

**SCHEDULE / Tuesday, June 14, 2016**

7:00 a.m. – 5:00 p.m.	Registration Open — <i>Plaza Level</i>					
7:30 a.m. – 8:30 a.m.	Networking Breakfast — <i>Pavilion Ballroom West</i>					
8:00 a.m. – 5:00 p.m.	Exhibition Open — <i>Plaza Level</i>					
8:30 a.m. – 8:40 a.m.	Welcome remarks — <i>Pavilion Ballroom East</i>					
8:40 a.m. – 9:30 a.m.	Keynote Address presented by Paul Anastas — <i>Pavilion Ballroom East</i>					
9:30 a.m. – 9:50 a.m.	Networking Coffee Break — <i>Plaza Foyer East</i>					
<b>TECHNICAL SESSIONS</b>	<b>CO<sub>2</sub> UTILIZATION BY DESIGN: FROM MOLECULAR CATALYSIS TO SURFACE CHEMISTRY SESSION 1</b>	<b>2016 PRESIDENTIAL GREEN CHEMISTRY CHALLENGE AWARDS</b>	<b>CHALLENGES, TOOLS, AND INNOVATION IN THE APPAREL AND FOOTWEAR SECTOR SESSION 1</b>	<b>GREEN CHEMISTRY IN CONSUMER PRODUCTS: FROM SUPPLY TO DEMAND</b>	<b>GENERAL ADVANCES IN GREEN CHEMISTRY</b>	<b>ADVANCES IN CONTINUOUS CHEMISTRY: BACK TO THE FUTURE</b>
	<b>Galleria N</b>	<b>Galleria S</b>	<b>Broadway I/II</b>	<b>Broadway III/IV</b>	<b>Forum Suite</b>	<b>Council Suite</b>
	<i>G. Li organizer, presiding</i>	<i>B. A. Drake, Organizer, D. Widawsky, Presiding</i>	<i>J. D. Frazier, Organizer, Presiding</i>	<i>L. Heine, A.M. Noce organizers, presiding A. Nestler, organizer</i>	<i>J. E. Hutchison, A. Voutchkova, Organizers, Presiding</i>	<i>M. E. Kopach, Organizer, Presiding</i>
9:50 a.m. – 10:10 a.m.	10. <b>Designing catalysts for the reduction of CO<sub>2</sub> using an energy-based approach.</b> <i>A.M. Appel</i>	<b>Winners of this year's Presidential Green Chemistry Challenge Awards (PGCCA) will be honored and have an opportunity to present their award lectures at this special session.</b>	<b>Introductory Remarks.</b>	26. <b>What are the odds? A journalist's take on ingredients for "green" products.</b> <i>M. Bomgardner</i>	18. <b>Green design for substitution with no regrets.</b> <i>P.T. Anastas</i>	1. <b>Flow chemistry for sustainable chemical manufacturing.</b> <i>M.G. Organ</i>
10:10 a.m. – 10:30 a.m.	11. <b>Electrocatalytic conversion of CO<sub>2</sub> using manganese-centered molecular catalysts.</b> <i>J. Agarwal</i>		5. <b>Use of automated tools to facilitate rapid chemical hazard assessment of footwear and apparel product and process chemicals.</b> <i>J. Rinkevich</i> , P.J. Beattie, J. Orchard-Hays, J.L. Tunkel, C.A. Rudisill	27. <b>Rivertop renewables: "Rising to the demand for green chemistry".</b> <i>B.T. Furey</i>	19. <b>Chem21.</b> A. Wells, <i>D. Prat</i> , H. Sneddon, L. Summerton, J. Hayler, R. Taylor	2. <b>Merging catalysis and continuous for greener processes.</b> <i>S.A. May</i>
10:30 a.m. – 10:50 a.m.	12. <b>Differences in carbon isotope discrimination during the photocatalytic reduction of CO<sub>2</sub>.</b> <i>A.M. Angeles Boza</i>		6. <b>How to use the alternatives assessment process to green your products using the EcoValuate tool.</b> <i>J. Malaczynski</i>	28. <b>Systematic transition to safer consumer products.</b> <i>R. McFadden</i>	20. <b>DOZN: A quantitative green chemistry evaluator.</b> <i>E. Ponnusamy</i>	3. <b>Synthetic transformations employing continuous flow technologies.</b> <i>C.L. Liotta</i>
10:50 a.m. – 11:10 a.m.	13. <b>Turning on the protonation-first pathway for electrocatalytic CO<sub>2</sub> reduction.</b> <i>J.J. Rochford</i>		7. <b>Sustainable high-performance fibers from Himalayan giant nettle (<i>Girardinia diversifolia</i> L.).</b> <i>R.S. Blackburn</i> , G. Lanzilao, P. Goswami	29. <b>U.S. market pressures and the battle between hazard and risk.</b> <i>R. Engler</i>	21. <b>Synthetic to natural: Safer color chemistry across the spectrum.</b> <i>M.W. Ellsworth</i>	
11:10 a.m. – 11:30 a.m.	14. <b>Development of solar fuels photoanodes through combinatorial integration of Ni-La-Co-Ce oxide and Ni-Fe-Co-Ce oxide catalysts on BiVO<sub>4</sub>.</b> <i>J. Haber</i> , D. Guevarra, A. Shinde, L. Zhou, G. Liu, I. Sharp, F. Toma, J. Gregoire		8. <b>INSQIN Waterborne PU: Addressing the sustainability challenges of PU coated textiles.</b> <i>R. Saunders</i>	30. <b>A Washington State perspective on PCB contamination in pigments and dyes.</b> <i>A. Stone</i>	22. <b>Harnessing the power of drug design for safer environmental chemicals.</b> <i>C. Ng</i>	
11:30 a.m. – 11:50 a.m.	15. <b>Life cycle emissions assessment of a solar fuel process: Impact of catalyst performance on the net CO<sub>2</sub> emissions of impact of methanol production by direct electrocatalytic reduction of CO<sub>2</sub>.</b> <i>M. Pellow</i> , S. Benson		9. <b>Innovations in denim finishing: Comparative savings in chemical, energy and water use.</b> <i>S.F. Echols</i>	31. <b>Accelerating green chemistry innovation through collaborative partnerships: Examples and lessons from the GC3.</b> <i>L. Hoch</i> , M. Becker	23. <b>The role of recycled materials.</b> <i>R. Peoples</i>	
