

Polymers and Coatings

Winter Short Course February 8-12, 2010



California Polytechnic State University
Polymers and Coatings Program
San Luis Obispo, CA 93407
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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 18,000 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. Other coatings technologies (e.g., powder coatings) are discussed in order to compare and contrast with traditional liquid coatings. In addition, 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

Embassy Suites, San Luis Obispo, site of most of the conference presentations, offers a special conference rate if registrants reserve space prior to January 15, 2010 (\$119/single or double occupancies, \$129/triple, plus tax). Call the hotel at (805) 549-0800 and refer to "Cal Poly Polymers and Coatings." The conference rate includes made-to-order full breakfast and evening social hour. Embassy Suites provides complementary shuttle service from San Luis Obispo Regional airport to the hotel. Additional information about Embassy Suites can be found at <http://www.embassysuites-lo.com>. The San Luis Obispo Chamber of Commerce website (www.slochamber.org) contains information for other local hotels. Course registration fee is \$1175 if received on or before January 15, 2010 and \$1275 if received on or after January 16, 2010. Participants can register on-line, or use the registration form provided in this brochure. Course registration fee covers handouts, refreshments, and luncheon for Monday thru Thursday. San Luis Obispo is located in California's Central Coast region, 200 miles north of Los Angeles, 230 miles south of San Francisco. Participants who wish to drive from Los Angeles or San Francisco areas may take Route 101.

For more information contact Dr. Ray Fernando (805) 756-2395 or visit www.polymerscoatings.calpoly.edu

Short Course Instructors

Ward Brown (Rohm and Haas Co.)

Dr. Ward Brown graduated from Michigan State University with a BS degree in Chemistry in 1981 and then attended The University of California at Berkeley as a National Science Foundation Fellow, where he received his Ph. D. in Physical Chemistry in 1986. After completing his doctoral studies, he founded Synectics, a scientific software company. He joined Rohm and Haas Company as a Senior Chemist in the Industrial Coatings Department in 1989 and has since worked in a variety of coatings areas, including wood coatings, traffic paints, general thermoset coatings, and architectural coatings. For the past eight years he headed the Hiding Technology Applications Group in the Architectural coatings Department, where he developed new plastic pigments for paints and studies ways to improve the hiding efficiency of conventional inorganic pigments in coatings.

Phil Costanzo (California Polytechnic State University)

Dr. Phil Costanzo received his Ph.D. in 2005 from the University of California at Davis in Organic Chemistry. Prior to joining the Cal Poly faculty in 2007, he completed a National Research Council (NRC) post-doctoral fellowship at the Army Research Laboratory, where he developed specialty resins, coating and composites for various military applications. In general, Dr. Costanzo's research interests revolve around the development of structure-property relationships that can be employed in real-world applications.

Michael P. Diebold (Dupont Company- Wilmington, DE)

Dr. Mike Diebold 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 appointment in Cambridge University, England, Mike joined DuPont in 1988 as a research chemist in the titanium dioxide group. In his current position as Senior Research Associate he is involved in product support, new product and process developments, and the study of fundamental properties of TiO₂. He is the 1996 recipient of Surface Coating International's Stern Award, and he is an FSCT Distinguished Lecturer for 2003-2004 as well as the ICE 2003 Technical Focus Keynote Speaker.

Michael J. Dvorchak (Bayer Polymers)

Mr. Michael J. Dvorchak began his career with Mobay Corp. in 1985 as a Development Chemist specializing in bis-oxalolidine chemistries and eventually progressed to Manager of Technology for wood coatings. He was then named as Technology manager in general product finishing where he focused on 1K, 2K solvent/water polyurethanes (ultra low VOC polyurethane dispersions) both blocked and conventional cure routes. In January 2000 Mike became Marketing Manager for FWAs and Chemicals. He has received five patents, written over ten papers, and was course instructor for polyurethane dispersions, polyurethane chemistry and spray application at the ICE Conference and High Solids Waterborne Conference.

