



## SAGE Sunset Celebration Agenda

### Morning

8:00 AM	Welcome	Meet & Greet
8:30	Tom McKeag & John Arnold	Welcoming Remarks
9:00	Megan Schwarzman & Karl Palmer	Beyond Silos: The Next Generation of Interdisciplinary Scientists
9:30	Amanda Cattermole & Marty Mulvihill	Chemistry Is The New Black
10:00	Coffee Break	
10:30	Daniel Kammen & Noah Kittner	Sustainable Energy Innovation: Kosovo And The Clean Energy Transition
11:00	Justin Bours, Jeremy Faludi, Susan Gladwin & Lauren Heine	The 3D Printing Roundtable
12:00 PM	Lunch	

### Afternoon

1:00 PM	Billy Hart-Cooper & Kaj Johnson	Reversible Antimicrobials As Next Generation Preservatives
1:30	Akos Kokai & L. Drew Hill	Two Academics Walk Into A Firm...
2:00	Panel Discussion	Green Chemistry Across Sectors: Challenges And Opportunities
2:30	Breakout Session: Building a Better Graduate	Industry Innovation, Challenges, Skill Sets And Needs
3:30	Coffee Break	
4:00	Miriam Rotkin-Ellman & David Faulkner	Advocacy, Green Chemistry, And National Policy
4:30	Jennifer Lawrence & Emily Gonthier	Energy-Efficient Wastewater Treatment
5:00	Poster Session & Mixer	Sage Fellow Posters, Drinks, And Hors d'Oeuvres



## Morning Presentations

### 9:00 AM

#### ***Beyond Silos: The Next Generation of Interdisciplinary Scientists***

*Meg Schwarzman and Karl Palmer*

The comprehensive skills required for designing and selecting safer chemicals and materials are not ones typically taught to aspiring chemists, engineers, or environmental health scientists. Decision-making skills required for informing public policy are even less commonly taught. BCGC's Greener Solutions course is equipping the next generation of decision-makers with these skills, and they're being put to use in Cal/EPA. We'll explain how.

### 9:30 AM

#### ***Chemistry Is The New Black***

*Amanda Cattermole & Martin Mulvihill*

We will provide an overview of the hazardous chemicals present in the apparel industry and how that has spurred incredible innovation in Green Chemistry. We will discuss how, over the past 5 years, Marty and I have been collaborating and supporting each other, starting with the Green Solutions Class between Berkeley and Levi Strauss & Co to our new roles: Marty as a Partner in Safer Made and Amanda as a Sustainability Consultant.

### 10:30 AM

#### ***Sustainable Energy Innovation: Kosovo And The Clean Energy Transition***

*Daniel Kammen & Noah Kittner*

Kittner and Kammen will discuss the case of Kosovo- one of the battlegrounds for the future of fossil fuels and renewable energy. They highlight how collaborations with Green Chemistry researchers created opportunities to utilize ICP-MS instruments, develop alternative energy pathways, and engage with the World Bank, European Commission, and civil society on the economic, environmental and health impacts of our energy choices.

### 11:00 AM

#### ***The 3D Printing Roundtable***

*Justin Bours, Jeremy Faludi, Susan Gladwin & Lauren Heine*

The Greener Solutions project that produced the Biofriendly Framework for Additive Manufacturing and led to a publication in the Journal of Industrial Ecology on *Addressing Hazardous Implications of Additive Manufacturing* continues to evolve. What began as a shared internship for a talented Berkeley polymer chemist developed into the 3D Printing Roundtable with support from Autodesk. It also sowed the seeds for a workshop on sustainable plastics with Interface Carpet and the creation of Northwest Green Chemistry's Green Product Design and Assessment workbook that will be released in 2018. This collaboration brought together academics, industry manufacturers and print users, NGOs and government participants to work towards a shared vision and approach to shaping 3D printing/additive manufacturing as a technology that realizes the vision of safe, healthy and socially beneficial materials flowing within a circular economy.



## Afternoon Presentations

### **1:00 PM**

#### ***Reversible Antimicrobials As Next Generation Preservatives***

*Billy Hart-Cooper & Kaj Johnson*

Drawing on interdisciplinary expertise from the BCGC, USDA, and method, Billy and Kaj will describe how a student group teamed with partners from industry and government to develop a new class of preservatives for home and personal care products. Unlike conventional preservatives, these substances are compatible with many product formula categories, can be naturally derived, exhibit improved safety, and are designed to dissociate to nontoxic subcomponents after disposal.