11:50 a.m. – 12:10 p.m.	16. <b>Transfer hydrogenation of CO<sub>2</sub> from glycerol By single-site heterogeneous catalysis.</b> <i>M. Finn</i> , A. Azua-Barrios, H. Yi, J. Sartucci, A.B. Silva, A. Voutchkova			32. <b>EPA's Safer Choice Program: Meeting consumer demand and offering green chemistry solutions.</b> <i>B. Williams</i>	24. <b>Presidential green chemistry challenge award winning technologies in the consumer products sector.</b> <i>R.J. Fehir</i> , B.A. Drake	4. <b>Chemical assembly systems: Layered control for divergent, continuous, multi-step synthesis.</b> <i>K. Gilmore</i>
12:10 p.m. – 12:30 p.m.	17. <b>Enhanced interfacial actions between oil and CO<sub>2</sub> by oil-CO<sub>2</sub> amphiphilic compounds.</b> <i>Q. Shi</i> , W. Qiao			33. <b>Government policy drivers for the adoption of green and sustainable chemistry.</b> <i>R.J. Garant</i>	190. <b>Integrated fermentation and catalytic processing of biomass derived pyrones and lactones to produce fuels and chemicals.</b> <i>M.I. Alam</i>	
12:30 p.m. – 1:30 p.m.	Lunch on your own					

**Paul Anastas**

*Teresa and H. John Heinz III Professor in the Practice of Chemistry for Environment and Director of the Center for Green Chemistry and Engineering*  
Yale University

TECHNICAL SESSIONS	CO <sub>2</sub> UTILIZATION BY DESIGN: FROM MOLECULAR SURFACTANTS TO SURFACE CHEMISTRY SESSION 2	DRIVING WASTE TOWARD ZERO: THE IMPORTANCE OF SUPERIOR PROCESS DESIGN	CHALLENGES, TOOLS, AND INNOVATION IN THE APPAREL AND FOOTWEAR SECTOR SESSION 2	ENSURING COMMERCIAL SUCCESS IN SUSTAINABLE TECHNOLOGY TRANSFER BY DESIGN	SUSTAINABLE STRATEGIES FOR NEXT GENERATION BIOLOGICS AND THERAPEUTICS	CONVERSION OF RENEWABLES: CATALYSIS, METHODS AND TECHNOLOGIES
	Galleria N	Galleria S	Broadway I/II	Broadway III/IV	Forum Suite	Council Suite
	<i>G. Li, Organizer, Presiding</i>	<i>D. K. Leahy, Organizer J. Yin, Presiding</i>	<i>J. D. Frazier, Organizer, Presiding</i>	<i>T. J. Burns, P. Silva, Organizers C. K. Choy, Presiding</i>	<i>K. Budzinski, Organizer, Presiding</i>	<i>K. Barta, P. Bruijninx, Organizers, Presiding</i>
1:30 p.m. – 1:50 p.m.	41. <b>Modeling photo-active TiO<sub>2</sub>-graphene interfaces.</b> <i>N.A. Deskins</i> , B. Bukowski	51. <b>A practical synthesis of ERK inhibitor GDC-0994 on multi-kilogram scale.</b> <i>X. Linghu</i>	34. <b>Learnings from the commercial introduction of a renewably sourced durable water repellent.</b> G. Brown, <i>R.C. Buck</i> , J.C. Sworen	Introductory Remarks. 58. (1:35 p.m.) <b>What it takes to make a dent: The development of a new-to-the-world metathesis-based surfactant which makes water work like an organic solvent.</b> <i>R. Slone</i>	277. <b>Green metrics for biologics manufacturing: Current collaborative effort and future direction.</b> <i>S.V. Ho</i> , K. Budzinski	45. <b>A temperature controlled approach for the homogenously catalyzed conversion of oleochemicals in aqueous media.</b> <i>T. Gaide</i> , J. Dreiman, J. Bianga, A. Behr, A. Vorholt
1:50 p.m. – 2:10 p.m.	42. <b>Mechanism of CO<sub>2</sub> reduction to CO and CH<sub>3</sub>OH on ceria surface: Density function theory study.</b> <i>N. Kumari</i> , M. Haider, M. Agarwal, N. Sinha, S. Basu	52. <b>Chemical development of a novel antiviral at Merck: Greener chemistry through process innovation.</b> <i>M. McLaughlin</i>	35. <b>The route to fluorine-free repellent coatings in outdoor apparel: Consumer use, maintenance and physiological comfort.</b> P. Hill, M. Taylor, P. Goswami, <i>R.S. Blackburn</i>	59. (1:55 p.m.) <b>Finding new ways to catalyze innovation and achieve sustainability in additive manufacturing.</b> <i>T. McKeag</i> , D. Danby		46. <b>Synthesis of biobased building blocks from vegetable oils: A chemicals platform approach for polymer synthesis.</b> <i>S. Caillol</i>
2:10 p.m. – 2:30 p.m.	43. <b>Hybrid photocatalysts for solar energy conversion.</b> <i>T. Jin</i> , B.D. Stewart, S.A. Pantovich, G. Li	53. <b>Development of a green and efficient Suzuki-Miyaura process for the triple reuptake inhibitor penultimate BMS-821754.</b> <i>B. Mudryk</i>	36. <b>Permanent, perfluorocarbon-free, water-free finishing of textiles and footwear.</b> <i>G.S. Selwyn</i>	60. (2:15 p.m.) <b>Value of GHG reductions and sports events in advancing low-carbon technologies into the market.</b> <i>A.M. Behr</i> , M.H. Mazor, S. Phillips, J. Natalense	278. <b>Single-use technology and sustainability: Quantifying the environmental impact of biopharmaceutical manufacturing.</b> <i>W.P. Flanagan</i> , A.R. Dua, C. Reeb, J. Dettling, A. Sinclair, Y. Abe	49. <b>Catalyst structure-performance relations for supported Ru-catalysed hydrogenations of levulinic acid to gamma-valerolactone.</b> <i>E. Heeres</i>
2:30 p.m. – 2:50 p.m.	44. <b>Amidoxime-functionalized microcrystalline cellulose-mesoporous silica composites for high temperature carbon dioxide sorption.</b> <i>C. Gunathilake</i> , R. Dassanayake, N. Abidi, M. Jaroniec	54. <b>Greener chemistry in research labs with higher-concentration reactions.</b> <i>L. Sun</i> , Y. Yin, R. Ma	37. <b>Alternatives assessment of 11 non-fluorinated DWR products utilizing the GHS-column model.</b> <i>K. Schubert</i> , R.C. Buck	61. (2:35 p.m.) <b>Economic and ecologic strategies for chemical manufacturing by means of continuous flow chemistry.</b> <i>D. Kirschneck</i>		
