Emulsion Polymers Consulting and Education, LLC presents

*Basics of Creating Latex Particles with Controlled Size and Chemistry**

NASA Website Photo

A 2-hour, On-line Tutorial
November 20, 2025

Faculty
Donald C. Sundberg, PhD
Michael F. Cunningham, PhD

* Emulsion Polymers Consulting and Education (EPCEd) has a curriculum of 21 tutorials, treating both *fundamental* science/engineering topics and others treating *specialized topics*.

TUTORIAL OBJECTIVES: Despite having been practiced at commercial scales for more than a century, emulsion polymerization is increasingly the preferred reaction process used to create polymers of high molecular weight as aqueous based dispersions. A review of free radical polymerization reactions for homo- and comonomer systems establishes the basis for understanding the chemical kinetics that take place in both the water and polymer particle phases. Extension to the physical chemistry of colloidal systems allows us to establish the principles that control nanoparticle nucleation, subsequent growth and polymer chain development in the particles.

INTENDED AUDIENCE: This tutorial has been designed to introduce those relatively new to this field to the chemical and physical principles involved in creating latex particles with controlled polymer chemistry and nanoparticle size distributions. By developing an introductory background in these subjects, participants will then be positioned to work with the myriads of challenges involved in creating commercially viable latex based polymers.

STRUCTURE OF THE TUTORIAL: This on-line tutorial will be presented during a 2-hour period starting at 9:30 AM (EDT) on November 20, 2025. Participants will have received printed, personalized workbooks (full color copies of all the PPT slides) prior to the date of the on-line session. Questions can be placed in the on-line Chat Box and discussed in a 30- minute session immediately following the formal presentation.

WORKSHOP OUTLINE: See next page for a topical outline. Faculty profiles follow on page 3.

REGISTRATION INFORMATION

The registration fee includes the full book of tutorial slides delivered to the registrant's home or business address. Presentations will be made on-line via Microsoft Teams. ***Early registration is recommended*** due to the tutorial size limitation of 30 participants.

Registration Fee: ***$425 USD***
Registration Form – **Go To Page 4**

Contact for further information:
info@epced.com

Basics of Creating Latex Particles with Controlled Size and Chemistry

1.) **Reactions and mechanisms in emulsion polymerization;** describes the critical reactions in emulsion polymerization (chain initiation, chain growth (propagation), termination, chain transfer, crosslinking) and the role of the multiple phases (aqueous phase, monomer droplets, polymer particles).

2.) **Modes of reaction for emulsion polymerization processes;** outlines the essential features of batch, semi-batch and continuous processes, including how the mode of reaction impacts critical process parameters (e.g. rate, molecular weight).

3.) **How polymer particles are created in emulsion polymerization;** describes the various types of particle nucleation processes that can occur, and what process conditions influence particle nucleation.

4.) **Reaction rates during emulsion polymerization;** discussion of factors determining the polymerization rate and how they can be controlled, for both batch and semi-batch processes.

5.) **Latex particle size control;** describes the numerous and various factors that determine the number of particles in an emulsion polymerization, and how the process conditions can be tuned to control the particle number and size.

6.) **Polymer molecular weight control;** discussion of factors determining the molecular weight and how they can be controlled, for both and semi-batch processes.

7.) **Copolymer composition control;** discussion of why copolymers are often not uniform in composition, and how we manipulate the emulsion polymerization process to make uniform polymers.

8.) **Introduction to colloidal stability;** presentation of why polymer particles are colloidally stable and the key factors that influence stability.

Faculty Profiles

Professor Donald C. Sundberg has been working in the field of emulsion polymers for 53 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 worked on latex based impact modifiers for ABS resins with the Monsanto Company, scaling processes to the 10,000 gallon reactor size. He has extensive research experience in emulsion polymerization and is widely recognized for his work on structured latex particles. This has resulted in over 100 peer reviewed publications and many conference papers. In addition he has conducted many workshops, most notably the one on latex particle morphology control. He spent a sabbatical year at the Institute for Surface Chemistry in Stockholm and was Chair of the 1997 Gordon Research Conference on Polymer Colloids. He is the 2016 Mattiello Memorial Lecture awardee from the American Coatings Association. His research interests are in polymerization kinetics in solution, bulk and emulsion systems, interfacial science and polymer morphology control, diffusion in polymers, 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 Michael F. Cunningham has an extensive background in dispersed phase polymerizations, including suspension, emulsion, miniemulsion and dispersion polymerization. He received a bachelor's degree in Engineering Chemistry from Queen's University (Kingston, Ontario, Canada) and his Ph.D. from the University of Waterloo. He spent six years working on dispersed phase polymerizations in the Xerox Corporate Research Group, acquiring experience in process scaleup and technology transfer to manufacturing. He has an active research program in polymer colloids and emulsion polymerization, particularly in the area of living radical polymerization and stimuli-responsive particles, publishing over 250 peer reviewed publications, and holding 26 U.S. patents. He is secretariat of the International Polymer Colloids Group, and previously held the Ontario Research Chair in Green Chemistry and Engineering. He has consulted with a number of companies in the area of emulsion and suspension polymerization, and lectured for over 10 years at industrial short courses on emulsion polymerization in the USA and Switzerland. He is a Partner with Professor Sundberg in the international consulting firm Emulsion Polymers Consulting and Education, LLC.

Basics of Creating Latex Particles with Controlled Size and Chemistry
On-line tutorial
November 20, 2025
Registration Form

Name_____
Address_____
_____
City/State_____
Postal Code_____
Country_____
Position or Title_____
Organization_____
E-mail_____

The cost of this tutorial is $425 (USD). There is a non-refundable fee of $60 (USD). Cancellation of registration can be made up until October 20, 2025 with a full refund less a $60 processing fee.

Method of Payment:

- Credit Card (We accept Visa, MasterCard, American Express)

  ***Please use this link to SwipeSimple to pay by credit card*:**

  https://swipesimple.com/links/lnk_31cd12df2d4cc9e9108c3e9d0606e999

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

- Company check (make payable to Emulsion Polymers Consulting and Education, LLC, 39 Nute Road, Madbury, NH 03823, USA)

Please submit this registration form as an attachment to info@epced.com. This registration form may serve as an invoice for those who register.