### **1:00 PM**

#### ***Two Academics Walk Into A Firm...***

*Akos Kokai & L. Drew Hill*

One of the core insights of SAGE is to see academic research, industry R&D, NGO advocacy, and regulatory programs as being situated in a broader system, in which we can seek opportunities to prevent harm and shift society toward sustainability. In this talk we look at what “doing green chemistry” can mean in different sectors and how a range of efforts might be complementary. We consider how SAGE and other graduate student training can prepare students for work outside academia, and discuss needs for future green chemistry capacity.

### **4:00 PM**

#### ***Advocacy, Green Chemistry, and National Policy***

*Miriam Rotkin-Ellman & David Faulkner*

Non-government organizations and advocacy organizations, such as the Natural Resources Defense Council (NRDC), play an important role in the chemical regulatory ecosystem. Through participation in member-driven initiatives, research, public awareness campaigns, lobbying, and litigation, advocacy organizations can be powerful drivers for regulatory change. In this presentation, Miriam and David will discuss David's internship (a BCGC-NRDC partnership) and how the NRDC's work encourages green chemistry policies in a national context.

### **4:30 PM**

#### ***Energy-Efficient Wastewater Treatment***

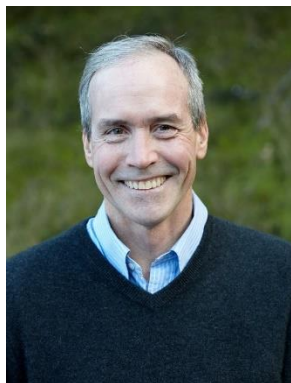
*Jennifer Lawrence & Emily Gonthier*

Municipal wastewater treatment plants are energy-hungry entities. Jennifer and Emily present their collaborative research experiences surrounding an innovative, energy efficient wastewater treatment process called anaerobic ammonium oxidation (anammox).



## SAGE Sunset Celebration Speakers

### **Tom McKeag**



Tom McKeag, MCP, MLA, is the executive director of the UC Berkeley Center for Green Chemistry (BCGC). Tom coordinates research on sustainable energy and green chemistry through its SAGE IGERT program, helps teach project-driven and industry-interfacing graduate courses like Greener Solutions, and leads advocacy, outreach and fund-raising at the center. Tom is a founding editor of Zygote Quarterly magazine (<http://zqjournal.org>). ZQ celebrates the nexus of science and design as they meet in the field of bio-inspired design. He taught the BioWerks studio course in the Industrial Design department at the California College of the Arts, SF, 2006-2015, and was the Biomimicry Column columnist at Greenbiz.com, 2009-2015. In 2013-2014, he was a Fulbright Nehru senior scholar at the Indian Institute of Science, Bangalore, India.

### **John Arnold**



John Arnold is the faculty director of the Berkeley Center for Green Chemistry, a Professor of Chemistry, and Undergraduate Dean of the College of Chemistry at UC Berkeley. His lab has extensive experience in the synthesis and study of new and unusual molecular inorganic and organometallic compounds of the d-, p-, and f- block elements. He currently chairs the editorial board of the Dalton Transactions Journal published by the Royal Society of Chemistry.



## Megan Schwarzman



Dr. Megan Schwarzman is Associate Director of Health and Environment for the interdisciplinary Berkeley Center for Green Chemistry and an Environmental Health Scientist in UC Berkeley's School of Public Health. Her research and teaching focuses on environmental contributors to breast cancer, chemicals policy, and strategies for applying environmental health knowledge to the design and selection of safer materials. After studying history at Haverford College, Dr. Schwarzman earned her medical degree from the University of Massachusetts. She completed specialty training in Family Medicine at the University of California, San Francisco, where she earned the Julius R. Krevans Award for Clinical Excellence. She earned a Master of Public Health in Environmental Health Sciences from the University of California, Berkeley. Dr. Schwarzman also practices medicine part-time.

