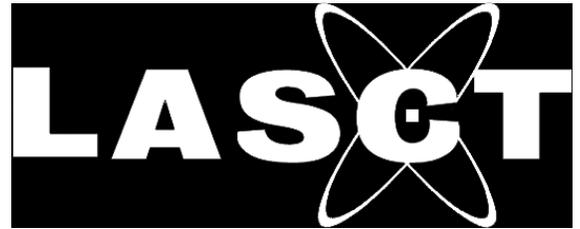


**One Full Day Waterbased Resin
Technology Education Seminar
Nov 1, 2018**



Come Join Us to Learn about the Newest Waterbased Resin Technologies
Presentations on developments from 6 Major Resin Companies
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At the Beautiful & Famous Summit House Restaurant in Fullerton, CA

You will have chance to discuss resin technologies in the seminar with the
speakers, and have chance to win gifts in raffles provided by our sponsors



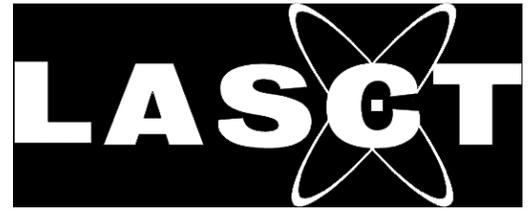
Waterbased Resin Technology

LASCT Education Seminar

10 AM – 4 PM on November 1st, 2018

[Summit House](#)

2000 E Bastanchury Rd, Fullerton, CA 92835



- **Member Early Bird Registration by Oct 20th: \$85**
- **Member Registration after Oct 20th: \$100**
- **Non-Member Early Bird Registration by Oct 20th: \$105**
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Schedule

10:00-10:40	DOW: <i>Waterborne Binders for Specialty Coatings: Building Back in Performance</i>
10:45-11:25	EPS: <i>Introduction to Polymer Science for Waterborne Coating Technologies</i>
11:30-12:30	Lunch
12:30-1:10	Specialty Polymers: <i>An Introduction to Emulsion Polymer Synthesis – Nucleation and Design of Water-Borne Latex Particles</i>
1:15-1:55	Alberdingk Boley: <i>Innovative Polyurethane Dispersions</i>
2:00-2:10	Snack and Coffee Break
2:15-2:55	BASF: <i>Taking High Gloss Paint to New Highs</i>
3:00-3:45	Arkema: <i>Resin Technologies and Key Selection Criteria in Architectural Coatings</i>
3:45-4:00	Raffle and Closing Remarks

Speakers



Corporate Sponsorship



LASCT thanks Ravago Chemicals for their double support of this seminar.

Speakers



Paul Doll (and Jocelyn Gruver) – Lead Technical Manager for Architectural Binders for Dow

Bio: For the past 25 years Paul Doll has been developing high end innovative inks and coatings that deliver valuable market solutions. He holds several patents and is the author / technical contributor of numerous scientific publications and two reference books. He has received the coating industries prestigious Shelby F. Thames award and the Dow Chemical Company's Responsible Care Award. Since obtaining his B.S. degree in Imaging Science from the Rochester Institute of Technology, he has gone on to grow 2 start-up companies, lead numerous coating projects focused on low VOC/IAQ, and now is the Lead Technical Manager for Specialty Architectural Binders for Dow Coating Materials.

Waterborne Binders for Specialty Coatings: Building Back in Performance

Paints and coatings have been used to enhance aesthetics and durability to human valued objects for millennia. Early man painted on cave walls with raw pigment. He later added plant resin to improve durability, and in the 1700s America got its first paint mill. Over time the resins used have been continuously modified to improve paint performance. Use of volatile solvents were necessary to dissolve and/or soften the resins so that they could be coated out onto a substrate and then leave behind a protective film. Environmental pressures and regulators have steadily reduced the amount of solvents, now termed VOCs that can be used in paints and coatings. In response, architectural paint companies and their suppliers have successfully spent decades working to build back in the properties that are sacrificed as VOC levels have been pushed to lower and lower levels. The smaller niche coatings markets, herein termed Specialty, require additional durability, adhesion to challenging substrates, and other properties that have allowed them to delay the push to lower VOC limits. However, with public focus on environmental factors steadily growing and companies adopting sustainable metrics, regulators are certain to continue to apply pressure on lowering VOC limits of all segments. Decades of coating materials R&D which has developed tools and deep understandings that are now being applied to these Specialty segments will be reviewed.