2:50 p.m. – 3:10 p.m.	Networking Break — Plaza Foyer East		Panel Discussion: DWR/Repellency	(2:55 p.m.) Networking Break — Plaza Foyer East	Networking Break — Plaza Foyer East	
3:10 p.m. – 3:30 p.m.	<b>GREEN CHEMISTRY IN THE SEMICONDUCTOR AND ELECTRONICS SUPPLY CHAIN</b> <i>E. Gately, M. Kirschner, Organizers, Presiding</i>		Intermission	62. <b>Development of sustainable alternatives for the next generation of chemicals and materials: Continued progress in development of renewably-sourced materials from DuPont.</b> <i>H.E. Bryndza</i> , M.A. Saltzberg	279. <b>Sharing learnings from Johnson &amp; Johnson's biologics life cycle assessment studies.</b> <i>P. Dahlin</i>	48. <b>New approaches for efficient synthesis of precursors of industrial-nylons from oleic acid.</b> <i>G. Abel</i> , A.Y. Mudiyansele, K. Nguyen, S. Viamajala, S. Varanasi, K. Yamamoto
	70. (3:00 p.m.) <b>Green chemistry in 3D printing technology.</b> <i>T. McKeag</i> , D. Danby					
3:30 p.m. – 3:50 p.m.	71. (3:20 p.m.) <b>Assessing and reducing the environmental toxicity of 3D-printed parts.</b> <i>S. Mesbah Oskui</i> , G. Diamante, C. Liao, W. Shi, J. Gan, D. Schlenk, W.H. Grover	56. <b>Towards the zero waste commercial API process.</b> <i>G.R. Humphrey</i>	38. <b>Eco-friendly dyeing of electrospun cellulose nanofibers with reactive dye.</b> <i>S. Hajahmadi</i>	63. <b>The commercial success of Polymeric FR: Market transformation driven by green chemistry.</b> <i>S. Hunter</i> , C. Lukas	280. <b>Sustainable science in bioconjugate process development.</b> <i>R. Finn</i>	185. <b>A continuous flow synthesis of biodiesel using vortex fluidics.</b> <i>J. Britton</i> , C. Raston
3:50 p.m. – 4:10 p.m.	72. (3:40 p.m.) <b>Opportunities and challenges for green chemistry in semiconductor technology.</b> <i>L.T. Kenny</i>	57. <b>Ligand-accelerated C-H activation reactions: Distance and geometry.</b> <i>J. Yu</i>	39. <b>Processing and characterization of natural banana fibers for textile applications.</b> <i>G.A. Montero</i>	58. Panel Discussion.	281. <b>Rational selection of alternative, environmentally compatible, surfactants for biotechnological production of pharmaceuticals - a step toward green biotechnology.</b> <i>R. Shearer</i>	50. <b>Conversion of cellulosic biomass by heterogeneous catalysts.</b> <i>A. Fukuoka</i>
4:10 p.m. – 4:30 p.m.	70. (4:00 p.m.) <b>Competing on green chemistry: Can the electronics industry do it?.</b> <i>M. Kirschner</i> (4:20 p.m.) <b>Using the Chemical Footprint Project to identify chemicals of concern in the supply chain.</b> <i>J. Reece</i> (4:40 p.m.) Panel Discussion		40. <b>The collision of comfort and sustainable design.</b> <i>J. Zwillingner</i>  Concluding Remarks. (4:25 p.m.)			
4:45 p.m. – 6:15 p.m.	GreenX — Pavilion Ballroom					
6:15 p.m. – 8:00 p.m.	Welcome Reception — Skyline I/II					

## SCHEDULE / Wednesday, June 15, 2016

7:30 a.m. – 5:00 p.m.	Registration Open — <i>Plaza Level</i>						
7:30 a.m. – 8:30 a.m.	Networking Breakfast — <i>Pavilion Ballroom West</i>						
8:00 a.m. – 5:00 p.m.	Exhibition Open — <i>Plaza Level</i>						
8:30 a.m. – 8:35 a.m.	Welcome Remarks — <i>Pavilion Ballroom East</i>						
8:35 a.m. – 9:30 a.m.	Keynote Address presented by Jin-Quan Yu — <i>Pavilion Ballroom East</i>						
9:30 a.m. – 9:50 a.m.	Networking Coffee Break — <i>Plaza Foyer East</i>						
TECHNICAL SESSIONS	ALTERNATIVE ASSESSMENT AND DE NOVO DESIGN	NEW SUSTAINABLE SYNTHETIC STRATEGIES THROUGH PHOTOREDOX CATALYSIS	HOW TO GET THERE FROM HERE SUSTAINABLY	DESIGN OF NEW STRATEGIES FOR THE CONVERSION OF LIGNIN	SUSTAINABLE CHEMICAL SEPARATIONS: ACCELERATING INDUSTRIAL APPLICATION OF LESS-ENERGY INTENSIVE ALTERNATIVES	EDUCATION RESOURCES DESIGNED TO SHARE SUSTAINABLE SOLUTIONS TO PLASTICS AND MATERIALS	GC&E BUSINESS PLAN COMPETITION
	<b>Galleria N</b>	<b>Galleria S</b>	<b>Broadway I/II</b>	<b>Broadway III/IV</b>	<b>Forum Suite</b>	<b>Council Suite</b>	<b>Skyline III</b>
	<i>H. Plugge, L. Shen, Organizers, Presiding</i>	<i>D. K. Leahy, Organizer N. Strotman, Presiding</i>	<i>S. Koenig, Organizer W. Gallagher, Presiding</i>	<i>K. Barta, P. Bruijninx, Organizers, Presiding</i>	<i>E. Ponnusamy, A. Sehgal, Organizers, Presiding</i>	<i>J. E. Wissinger, Organizer, Presiding</i>	<i>D. Daly, E. Beckman, R. Engler, Organizers</i>
9:50 a.m. – 10:10 a.m.	74. <b>On the design of safer chemicals: The path forward.</b> <i>S. DeVito</i>	97. <b>Tandem lewis acid-photoredox catalysis for enantioselective photoreactions.</b> <i>T.P. Yoon</i>	93. <b>The impact of a novel organocatalytic dynamic kinetic asymmetric transformation (DyKAT) on the synthesis of a drug candidate.</b> <i>T. Benkovics</i>	25. <b>On the activation parameters for model lignin linkages over a promising Cu-doped porous metal oxide catalyst.</b> <i>C.M. Bernt, H. Maneesuwan, M.A. Chui, K. Barta, P.C. Ford</i>	101. <b>Toward sustainable chemical separation processes.</b> <i>R. Giraud</i>	87. <b>Bustin' bunnies and beyond: Adaptable inquiry-based approaches for introducing polymer principles.</b> <i>N.J. Robertson</i>	Panel Discussion
