

POLYMERS & COATINGS WINTER SHORT COURSE

FEBRUARY 7-11, 2022



Polymers and Coatings Program at Cal Poly

California Polytechnic State University, San Luis Obispo, is one of the 23 campuses of the California State University system. Cal Poly enrolls over 20,000 students and is nationally recognized for the excellence of its programs in architecture, agriculture, engineering, and the sciences. The Polymers and Coatings program, an integral part of the Chemistry and Biochemistry Department of the College of Science and Mathematics, offers both an Undergraduate Concentration and a Masters degree in Polymers and Coatings Science.

Short Course Overview

Cal Poly's winter short course on polymers and coatings brings together academic and industrial experts in the field. The one-week course covers many aspects of coating technology with emphasis on liquid coatings, both waterborne and solvent-based. Participants benefit from discussions of VOC and air quality aspects of coatings by experts in both industry and government regulatory agencies. Participants are expected to have had some exposure to the coatings field along with working knowledge in chemistry and other sciences. The course will convene at 8:00 AM on Monday and end at 12:00 noon on Friday.

Travel and Accommodations

San Luis Obispo is in California's Central Coast region, 200 miles north of Los Angeles and 230 miles south of San Francisco. Participants who wish to drive from the Los Angeles or San Francisco areas may take Route 101. All major airlines offer services to San Luis Obispo Airport with connecting flights from Dallas-Fort Worth, Denver, Las Vegas, Los Angeles, Phoenix, San Francisco, and Seattle. The San Luis Obispo Chamber of Commerce website (<https://visitslo.com/>) contains information for local hotels. Lodging is not included in the program fee.

Registration and Fees

Course registration fee is \$1590 if received on or before January 7, 2022 and \$1690 if received on or after January 8, 2022. Participants must register online. Course registration fee covers hard and soft copies of handouts, refreshments, and luncheons for Monday through Thursday.

For more information, contact Dr. Ray Fernando at 805-756-2395 or visit www.wctc.calpoly.edu

TENTATIVE AGENDA

Monday, February 7

- Coating Industry & Formulation Overview
- Resin Technologies (Overview, Solvent, 2K)
- Pigments and Fillers
- Resin Technologies (Waterborne. Opaque Polymers)

Tuesday, February 8

- Additives for coatings
- Characterization (MW, Spectroscopy, etc.)
- Coating Rheology & Rheology Modifiers
- Color and Appearance

Wednesday, February 9

- Modern Methods of Surface Analysis
- Thermal Properties, Film Formation & Curing
- Tour of Facilities

Thursday, February 10

- Polyurethane and UV/Radiation Cure Technology
- Pigment Dispersion
- Coating Rheology-Applications
- Colloid Characterization Methods
- Formulating for the Environment
- VOC/Air Quality-Regulations, Analysis and Measurement

Friday, February 11

- VOC Compliant Resin and Colorant Technologies
- Specialty Filters
- Coating Service Life Prediction
- Wrap Up and Evaluations

SHORT COURSE INSTRUCTORS

Dennis Butcher (Technical Marketing Manager, Lubrizol Corporation) Dennis Butcher (Regional Technical Marketing Manager, Lubrizol Corporation) received his B.S. in Chemistry from State University College of New York at Fredonia in 1982. In his 29 years at Lubrizol he has held several positions prior to current role including Global Market Manager, R&D Manager, R&D Associate, and Account Manager. In these roles he has provided support in graphic arts, adhesives, paper, building materials, paints and coatings, color dispersions, and plastic additives over the years. Dennis came to Lubrizol after working in the ink industry for 7 years developing aqueous flexographic printing inks.

Dave Darling (Vice President of Safety, Health and Environmental Affairs, American Coatings Association)

During his 22 years at ACA, David has worked on coatings manufacturing environmental compliance issues, industrial surface coating and architectural coating VOC regulations and post-consumer paint issues. David has a MS and BS in environmental engineering from Syracuse University and is a professional environmental engineer.

Gary Dombrowski (Research Fellow, Dow Chemical Company) received his Ph.D. in chemistry from the University of Minnesota in the area of physical organic chemistry. He worked as a postdoctoral research associate at the University of Rochester's NSF Center for Photo-induced Charge Transfer. In 2000, he became a Synthesis Group Leader within Architectural and Functional Coatings, supporting the development of binders for the decorative paint market.

Mike Diebold (Chemours Company) is an Inorganic Chemist with a B.S. degree from the University of Illinois and a Ph.D. from Texas A&M University. After a one-year postdoctoral fellowship in Cambridge University, Dr. Diebold joined DuPont in 1988 as a research chemist in the titanium dioxide group. In his current position as Research Fellow he is involved in product support, new product and process developments, and the study of fundamental properties of TiO₂ and light scattering in coatings. He has written numerous papers in coatings journals, holds 10 patents on TiO₂ pigment technology and has recently published a book on the application of light scattering to coatings

Ray Fernando (Professor, California Polytechnic State University) received his Ph.D. in 1986 from North Dakota State University in Polymers and Coatings, emphasizing studies in the coating rheology field. He has fifteen years of industrial experience in coatings, with extensive knowledge in waterborne technology. Since 2002 he has been the occupant of Arthur C. Edwards Endowed Chair in the Department of Chemistry and Biochemistry and the Director of Kenneth N Edwards Western Coatings Technology Center at Cal Poly. He spent 3 years in R&D at Air Products and Chemicals and 12 years at Armstrong World Industries.