Robert Sandoval – R&D Scientist at EPS

Bio: Dr. Robert Sandoval is an R&D Scientist at EPS, leading platform technology development across the architectural, industrial, and construction segments. He earned a B.S. in Chemical Engineering from Michigan Technological University (2005) and a Ph.D. in Chemical Engineering from Northwestern University (2010), focusing in polymer physics and engineering. Dr. Sandoval spent four years at Dow Chemical in their central R&D group before joining EPS in 2014. His research has focused on emulsification technology, coating formulations, and testing. His contributions at EPS have helped launch several platform technologies, including new high gloss architectural resins, flat through semi-gloss resins, and roof coatings.

Introduction to Polymer Science for Waterborne Coating Technologies

This section will provide an introductory overview to polymer science and waterborne resin technology as it relates to the coatings industry. An introduction to general polymer structure, characterization techniques, and polymer physical property terminology commonly discussed and used in the coatings industry will be presented. Other main topics will include common polymerization reaction mechanisms associated with acrylic, vinyl acrylic, polyurethane, and epoxy chemistries. Additionally, an in-depth examination of emulsion polymerization, its reaction mechanism and kinetics will be described, along with factors that impact the polymerization, latex characteristics, and ultimately the final properties of coatings. Finally, the benefits and limitations for the different waterborne chemistries will be discussed.



Devin Busse – Senior Polymer Chemist at Specialty Polymers

Bio: Devin Busse received his B.S. in Chemistry from Pacific Lutheran University and an M.S. degree in Organic Chemistry from the University of Rhode Island before starting a career in the coatings industry. He has worked for twelve years developing emulsion polymers for architectural, industrial and specialty coatings applications. He is currently a Senior Polymer Chemist at Specialty Polymers, Inc. where one of his focuses is on using particle morphology control to improve coating performance over a wide range of applications. Devin lives in Salem Oregon with his wife, Tamara, and two-year old son, Roland.

An Introduction to Emulsion Polymer Synthesis – Nucleation and Design of Water-Borne Latex Particles

The objective of this paper is to present a general introduction to emulsion polymer synthesis. Topics include the mechanism of particle nucleation, monomer selection, surfactant package and process control as they relate to target properties and performance. The relationship between latex properties (e.g. particle size, non-volatiles and viscosity) will be outlined, highlighting the advantages of using a dispersed polymer system over traditional solvent borne alternatives. Because a common broad objective of the industry is to produce water-borne materials that yield solvent-borne polymer performance (excellent coalescence, water repellency, block resistance, etc.) an emphasis is placed on the use of morphology control. By controlling the distribution of discrete polymer compositions within individual particles one can accomplish dynamic combinations of properties that are otherwise very elusive in uniform particle compositions. A common example is core-shell polymers that offer low VOC-low MFFT properties while retaining high block resistance and hardness. While many concepts presented here will apply to colloid-stabilized systems (typically vinyl acetate polymers), this talk will focus on surfactant-stabilized, acrylic and styrene acrylics polymer systems.