10:10 a.m. – 10:30 a.m.	75. <b>Biosynthetic and bio-inspired glycolipid surfactants: Properties, biodegradability, and toxicity.</b> <i>J.E. Pemberton</i> , R.L. Polt, S.D. Schwartz, R. Maier, W.J. Klimecki			82. <b>Aromatic monomers by in situ conversion of reactive intermediates in the acid-catalyzed depolymerization of lignin.</b> <i>P.J. Deuss</i>			
10:30 a.m. – 10:50 a.m.	76. <b>Computational model for Nrf2-ARE activation in human HepG2 cells based on whole-molecule chemical properties and mechanistic domains.</b> <i>F. Melnikov</i> , A. Voutchkova, L. Shen, J. Kostal, J.B. Zimmerman, P.T. Anastas	98. <b>Application of photoredox catalysis to green manufacturing processes.</b> <i>D. DiRocco</i>	94. <b>Development of a green manufacturing process.</b> <i>K.M. Maloney</i> , G.R. Humphrey	83. <b>Lignin valorization using biological funneling and chemical catalysis.</b> <i>G. Beckham</i>	102. <b>ALTSEP: Initial steps on the road to low energy-intensity chemical separations.</b> <i>A. Sehgal</i>	88. <b>Organocatalytic ring-opening polymerization of trimethylene carbonate to yield a biodegradable polycarbonate.</b> <i>M. Brennan</i> , J. Chan, X. Zhang, R.M. Waymouth, J. Hedrick	
10:50 a.m. – 11:10 a.m.	77. <b>A practical guide for green molecular design: Using in silico approaches to reduce toxicological risk.</b> <i>D. Faulkner</i> , L.K. Rubin, V. De La Rosa, D.E. Johnson, J. Arnold, C. Vulpe					89. <b>Polymers experiments in the general chemistry laboratory curriculum at UC Berkeley.</b> <i>M.T. Robak</i> , M.C. Douskey, L.B. Armstrong, G. Kerstiens, A.M. Baranger	
11:10 a.m. – 11:30 a.m.	78. <b>Predicting chemical hazard with a big data approach.</b> <i>A. Maertens</i> , T. Luechtefeld, T. Hartung	99. <b>New avenues in synthesis via organic photoredox catalysis.</b> <i>D.A. Nicewicz</i>	95. <b>The quest for efficiency in natural product synthesis.</b> <i>C. Beaudry</i>	84. <b>Sustainable energy materials for lithium sulfur batteries from lignosulfonate liquor.</b> L. Li, N. Koratkar, <i>T.J. Simmons</i>	Discussion and Brainstorming.	90. <b>Synthesis and exploration of sustainable polymers in the organic chemistry laboratory.</b> <i>J.E. Wissinger</i> , G. Fahnhorst, Z.J. Swingen, M.T. Wentzel	
11:30 a.m. – 11:50 a.m.	79. <b>HESI pilot project: Testing a qualitative approach for incorporating exposure into alternatives assessment.</b> <i>B. Greggs</i> , S. Arnold, T.J. Burns, P. Egeghy, P. Fantke, B. Gaborek, L. Heine, O. Jolliet, D. Muir, J. Rinkevich, N. Sunger, J. Young Tanir			85. <b>Electric insulating resin with high heat resistance derived from woody lignin obtained by steam-explosion.</b> <i>H. Kagawa</i> , Y. Okabe, C. Sasaki, Y. Nakamura		91. <b>Polymers for the planet: Engaging students in sustainable solutions.</b> <i>J.C. Levine</i>	
11:50 a.m. – 12:10 p.m.	80. <b>The California safer consumer products regulations' approach to alternatives assessment.</b> <i>E. Rodriguez</i>	100. <b>Organocatalyzed photoredox atom transfer radical polymerization: Catalyst development and application in the design of degradable polymers from biomass.</b> <i>R.M. Pearson</i> , G. Miyake	96. <b>Synthetic strategy, chemical innovation and the context of an efficient synthesis.</b> <i>M.D. Eastgate</i>	86. <b>Sustainable conversion of lignin to value-added chemicals, thermoplastics and fuels.</b> <i>M.M. Abu-Omar</i>		92. <b>Tangential flow filtration of spherical, colloidal nanoparticles: A "green" laboratory module for chemistry and engineering students.</b> <i>I.E. Pavel Sizemore</i> , K.M. Dorney, J. Baker, M. Edwards, S. Kanel	
12:10 p.m. – 12:30 p.m.	81. <b>Understanding the unexpected or unanticipated consequences of a chemical over its life cycle is fundamental to eco-design.</b> J. Fava, <i>E. Mulholland</i>						
12:30 p.m. – 1:30 p.m.	Lunch on your own						



**Jin-Quan Yu**  
Frank and Bertha Hupp Professor of Chemistry  
The Scripps Research Institute

TECHNICAL SESSIONS	SUSTAINABLE STRATEGIES FOR ORGANIC SYNTHESIS USING BIOCATALYSIS	EXPLORING OPPORTUNITIES FOR GREEN CHEMISTRY EDUCATORS AND RESEARCHERS AS CHANGE AGENTS ADDRESSING THE SOCIAL AND ENVIRONMENTAL (IN) JUSTICES OF CHEMICAL EXPOSURE	DESIGN OF NEW STRATEGIES FOR THE CONVERSION OF CARBOHYDRATES	GREEN CHEMISTRY AND MEDICINAL CHEMISTRY ARE MISCIBLE!	BRIDGING GREEN SOLVENT DESIGN, IMPACTS AND APPLICATION	WORKSHOP ON DATA UNCERTAINTY IN PREDICTIVE TOXICOLOGY AND ALTERNATIVE ASSESSMENTS	GC&E BUSINESS PLAN COMPETITION		
	<b>Directors Suite</b>	<b>Studio Suite</b>	<b>Broadway I/II</b>	<b>Broadway III/IV</b>	<b>Forum Suite</b>	<b>Council Suite</b>	<b>Skyline III</b>		
	<i>A. Goswami, Organizer, Presiding</i>	<i>E. J. Brush, Organizer, Presiding</i>	<i>K. Barta, P. Bruijninx, Organizers, Presiding</i>	<i>S. G. Koenig, Organizer D. T. Richter, Presiding</i>	<i>L. Soh, Organizer, Presiding</i>	<i>J. Kostal, Organizer, Presiding</i>	<i>D. Daly, E. Beckman, R. Engler, Organizers</i>		