Raymond H. Fernando (California Polytechnic State University)

Dr. Ray Fernando 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 Arthur C. Edwards Endowed Chair, Director of Polymers and Coatings Program in the Department of Chemistry and Biochemistry at Cal Poly State University. He spent 3 years in R&D at Air Products, involved with a wide range of coatings and adhesives, coatings for electronics, and nanocomposites. Prior to that, he was a Program Manager for Armstrong World Industries, managing the coating research program that supports global manufacturing and marketing needs of Armstrong Building Products Division. Dr. Fernando has over forty publications and patents, and has given many lectures and presentations related to coatings. Dr. Fernando is the current Chair of Technical Events Coordinating Committee for FSCT. He received FSCT's President's Award in 2005.

Derek E. Gragson (California Polytechnic State University)

Dr. Derek Gragson received his Ph.D. in 1997 from University of Oregon in Physical Chemistry. Prior to joining Cal Poly faculty in 1999 he has experience as a Research Assistant at Lawrence Livermore National Lab, and as a Postdoctoral Fellow at Harvey Mudd College, Claremont, CA. Dr. Gragson's interests and experience include studying multi-layer structures formed from polyelectrolytes including controlling film thickness, morphology, and water content, scanned probe microscopies, non-linear optics and laser based spectroscopies, thermodynamics of phospholipid mono and bi-layers, surfactants, di-block copolymers, solution polymer physics, surface analytical techniques, and surface science in general.

Dane R. Jones (California Polytechnic State University)

Dr. Dane Jones 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, VOC analysis, and applications of coatings in art preservation. Dr. Jones serves as a consultant to several polymers and coatings manufacturers. He is the recipient of Cal Poly's Distinguished Teacher Award and Los Angeles Coating Society's Distinguished Service Award.

Patrick Lainé (BYK USA Inc. - Wallingford, CT)

Education: B.S. Chemistry - Ecole Nationale Supérieure de Chimie, Toulouse, France. After studying chemistry in France, his native country, Patrick Lainé worked for BYK-Chemie GmbH, Wesel, Germany, worldwide leader in specialty additives for coatings and plastics, from 1989 through 1994. As a Chemist, he performed technical service for customers, with special emphasis in Automotive and Coil Coatings markets. In 1995, Patrick transferred to BYK USA Inc., Wallingford, Connecticut, as the NAFTA End-use Manager for General Industrial Coatings & Pigment Concentrates. Since July 2008, Patrick took new responsibilities as NAFTA Paint Laboratory Manager and Product Manager for Wetting & Dispersing additives.

James F. Nyarady (California Air Resources Board - Sacramento, CA)

Mr. Jim Nyarady received his B.S. degree in Chemical Engineering from Stanford University, and he is a Registered Professional Engineer in California. Jim has been in the air pollution control field for over 20 years, with 18 of those years at the Air Resources Board (ARB). Currently, he is the Manager of the Strategy Evaluation Section in the Stationary Source Division of ARB. From 1998 to 2000, Jim led a team that developed an update to the ARB's Suggested Control Measure (SCM) for architectural coatings. Since then, Jim has worked closely with local California air pollution control districts and other states as they amend or adopt architectural coatings rules that are based on the 2000 SCM. Jim is also now heading up an update of the SCM scheduled to go to the board in late 2007. Jim is responsible for conducting surveys of architectural coatings sold in California, investigating the feasibility of reactivity-based standards for architectural coatings, and managing several architectural coatings research projects.

