent 10 years at UNH with an emphasis on the factors controlling composite particle morphology development. He received his B.S. and M.S. degrees in chemical engineering, and his PhD in materials science from UNH. His areas of active research include control of composite latex particle morphology, emulsion polymerization kinetics, diffusion in polymers and adsorption of surfactants on latex particles.

Registration Form

Core-Shell Latex Particles – Fundamental Aspects of Morphology Control

Durham, NH 03824 USA

June 2-5, 2014

Name _____

Address _____

City/State _____

Postal Code _____

Country _____

Position or Title _____

Organization _____

Phone _____

Fax _____

E-mail _____

Participant Category

- Standard price for industrial participant: \$1850 (USD)
- Discounted price for additional participant(s) from the same company: \$1750 (USD)
- Academic participant: \$1650 (USD)

There is a non-refundable fee of \$50 (USD). Cancellation of registration can be made up until May 2, 2014 with a full refund less the \$50 processing fee.

Method of Payment:

Credit Card

___ Visa ___ MasterCard ___ American Express

Card # _____

Visa or MC Security Code # (last 3 digits on back of card) _____

AMEX Security Code # (4 digits on front of card) _____

Expiration date _____

Signature _____

Credit Card billing address (if different than above): _____

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- Wire transfer from bank --- Go to info@epced.com and request banking instructions.

For a secure eCommerce transaction, FAX this completed form to EPCEd at 1-603-343-4015, or call 1-603-742-3370.

This registration form may serve as an invoice for those who register.

LODGING OPTIONS

WALKING DISTANCE TO UNH Conference Site (about 10 min):

Holiday Inn Express
2 Main St., Durham, NH 03824
603-868-1234
www.hiexpress.com

Three Chimneys Inn
17 Newmarket Rd., Durham, NH 03824
603-868-7800
www.threechimneysinn.com

REQUIRES A VEHICLE:

Comfort Inn & Suites
10 Hotel Dr, Dover, NH 03820
603-750-7507
www.comfortinn.com

Dover Days Inn Durham/Downtown
481 Central Ave, Dover, NH 03820
603-742-0400
www.daysinn.com

Microtel Inns & Suites
31 Webb Pl, Dover, NH 03820
603-953-0800
www.microtelinn.com

Silver Fountain Inn
103 Silver St, Dover, NH 03820
603-750-4200 or 888-548-6888
www.silverfountain.com

Hilton Garden Inn
100 High St, Portsmouth, NH 03801
866-413-1105
www.hgiportsmouth.com

Residence Inn Portsmouth Downtown
100 Deer St, Portsmouth, NH 03801
603-968-5095
www.marriott.com

Sheraton Portsmouth Harborside
250 Market St, Portsmouth, NH 03801
603-431-2300
www.sheratonportsmouth.com

Best Western Wynwood Hotel & Suites
580 US Hwy 1 Bypass, Portsmouth, NH 03801
603-436-7600
www.wynwoodportsmouth.com

Residence Inn by Marriott
1 International Dr, Portsmouth, NH 03801
866-430-2692
www.marriott.com

Fairfield Inn by Marriott
650 Borthwick Ave Ext, Portsmouth, NH 03801
603-436-6363 or 800-228-2800
www.marriott.com

Hampton Inn Portsmouth
99 Durgin Lane, Portsmouth, NH 03801
603-431-6111
<http://hamptoninn.hilton.com>

Holiday Inn
300 Woodbury Ave, Portsmouth, NH 03801
800-315-2621
www.holidayinn.com