## Karl Palmer



Karl Palmer works in the Department of Toxic Substances Control's (DTSC) Safer Products and Workplaces Program where he is responsible for DTSC's efforts to implement the department's Safer Consumer Products regulations. Karl's team also administers DTSC's other toxics in products laws and supports green chemistry strategies and initiatives throughout California. Prior to his current job, Karl lead DTSC's Regulatory and Program Development Branch, providing technical support and policy development and adopting regulations for hazardous waste classification, recycling, household hazardous waste, electronic waste and universal wastes. Mr. Palmer has worked in each of DTSC's core programs performing a wide variety of work including site assessments of hazardous waste sites, conducting investigations at state superfund sites, cleaning up former methamphetamine labs and coordinating HAZMAT support at major chemical spills and natural disasters.



## Amanda Cattermole



Amanda Cattermole leads Cattermole Consulting Inc., and is an advocate for the adoption of safer chemicals. She has had a successful career, with key roles in Product Development, Global Innovation, Research and Development and Sustainability. While at Levi Strauss and Co., Amanda was part of the team that developed an environmental vision that set the corporate strategy and roadmap in sustainability for the company. She led the research and development of safer alternatives to chemicals of concern and developed guiding principles for how to identify, use and manage chemicals in products and supply chains. Amanda was a technical point person for Levi Strauss and Co. during the recent GreenPeace Detox campaign. She led a work stream for the multi-stakeholder group known as Zero Discharge of Hazard Chemicals, (ZDHC) a collaborative effort by leading brands committed to reducing the environmental impact in the apparel and footwear supply chain. Amanda holds a Bachelors degree in Color Chemistry from Leeds University and a Masters degree in Textile Chemistry from UC Davis.

## Martin Mulvihill



Marty is a General Partner with Safer Made. He was a co-founder and the executive director for the Berkeley Center for Green Chemistry (2010-2015) and is a respected name in the green chemistry community. He has worked with many Fortune 500 companies in the personal care, construction, electronics, and apparel industries to help them replace hazardous chemicals with safer alternatives. He has developed technologies that help provide access to clean drinking water in the developing world and created new approaches for the design of safe, bio-based materials. Marty has a PhD in Chemistry from UC Berkeley (2009).



## Daniel Kammen



Daniel Kammen is the Class of 1935 Distinguished Professor of Energy at the University of California, Berkeley, with parallel appointments in the Energy and Resources Group, the Goldman School of Public Policy, and the department of Nuclear Engineering. He was appointed the first Environment and Climate Partnership for the Americas (ECPA) Fellow by Secretary of State Hilary R. Clinton in April 2010. He is also the founding director of the Renewable and Appropriate Energy Laboratory (RAEL), Co-Director of the Berkeley Institute of the Environment, and Director of the Transportation Sustainability Research Center. He has founded or is on the board of over 10 companies, and has served the State of California and US federal government in expert and advisory capacities. Kammen has served as a contributing or coordinating lead author on various reports of the Intergovernmental Panel on Climate Change since 1999.

## Noah Kittner



Noah is a PhD candidate in the Energy and Resources Group at UC Berkeley and researcher in the Renewable and Appropriate Energy Laboratory. After graduating with a BS in Environmental Science from UNC-Chapel Hill (highest honors), Noah was a Fulbright Fellow at the Joint Graduate School for Energy and Environment in Bangkok, Thailand researching technical and policy aspects of solar electricity and sustainability assessment. He co-authored a Thai Solar PV Roadmap with colleagues at Chulalongkorn University for the Thai Ministry of Energy. He has worked on renewable energy issues in a variety of contexts, including measuring land use change and biomass fuel uses in western Uganda, installing solar panels in Mexico, and electricity grid modeling in Kosovo. He is supported through the Berkeley Center for Green Chemistry as SAGE-IGERT fellow, National Science Foundation as a Graduate Research Fellow, USAID, and won an award from the National Go Solar Foundation.



## Justin Bours



Dr. Justin Bours is a green chemist and materials/polymer scientist that has consistently leveraged his knowledge of chemical reactivity and material life cycles toward eliminating chemical risks and promoting safe, circular materials. As Senior Technical Manager at Cradle to Cradle Products Innovation Institute, Justin contributes to the auditing of product assessments and leads technical projects to enhance the certification program and promote sustainable product manufacture and design. He also leads the development of key proposals for future versions of the C2C Certified Products Standard's criteria under the Material Reutilization category. Justin's academic work as a graduate Chemistry student at Berkeley was focused on developing synthetic strategies for a larger and more diverse library of conducting polymers and on the synthesis of organic molecular sensors for targeted explosives detection.