Leslie Hamachi (Assistant Professor, California Polytechnic State University) received her PhD from Columbia University in 2018 where she received the Pegram Award for her thesis work on developing a library of new chalcogen precursors for use in rate-controlled core/shell nanocrystal synthesis. She obtained her BS in chemistry, with a concentration in materials chemistry, in 2013 from the University of California, Berkeley, graduating with honors. After completing her PhD, she joined Prof. William Dichtel's group at Northwestern University as an NSF Center for Sustainable Polymers postdoctoral research fellow. Dr. Hamachi joined the Chemistry & Biochemistry department at Cal Poly in 2020 as a tenure-track faculty member. Prior to joining Cal Poly, Dr. Hamachi worked in nanocrystal colloid R&D and manufacturing at Oxonica Materials, Inc., and taught as an adjunct professor at the Fashion Institute of Technology.

Michelle Gabriel-Caldwell (Applied Technology Specialist, BYK Additives Company) has been with BYK USA Business Line Paint for over 18 years, and is currently the Senior Technical Representative for the Atlantic Region. In addition to those duties,

she is the North American Applied Technology Specialist for Wetting & Dispersing Additives for all of BYK's Business Lines. She was formerly the BYK USA End Use Specialist for Powder Coatings for 11 years. Michelle began her coatings career at Benjamin Moore as an analytical chemist in 1992; after 3 years she advanced to product development chemist where she formulated various specialty solvent borne coatings. Michelle holds degrees in Chemical Engineering and Chemistry.

Dane Jones (Emeritus Professor, California Polytechnic State University) received his Ph.D. in Physical Chemistry from Stanford University in 1974. He has held research and teaching positions at Uppsala University, the University of Utah and The University of California, San Diego. He joined Cal Poly faculty in 1976. He was instrumental in developing the Polymers and Coatings program at Cal Poly and was director of the program until 2002. His research interests include spectroscopic analysis of polymers and coatings, and VOC analysis. He is the recipient of Cal Poly's Distinguished Teacher Award and Los Angeles Coating Society's Distinguished Service Award.

Patrick Lutz (Technical Sales, EPS Color Corp) received a B.A. and a Ph.D. from Syracuse University in 1964 and 1970, respectively. He held many Technical Service, Market Research and Sales positions with DuPont Pigments and Chemicals Groups over a 25-year span. In 1993, he joined Dunn-Edwards Corporation as the Slurry Project Manager and was the Director of Labs and interfaced with extensively with regulatory agencies dealing with VOC discussions. In 2002, Pat joined EPS as the west coast Technical Sales Representative focusing on architectural resins and colorants. In this position, he has maintained an involvement in VOC discussions with regulators throughout North America.

Jim Macdonald (End Use Manager, BYK-Gardner USA) is Business Line Manager – Industrial paint and coatings applications.

Scott Van Remortel (Manager, Technology and Innovation (Sibelco North America)) received a B.S. degree in Polymers and Coatings Technology from Eastern Michigan University in 1992. Scott is an active member of the Industrial Advisory Council for the Polymers and Coatings Program at Cal Poly, San Luis Obispo. In addition, he is a Past President and is the current technical chair of the Piedmont Society for Coatings Technology.

Erik Sapper (Assistant Professor, California Polytechnic State University) received his PhD in Coatings and Polymeric Materials from North Dakota State University in 2013. He has a BS in Chemistry (2006) and MS in Polymers and Coatings Science (2007) from California Polytechnic State University. Since 2010 he has worked in the Chemical Technology division of Boeing Research & Technology, taking on various principal investigator and project manager roles. Prior to joining Cal Poly in 2016, Dr. Sapper was located in St. Louis, Missouri, where he led teams at multiple sites working on polymer synthesis, coatings formulation, service lifetime prediction, and test method development.

Todd Williams (Corrosion Manager, Covestro Company) Dr. Todd Williams has been responsible for technical activities in the protective and marine market at Covestro LLC since 2012. In 2009, Williams joined Covestro developing UV-curable coating formulations after leaving Segetis where he synthesized renewable polyols. He is a NACE-certified Coating Inspector Level 2 and holds a Ph.D. from The University of Southern Mississippi where he wrote his thesis on crosslinking latex coatings.

Shanju Zhang (Associate Professor, California Polytechnic State University) received his Ph. D. in Polymer Chemistry and Physics from Jilin University, China in 1998. Prior to joining the Cal Poly faculty in 2011, he held research positions at Yale University, Georgia Tech, Cambridge University, Technical University of Berlin and Chinese Academy of Sciences. His research interests include synthesis, structural analysis and processing of polymers, liquid crystals and nanomaterials. He is the recipient of the Alexander von Humboldt Fellowship.