1:30 p.m. – 1:50 p.m.	128. <b>Novel sustainable cyclopropanation biocatalysts.</b> <i>J.D. Rozzell</i>	Introductory Remarks.	110. <b>A new perspective in bio-refining: Levoglucosone formation from residual saccharides in waste biorefinery hydrolysis lignin.</b> <i>M. De bruyn</i> , J. Fan, V. Budarin, D. Macquarrie, L. Gomez, R. Simister, T. Farmer, W. Raverty, S. McQueen-Mason, J. Clark	121. <b>Green medicinal chemistry by design.</b> <i>K. Freeman-Cook</i>	103. <b>Tailoring physicochemical solvent properties through CO<sub>2</sub> expanded liquids.</b> <i>E.E. Urena-Benavides</i> , P. Pollet, C.A. Eckert, C.L. Liotta	This year's workshop will focus on the concept of data uncertainty and its importance in decision-making strategies and development of predictive tools. The synthesis of overlapping data sources with varying uncertainty and reliability is critical in developing robust predictive methods, yet it is one of the aspects of model development that is often undervalued or completely disregarded. We will discuss this issue from the point of view of experimentalists, modelers and practitioners involved in safer chemical design.	Semi-finalists will be presenting their business plans.  <b>3Bar Biologics, Inc.</b> , J. Fife  <b>AeroClay</b> , G. McGill  <b>Grow BioPlastics</b> , TBD  <b>Jolt Energy Storage Technologies</b> , T. Guarr		
1:50 p.m. – 2:10 p.m.		116. <b>Pesticide impacts of banana cultivation: A disconnect between producing regions and consumers.</b> <i>A.A. Mendez</i> , C. Ng, L. Castillo, C. Ruepert						111. <b>Bio-based sources for p-Xylene.</b> <i>P.B. Smith</i> , D. Henton, A. Dumitrascu, D. Hucul, M. Masuno, R. Smith, J. Bissell	122. <b>Progress towards embedding a culture of green into Amgen's medicinal chemistry program.</b> <i>A. Siegmund</i>
2:10 p.m. – 2:30 p.m.	129. <b>Biocatalytic synthesis of fluorescent polyphenols for sensing applications.</b> <i>W. Kiratitanavit</i> , F. Bruno, C. Doona, R. Nagarajan	117. <b>Chemistry in a social justice context.</b> <i>M.M. Kirchhoff</i>	112. <b>Efficient, chemical-catalytic approaches to the production of renewable succinic, 3-hydroxypropanoic, and furandicarboxylic acids from biomass-derived 5-(chloromethyl)furfural.</b> <i>M. Mascall</i> , L. Wu, S. Dutta	123. <b>Putting spin on flow chemistry.</b> <i>J. Britton</i> , C. Raston, G. Weiss	105. <b>Fractionation of microalgae lipid and nutraceutical compounds with supercritical carbon dioxide.</b> <i>T.A. Kwan</i> , J.B. Zimmerman				
2:30 p.m. – 2:50 p.m.	130. <b>Computational design of new biocatalysts and retro-synthetic approaches.</b> <i>A. Zanghellini</i>	118. <b>Two decades of the Presidential Green Chemistry Challenge awards: Bringing about positive change for society, the environment and the economy.</b> <i>M.C. Cann</i>						124. <b>Microplate microreactor scaffolds: Making the most of existing lab infrastructure.</b> <i>S.B. Corry</i> , R. Parmenter	106. <b>Novel series of diphenyl phosphate based ionic liquids for the dissolution and ecofriendly extraction of biomass at room temperature.</b> <i>R. Medimagh</i> , R. Zarrougui, H. Essadam
2:50 p.m. – 3:10 p.m.	Networking Break — Plaza Foyer East							Judges feedback (closed session)	
3:10 p.m. – 3:30 p.m.	131. <b>(R)- and (S)-amines through amine dehydrogenase catalysis.</b> <i>A.S. Bommarius</i> , S.K. Au, B.B. Bommarius	119. <b>Exploring social and environmental justice through green chemistry education, research and outreach.</b> <i>E.J. Brush</i>	113. <b>A green route to aromatic compounds: Cascades of carbohydrate-derived furfurals in water.</b> <i>S. Higson</i> , F. Subrizi, T.D. Sheppard, H.C. Hailles	125. <b>Chiral reduction of heterocyclic enones to ketones using a mutant flavin-dependent reductase.</b> <i>T.R. Webb</i> , C. Lagisetti, W. Zhou	107. <b>Tunable and switchable solvents for processing nanoparticles for catalysis by controlling surface interactions.</b> <i>S.R. Saunders</i> , S. Reynolds, T. Graham, G. Ibrahim, K. Bryant				
3:30 p.m. – 3:50 p.m.		120. <b>Mainstreaming green chemistry: Sharing the twelve principals.</b> <i>A. Lujan</i> , M. Simpson, O. Krel				114. <b>Solid acid and Pd/C tandem catalysis for renewable aromatic chemicals from biobased furanics.</b> H.C. Genuino, S. Thiyagarajan, J. van der Waal, E. Dejong, J. van Haveren, B. Weckhuysen, D. van Es, P. Bruijninx	126. <b>Base-free and ligand-free Suzuki coupling reactions of basic nitrogen-containing substrates in water.</b> <i>Z. Li</i> , C. Gelbaum, J.S. Fisk, B. Holden, A. Jaganathan, P. Pollet, C.L. Liotta		108. <b>A novel approach to determine overall analytical greenness scores for processes in the pharmaceutical industry.</b> <i>L. Lehmann</i> , C. Wood, T.V. Raglione
3:50 p.m. – 4:10 p.m.	132. <b>Efficient synthesis of chiral pharmaceutical intermediates using biocatalysis.</b> <i>J.W. Wong</i>	Discussion.	115. <b>Catalytic processing of wood to pulp and their valorization.</b> <i>B.F. Sels</i>	127. <b>Novel direct arylation and amination reactions: Rapid synthesis of functionalized biaryls, a-arylated ketones, arylamines and heterocycles.</b> <i>L. Kurti</i>	109. <b>Solvent selection guides for pharmaceutical chemistry.</b> <i>D. Prat</i>				
4:10 p.m. – 4:30 p.m.		Concluding Remarks.				Panel Discussion. (4:30 p.m.)			