Terri Carson – Director of Technical Service and Quality Control at Alberdingk Boley

Bio: Dr. Terri Carson graduated from The University of North Carolina at Chapel Hill. Her graduate work focused on the use of supercritical carbon dioxide as a reaction medium in synthesizing fluoropolymer block copolymer surfactants and dispersion polymerizations of water soluble monomers. She worked for The Dow Chemical Company in Freeport, Texas for six years in the Epoxy and Polyurethane business as a Functional Development Specialist. She joined Alberdingk Boley Inc. in 2006 as the Product Development Manager. Alberdingk Boley is a global manufacturer of waterborne resins, including acrylic emulsions and polyurethane dispersions. Presently, Terri serves as the Director of Technical Service and Quality Control. She also supports Sales applications and product development and manufacturing in all aspects of chemical processing

Innovative Polyurethane Dispersions

The use of waterbased polyurethane dispersions (PUDs) has grown in various market areas including wood flooring, furniture and cabinet markets because they provide high performance capability while satisfying increasing environmental requirements. They provide excellent performance as a replacement to traditional solventborne resins. PUDs are known for their abrasion resistance, elasticity and chemical resistance and can be formulated as one and two component systems using several types of crosslinkers. Advances in the design and manufacture of these polymers have lead to even more versatile binders. This presentation will outline the development history of polyurethane dispersions and discuss the chemistries involved. Coating properties and formulating suggestions will be discussed. Some of the innovations to be discussed include solvent-free technology, UV curable dispersions, inherently matte polymers and the incorporation renewable resources.



Xin Li (and Nicholas Foley) – Product Development Scientist at BASF

Bio: Dr. Xin Li is currently a Product Development Scientist at BASF. He received his B.S. in Physics from the University of Science and Technology of China in 2006, and a Ph.D. in Polymer Science from the University of Akron in 2011, focusing on polymer rheology. Before joining BASF, he spent 5 years at Milliken & Co as an R&D physicist with projects related to composite materials, polymer processing and chemical modification of polyolefin. Xin joined BASF in 2016. In his current position at BASF, his research mainly focuses on latex development for architecture coating.

Taking High Gloss Paint to New Highs

Designing raw materials and formulating low-VOC, durable high gloss paint is no small feat. Formulation of such paints come with several key challenges: dry-film hardness, pigment distribution optimization, and rheology design for sufficient leveling following roller and brush application. Once the polymer-rich surface dries, it usually succumbs to poor dirt pickup resistance and poor durability. This poor performance is further amplified by low-VOC and 0 PVC deep base formulas. Furthermore, it is common in the industry that most high gloss paints must be both interior and exterior capable, forcing the formulator to find a balance for, often oppositional, performance properties. We have benchmarked several lead high gloss paints on the market to develop an understanding of how well paint companies are tackling the challenges of high performance high gloss paint. We will present some comparative results and identify performance niches in the high gloss market that have still yet to be filled. Finally, we will also cover some of our recent and ongoing polymer design and formulation efforts that could help the industry close these gaps.



Jeffrey Arendt - Technical Account Coordinator and Senior Research Specialist with Arkema's Coating Resins business unit (ACR).

Bio: At Arkema, Jeff currently leads ACR's Technical Service and Applications Development work for Industrial Coatings markets. Jeff has a BS in Chemistry from the University of Wisconsin River Falls and an MBA from the University of Minnesota. Jeff started in the chemical industry as an intern with The H.B. Fuller Company working with adhesives for the wood, window and door applications. In 1999 Jeff started his coatings industry career as a bench chemist at Hirshfield's Paint. Here Jeff formulated products for architectural and light industrial markets while also gaining experience working on projects targeting process, cost and quality improvements. In 2005 Jeff was promoted to Technical Director. In 2010 Jeff joined Arkema's research team. At Arkema Jeff leads resin and additive development teams focused on creating robust high performing environmentally friendly solutions for coating applications.

Resin Technologies and Key Selection Criteria in Architectural Coatings

A wide range of resin technologies are utilized across the various architectural coatings segments. Major resin technologies include acrylic, styrene-acrylic, vinyl acrylic and vinyl acetate ethylene emulsion polymers. Technology advancements in waterbased alkyds provides another class of resins to the coatings formulator for low VOC architectural coating applications. With so many choices, along with limited time and resources available to screen each technology, formulators often wonder which resin is best for their particular application. With resin selection being critical for developing the intended end-use properties required it is necessary to understand all these resin technologies. Details on these resins, end-use segments and formulations will be discussed.

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