Clifford K. Schoff (Consultant, Allison Park, PA)

Dr. Cliff Schoff holds B.S. and M.S. degrees in Chemistry from the University of Idaho and a Ph.D. in Polymer Chemistry from the University of St. Andrews in Scotland. Cliff was a Peace Corps science teacher in Nigeria, a Research Fellow at the University of Glasgow, and a member of the Research Staff in Chemical Engineering at Princeton University. From 1974 until 2002, he was employed by PPG where he did research and problem solving in the areas of liquid and solid rheology, cure, surface defects, corrosion, pigment dispersion, and the physical chemistry of electrodeposition coatings. Following his retirement from PPG, Cliff has become a consultant. He has spent 35 years doing research and problem solving on coatings. Cliff has published more than 40 papers and articles plus about 50 one-page "Coatings Clinics" for JCT Coatings Tech. He has given lectures at number of universities and research facilities in the U.S. and overseas and has taught portions of many short courses. He has received a number of awards, including being honored as the Mattiello Lecturer at the 1998 Annual Meeting of the FSCT. In 2008 Cliff received the Roy W. Tess Award for outstanding contributions to coatings science and technology from ACS, Polymeric Materials: Science and Engineering Division.

Scott Van Remortel (Unimin Specialty Minerals, INC. Spruce Pine, NC)

Mr. Scott Van Remortel is a Technical Sales Manager at Unimin Specialty Minerals. He 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 the Vice-President of the Piedmont Society for Coatings Technology.

Robert Wendoll (Dunn-Edwards Corporation, Los Angeles, CA)

Robert Wendoll is a graduate of the University of California at Berkeley (Bachelor of Arts in Architecture & Art, 1971). He is currently the Director of Environmental Affairs for Dunn-Edwards Corporation, Los Angeles, California. He has been with Dunn-Edwards for twenty-four years, out of a total of thirty-two years in the paint and coatings industry. His current duties include monitoring environmental, health & safety laws and regulations, determining specific applicability to Dunn-Edwards, and designing and implementing compliance measures and programs. He also has frequent interaction with legislators and regulators involved in the development of new or amended laws and regulations.

Cheng-Le Zhao (BASF Corporation, Charlotte, NC)

Dr. Cheng-Le Zhao received his Ph.D. in 1987 from the University of Strasbourg in Polymer Materials Science. During a two-year postdoctoral stay in Prof. Winnik's group at the University of Toronto, he studied polymer diffusion during latex film formation, the associative behavior of water-soluble block copolymers and the latex particle morphology. Dr. Zhao joined BASF in 1989, has worked at BASF R & D and technical marketing centers in Canada, USA and Germany, on the research and development of aqueous polymer dispersions for various applications. Currently, he is a senior research associate responsible for the development of acrylic latexes for architectural coatings. Cheng-Le is a member of the ACS and FSCT and has over 40 research publications and patents. He won the Elias Singer best paper award at the 2000 International Waterborne, High-solids and Powder Coatings Symposium, and FSCT's John A. Gordon best paper award at ICE 2004. He has given presentations in FSCT courses, the Cal Poly Coatings Course, the Gordon Research Conference and a number of other international conferences.

Tentative Agenda

Monday 02.08.10

Embassy Suites, San Luis Obispo

- Welcome and Introductions
- Coating Industry Overview
- Resin Technologies (Overview, Solvent, 2K)
- Pigments and Fillers
- Resin Technologies (Waterborne, Opaque Polymers)

Tuesday 02.09.10

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- Advanced Polymerization Methods for Coatings
- Rheology Modifiers
- Coating Flows in Applications
- Characterization (MW, Spectroscopy, etc.)
- Additives and Defects

Wednesday 02.10.10

Cal Poly Campus, San Luis Obispo

- Film Formation and Curing
- Additives and Defects

Thursday 02.11.10

Embassy Suites, San Luis Obispo

- Collid Science; Modern Methods of Surface Analysis
- Polyurethan and UV/Radiation Cure Technology
- Nanotechnology in Coatings, Smart Coatings
- VOC/Air Quality-Regulatory Issues
- VOC/Air Quality- Industry Issues

Friday 02.12.10

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- VOC and Emission Analysis Methods
- Specialty Fillers
- Wrap Up and Evaluations