4:30 p.m. – 6:30 p.m.	Poster Session — Pavilion Ballroom								
6:30 p.m. – 8:30 p.m.	6th Annual ACS GCI Industrial Roundtable Poster Reception — Galleria								
6:45 p.m. – 10:00 p.m.	ACS Careers Workshop — Forum Suite								

## SCHEDULE / Thursday, June 16, 2016

7:30 a.m. – 3:00 p.m.	Registration Open — <i>Plaza Level</i>					
7:30 a.m. – 8:30 a.m.	Networking Breakfast — <i>Pavilion Ballroom West</i>					
8:00 a.m. – 3:00 p.m.	Exhibition Open — <i>Plaza Level</i>					
TECHNICAL SESSIONS	DESIGN STRATEGIES TO MAXIMIZE THE NET ENVIRONMENTAL BENEFIT OF EMERGING APPROACHES TO ENVIRONMENTAL CHALLENGES SESSION 1	DESIGNING PRECURSORS FOR FUNCTIONAL MATERIALS THROUGH SUSTAINABLE CHEMISTRY	GREENER APPROACHES TO THERAPEUTIC SYNTHETIC POLYPEPTIDES	DESIGN OF PROCESSES FOR CLEANER WATER	DESIGN OF HETEROGENEOUS CATALYSIS	DESIGN OF STATE OF THE ART GC CURRICULA
	Directors Suite	Senate Suite	Broadway I/II	Broadway III/IV	Forum Suite	Council Suite
	<i>L. M. Gilbertson, Organizer, Presiding</i>	<i>B.L. Maddux, Organizer, C.K. Perkins, Organizer, Presiding</i>	<i>K. Budzinski, Organizer T. Benkovics, Presiding</i>	<i>S. Shukla, Organizer, Presiding</i>	<i>A. Voutchkova, Organizer, Presiding</i>	<i>J. E. Hutchison, Organizer, Presiding</i>
8:30 a.m. – 8:50 a.m.	Introductory Remarks.	241. <b>Printing with clusters.</b> <i>D.A. Keszler</i>	322. <b>Peptide API Manufacturing: A green chemists paradise or nightmare?.</b> <i>M.E. Kopach</i>	257. <b>Is there a way to clean drinking water for masses? An overview of the need and the quest of low cost low tech water treatment systems.</b> <i>S. Shukla</i> , A. Shukla	249. <b>Multi-functional heterogeneous catalyst for the conversion of ethanol to C4 chemical building block.</b> <i>C. Alvarez-Vasco</i> , m. Gray, H. Job, K.K. Ramasamy	264. <b>Green chemistry education roadmap: Overview and update.</b> <i>J.E. Hutchison</i>
8:50 a.m. – 9:10 a.m.	271. (8:40 a.m.) <b>Sustainable Design Strategies that Consumers Recognize in Polymers.</b> <i>K. Muenchinger</i>	242. <b>Metal oxide EUV photoresists: Novel materials in a mature industry.</b> <i>A. Telecky</i>		258. <b>Enhanced capacitive desalination performance with polysaccharide binders.</b> <i>R.D. Cusick</i>	250. <b>Protecting palladium: Balancing stability and reactivity in support-tether design.</b> <i>D. Paull</i>	265. <b>Infusing the concepts and tools of toxicology into the chemistry curriculum.</b> <i>A. Voutchkova</i>
9:10 a.m. – 9:30 a.m.	272. (9:20 a.m.) <b>Green chemistry for healthier skin cleansing: Designing a polymeric surfactant to benefit the consumer and minimize environmental impact.</b> <i>M.J. Fevola</i> , F.C. Sun, R.M. Walters, G.A. Nystrand, T.J. Futterer, G.N. Stamatas, C. Mack	243. <b>A synthesis strategy for gold nanoparticle reagents that maximizes performance and minimizes environmental impacts.</b> <i>A. Ginzburg</i> , E. Elliott, Z. Kennedy, J.E. Hutchison	323. <b>Biotechnology based production process for a disulfide-bridged peptide.</b> <i>A. Goswami</i> , S.L. Goldberg, R.L. Hanson, R.M. Johnston, O.K. Lyngberg, Y. Chan, E. Lo, S. Chan, N. De Mas, A. Ramirez, R. Doyle, W. Ding, M. Gao, S.R. Krystek, C. Wan, Y. Kim, D. Calambur, M.R. Witmer, J.W. Bryson	260. <b>Copper coated stainless steel as antimicrobial agent in preventing bacterial growth.</b> S. Shukla, <i>R. Nissankarrao</i> , A. Kucknoor, A. Shukla, R. Cardenas, D. Rutman	251. <b>Designing the interface between nanoparticle catalysts and electrode materials for enhanced electrocatalysis.</b> <i>S.L. Young</i> , J. Kellon, J.E. Hutchison	
9:30 a.m. – 9:50 a.m.	273. (9:40 a.m.) <b>Valorizing waste cardboard as a low-cost greener building material for India.</b> <i>H.L. Buckley</i> , C.H. Touchberry, J.P. McKinley, Z. Mathe, H. Muradyan, H. Ling, R.P. Fadadu, M.J. Mulvihill, S.E. Amrose	244. <b>Precise tuning of optoelectronic properties of Sn-doped In2O3 nanocrystals through size and dopant distribution, and their use as additive solution-processed materials in electronic devices.</b> <i>B. Crockett</i>		261. <b>P. vulgaris self-sustaining ureolysis system for the recycling of wastewater.</b> <i>M. Morales</i> , I. Gonzalez, R. Martínez, C.R. Cabrera	252. <b>Selective hydrodeoxygenation of guaiacol over bifunctional Co/Al-MCM-41 catalyst.</b> <i>N.T. Tran</i> , Y. Uemura, A. Ramli	266. (9:20 a.m.) <b>Green chemistry education roadmap: Embedding systems thinking in the chemistry curriculum.</b> <i>E.J. Beckman</i>
9:50 a.m. – 10:10 a.m.	(10:00 a.m.) Intermission.	245. <b>The effect of aluminum cluster speciation on dielectric thin film properties.</b> <i>C.K. Perkins</i> , B.L. Fulton, R.H. Mansergh, M. Jenkins, J.C. Ramos, D. Park, J.F. Conley, D.W. Johnson, D.A. Keszler	324. <b>Synthetic peptide process design and control strategy.</b> <i>A. Lower</i>	262. <b>Comparative sorption studies of 17-β estradiol on raw bone powder, bone char and commercial hydroxyapatite.</b> <i>S. Patel</i> , J. Han, W. Gao	253. <b>Pesticide remediation: Oxidative degradation of organophosphate neurotoxins by supported molybdenum-peroxy polymers.</b> <i>L.Y. Kuo</i>	267. <b>Toxicology experiments in the general chemistry laboratory curriculum at UC Berkeley.</b> <i>L.B. Armstrong</i> , M.C. Douskey, M.T. Robak, A.M. Baranger, C.W. Tam, P. Pande, G. Kerstiens
10:10 a.m. – 10:30 a.m.	274. (10:05 a.m.) <b>Chloroaluminum phthalocyanine synthesis for transparent organic photovoltaics.</b> <i>E. Lee</i> , C.J. Andrews, A. Anctil	246. <b>Niobium and tantalum polyoxometalates as precursors to metal oxide thin films.</b> <i>L.B. Fullmer</i> , R. Mansergh, L. Zakharov, D.A. Keszler, M.D. Nyman		263. <b>Highly efficient and greener approach for fluorinating organic compounds.</b> <i>S. Dhingra</i>	254. <b>Switchable cycloadditions: A simple, adjustable nickel catalyst system for producing [2+2+2+2] or [2+2+2] cycloaddition products.</b> <i>R.A. Haley</i> , J. Liu, A. Zellner, H. Guan, J. Mack	268. <b>Teaching green chemistry and engineering principles through life cycle inventory analysis.</b> <i>M. Sabahi</i>
10:30 a.m. – 10:50 p.m.	275. <b>W</b> (10:25 a.m.) <b>PLATech: A drop-in replacement for urea-formaldehyde in wood-based composites.</b> <i>A. Bakken</i> , R. Taleyarkhan, B. Archambault	247. <b>Synthesis and non-aqueous solution characterization of new all-inorganic rare-earth clusters as precursors for thin films.</b> <i>D. Marsh</i> , S. Goberna-Ferron, M. Baumeister, L. Zakharov, M.D. Nyman, D.W. Johnson	325. <b>Solid phase peptide synthesis as method to understand the molecular basis of protein function.</b> <i>P. Dawson</i>	255. <b>Palladium-LDHs: Active and recyclable catalysts on decarbonylation of biomass-relevant substrates.</b> <i>N. An</i> , A. Adeniyi, M. Finn, P. Pereira, A. Voutchkova	269. <b>The Greener Solutions Program: Client-based learning and a bioinspired systems approach to safer and more sustainable chemistry.</b> <i>T. McKeag</i>	
10:50 p.m. – 11:10 p.m.	276. (10:45 a.m.) <b>Methane recovery from the anaerobic digestion of food waste and pretreated bioplastic.</b> <i>S.R. Hobbs</i> , A.E. Landis	248. <b>Synthesis of double perovskite materials by a bio-milling approach for SOFC electrode.</b> <i>U. Anjum</i> , M.A. Haider		256. <b>Inverse molecular design of green catalysts for converting biomass molecules into value-added chemicals.</b> <i>D. Xiao</i>	270. <b>Molecular design research network: Education at the nexus of chemistry and toxicology.</b> <i>K. Mellor</i> , N. Simcox, G. Lasker, M. Mullins, S. Nesmith, P.T. Anastas	
11:10 a.m. – 11:30 a.m.	(11:05 a.m.) Concluding Remarks.					
11:10 a.m. – 11:30 a.m.	Networking Break					



**Nathan (Nate) Lewis**  
George L. Argyros Professor of Chemistry  
California Institute of Technology

11:30 a.m. – 11:45 a.m.	Remarks/Student Poster Awards/Applied Separations Grant/Business Plan Competition Winner — <i>Pavilion Ballroom East</i>					
11:45 a.m. – 12:30 p.m.	Keynote Address presented by Nate Lewis — <i>Pavilion Ballroom East</i>					
12:30 p.m. – 2:00 p.m.	Lunch on your own					
TECHNICAL SESSIONS	DESIGN STRATEGIES SESSION 2	INORGANIC THIN-FILMS: FROM SUSTAINABLE DESIGN TO ADVANCED FUNCTIONALITIES	NEW DIRECTIONS IN GREEN SYNTHETIC DESIGN	GREEN CHEMISTRY DESIGN FOR A RAINBOW OF COLORANTS	DESIGN OF HOMOGENEOUS CATALYSIS	DESIGN OF CURRICULAR MATERIALS: RAPID FIRE SESSION PRESENTERS HAVE 10 MINS.
	Directors Suite	Senate Suite	Broadway I/II	Broadway III/IV	Forum Suite	Council Suite
	<i>L. M. Gilbertson, Organizer, Presiding</i>	<i>B. L. Maddux, Organizer C. K. Perkins, Organizer, Presiding</i>	<i>D. K. Leahy, Organizer C. Beaudry, Presiding</i>	<i>L. Heine, S. van Bergen, Organizers, A. Nestler, Organizer, Presiding</i>	<i>A. Voutchkova, Organizer C. H. Leung, Presiding</i>	<i>J. E. Wissinger, Organizer, Presiding</i>
2:00 p.m. – 2:20 p.m.	301. <b>Designing with Okala metrics.</b> <i>P. White</i>	315. <b>Solution-cast oxide films from aqueous all-inorganic molecular precursors: Solution chemistry, design principles, and electronic applications.</b> <i>S.W. Boettcher</i> , M. Kast, L.J. Enman, J. Wager, D.A. Keszler	64. <b>Ligand-free palladium-catalyzed Suzuki reactions in water: Effects of reaction scale, temperature, pH of aqueous phase and substrate structure.</b> <i>Z. Li</i> , C. Gelbaum, W.L. Heaner, J.S. Fisk, A. Jaganathan, B. Holden, P. Pollet, C.L. Liotta	307. <b>Inadvertent PCB formation from a pigment chemistry perspective.</b> <i>R. Christie</i>	293. <b>Catalytic isomerization of allyl functionalities in water by hexaaquaruthenium(II) tosylate.</b> <i>L.Y. Kuo</i>	282. <b>Sewer science: A calibrated peer review (CPR) writing project for quantitative analysis lab.</b> <i>L.D. Margerum</i>
2:20 p.m. – 2:40 p.m.			65. <b>Minimizing waste in a mechanochemical Wittig reaction.</b> <i>D.K. Leahy</i> , K. Benson, L.N. Ortiz-Trankina, C.R. Pace, P. Carr, J. Mack	308. <b>Colored pigments: Chemistry &amp; performance: A technical presentation.</b> <i>R. Kumar</i>	294. <b>Hydroformylation as key step in homogeneous tandem catalytic systems: Towards the synthesis of novel long-chain-polyesters from renewables.</b> <i>T. Seidensticker</i> , A. Vorholt, K.A. Ostrowski	283. <b>The next generation of green scientists.</b> <i>D. Paull</i>
2:40 p.m. – 3:00 p.m.	302. <b>Transiting to a resilient and low-impact urban water infrastructure system: A multi-objective systems approach.</b> <i>R. Wang</i> , J.B. Zimmerman	316. <b>Ion exchange for lower temperature processing and enhanced functionality in solution-processed thin films.</b> R.H. Mansergh, L.B. Fullmer, D. Park, <i>C.K. Perkins</i> , J.M. Amador, M.D. Nyman, D.A. Keszler	66. <b>Poly(4-vinylpyridine) as a green solid support for acid catalysts and reagents.</b> <i>T. Mathew</i> , S.G. Prakash, G.A. Olah	309. (2:35 p.m.) <b>The chemistry of color pigments: Engineering green chemistry solutions to achieve product stewardship goals.</b> <i>R. Mott</i>	295. <b>Regioselective cobalt-catalyzed hydroboration of 1,3-dienes.</b> <i>K. Dewese</i> , T. RajanBabu	284. <b>Micro-scale synthesis of biofuels in undergraduate research at a community college.</b> <i>R.R. Klepper</i>
3:00 p.m. – 3:20 p.m.	303. <b>Life cycle assessment of UV-curable biobased wood flooring coatings.</b> <i>M. Montazeri</i> , M. Eckelman	317. <b>Nontoxic, simple, and inexpensive zinc-aluminum transparent oxide thin-films via spin coating.</b> <i>V. Gouliouk</i> , C.K. Perkins, D.A. Keszler	67. <b>Abstract to be determined.</b> D.K. Leahy, <i>W. Gallagher</i>	310. (2:50 p.m.) <b>Textile colorants: Chemical properties and performance requirements.</b> <i>T. Schaefer</i>  (3:05 p.m.) Discussion: Chemical properties and performance requirements of pigments and dyes: Innovation needs.	296. <b>Ligand-assisted cleavage of dihydrogen in the design of new iron hydrogenation catalysts.</b> <i>L. Boisvert</i>	285. <b>Integrating sustainability into the undergraduate curriculum at UC Berkeley.</b> <i>M.C. Douskey</i> , M.T. Robak, L.B. Armstrong, G. Kerstiens, A.M. Baranger
3:20 p.m. – 3:40 p.m.	Networking Break — <i>Plaza Foyer East</i>					
3:40 p.m. – 4:00 p.m.	304. <b>Biomimicry: An approach to life-friendly chemistry.</b> <i>M. Dorfman</i>	318. <b>Solution-processed niobium phosphate thin films.</b> <i>D.H. Park</i> , T. Chiang, D. Clayton, N. Landau, A. Dangerfield, C.K. Perkins, Y.J. Chabal, M. Lonergan, J. Wager, D.A. Keszler	68. <b>Highly efficient synthesis of HIV NNRTI doravirine.</b> <i>D.R. Gauthier</i>	311. <b>The rainbow of material health criteria to assess colorants: Comparing U.S. EPA Safer Choice, Cradle to Cradle Certified™, and GreenScreen® criteria.</b> <i>M.H. Whittaker</i> , B. Reid, Z. Guerrette	297. <b>Computational modeling to advance lignin valorization.</b> <i>L. Berstis</i> , D. Vardon, T.J. Elder, M.F. Crowley, G. Beckham	286. <b>Teaching inquiry and sustainability in introductory chemistry by inviting students as participants in the redesign of a green chemistry laboratory curriculum.</b> <i>V. Lykourinou</i> , J. de la Parra, A. Rovira
4:00 p.m. – 4:20 p.m.	305. <b>Software guided design of safer chemicals.</b> <i>J.R. Vanderveen</i> , P.T. Anastas, J.B. Zimmerman, P.G. Jessop	319. <b>Elucidation of the physicochemical changes from aqueous hafnium peroxide nitrate gel to hafnium oxide thin film.</b> <i>S. Decker</i> , M. Jenkins, D. Park, D.B. Fast, R.H. Mansergh, J.C. Ramos, M. Dolgos, J.F. Conley, D.A. Keszler		312. <b>Industrial application of anthocyanins extracted from food waste.</b> <i>R.S. Blackburn</i> , C.M. Rayner, M. Benohoud	298. <b>Synthesis of dicationic main group Lewis acid catalysts using the naphthyl framework.</b> <i>I. Mallov</i> , D.W. Stephan	287. <b>Green making and sustainable team design.</b> <i>T.A. Kwan</i> , J.B. Zimmerman
4:20 p.m. – 4:40 p.m.	306. <b>Difficult choices: Evaluating green decision-making in the regulatory domain.</b> <i>T. Malloy</i>	320. <b>Area selective aerosol deposition.</b> <i>N. Murari</i> , R.H. Mansergh, Y. Huang, D.A. Keszler, J.F. Conley	69. <b>Unsymmetrical aryl(mesityl)iodonium salts as reagents for selective metal-free arylation reactions in organic synthesis.</b> <i>D. Stuart</i> , S. Sundalam, A. Nilova	313. <b>Characterization of the mutagenicity of some phenylenediamine based bisazo dyes.</b> <i>H.S. Freeman</i> , J.P. Clemmons, L.D. Claxton	299. <b>C-C and C-N bond formation by organocatalytic mimics of flavoprotein oxidases.</b> <i>F.W. Foss</i> , P. Thapa	288. <b>Connecting green chemistry and toxicology concepts through a senior seminar course.</b> <i>E.J. Brush</i>
4:40 p.m. – 5:00 p.m.		321. <b>Inorganic clusters to thin films: Solid-state NMR of group 13 metals (71Ga and 27Al).</b> <i>B.A. Hammann</i> , M.K. Kamunde-Devonish, M. Kast, K. Wentz, S.W. Boettcher, D.W. Johnson, S.E. Hayes		314. <b>Self-assembly of block copolymers to photonic crystals: Nanostructured materials for sustainable structural color.</b> <i>G. Miyake</i>	300. <b>Visible light mediated photocatalysis for classical photoreactions.</b> <i>A. Iyer</i> , S. Jockusch, J. Sivaguru	289. <b>Green metric workshop for the undergraduate organic chemistry lab.</b> <i>K.N. Goodwin</i>
						290. <b>Olefin metathesis in the undergraduate organic laboratory.</b> <i>T. Udumulla</i> , A.H. Hussain, D. Richiuso, A. Hussain, H. Herrera, S. Bien-Aime, S.L. Carberry
						291. <b>Introducing green chemistry through a research-based laboratory project.</b> <i>D.G. Kovacs</i>
						292. <b>Oxone replacements of bleach in organic chemistry laboratory experiments.</b> <i>J.E. Wissinger</i> , J.J. Palesch
						Panel Discussion.
						Intermission.