## Susan Gladwin



As Senior Global Program Manager at Autodesk, Susan Gladwin is responsible for building and leading Autodesk's clean tech program and industry strategy. With a passion for innovation and sustainable design, Gladwin aims to help the clean sector scale and succeed by managing Autodesk's partnerships with clean tech companies and stakeholders in North America, Europe and Asia. Gladwin also tracks the sector's sustainability "best practices", with the aim of helping make "clean" tech synonymous with "green" tech. A 25-year veteran in technology marketing, Gladwin has held senior positions or consulted to companies such as Apple, HP, Microsoft, Adobe and PARC. Her marketing experience encompasses successful product development, brand strategy and new market entry. Her clean technology background includes four years in pivotal roles at the Cleantech Open, including serving as Sustainability Chairperson.





## Jeremy Faludi



Jeremy Faludi, PhD., LEED AP BD+C, is a sustainable design strategist, assistant professor of engineering at Dartmouth, and former SAGE-IGERT fellow. He has contributed to six books on sustainable design, including *Worldchanging: A User's Guide for the 21st Century*. He co-authored the Autodesk Sustainability Workshop, created the Whole System Mapping sustainable design method, designed the prototype of AskNature.org for the Biomimicry Institute, and a bicycle he helped design appeared in the Smithsonian Cooper-Hewitt Design Museum's 2007 exhibit "Design for the Other 90%."

## Lauren Heine



Dr. Lauren Heine applies green chemistry, green engineering and multi-stakeholder collaboration to the development of products and processes. Lauren led development of both GreenScreen® for Safer Chemicals, a method for chemical hazard assessment increasingly used worldwide and CleanGredients™, a web-based information platform for identifying greener chemicals in cleaning products. Lauren serves on the Apple Green Chemistry Advisory Board, which is tasked with helping to integrate green chemistry into Apple's products and supply chain. For the OECD, she drafted Policy Principles for Sustainable Materials Management. Lauren served on the California Green Ribbon Science Panel. For the US EPA, she helped develop criteria for the Design for the Environment (DfE) Safer Choice and Alternatives Assessment Programs. Lauren was technical advisor to the development of the Interstate Chemicals Clearinghouse Alternatives Assessment Guide and the WA Alternatives Assessment Guide. She was a Fellow with the American Association for the Advancement of Science (AAAS) in the Green Chemistry Program at the US Environmental Protection Agency and is currently adjunct faculty at Gonzaga University.



### **Billy Hart Cooper**



Dr. Hart-Cooper is a Research Chemist at the USDA division of Agricultural Research Science in Albany, and currently collaborating with the Berkeley Center for Green Chemistry on a project to develop safer preservatives for home care and personal care products. He completed his doctorate in Chemistry at UC Berkeley supported through the Berkeley Center for Green Chemistry, and has taught as an adjunct professor at Columbia College.

### **Kaj Johnson**



Kaj Johnson is a Green Chef at Method Products in San Francisco formulating environmentally friendly cleaning, laundry and personal care products. The role as a Green Chef is to bring together the very best environmental and human health solutions together with innovative applications to solve consumer needs. The goal is to make every consumer experience a great one that drives them back for more. Prior to joining Method, Kaj worked in formulation and new business development for 22 years with Clorox helping to launch products like Brita and Greenworks.

### **Akos Kokai**



Akos is a PhD candidate in Environmental Science, Policy, and Management where he works with Dr. Alastair Iles. His background includes synthetic chemistry, chemical hazard assessment and policy, science & technology studies, and data science. He has been involved in BCGC as a student and also as an instructor. The Center and the SAGE program have strongly shaped Akos' academic career at UC Berkeley. He's also worked with Healthy Building Network on the Pharos Project and the Chemical Hazard Data Commons, and more recently worked as an intern in Apple's Environmental Technologies group.



## L. Drew Hill



Drew Hill is a graduate of Berkeley's PhD program in Environmental Health Sciences (2017) and the Masters of Public Health program at Yale University (2012). During his time at Berkeley, he worked primarily with Kirk Smith on exposure measurement, risk assessment, and low-cost air pollution sensors. He is now a Scientist at Exponent, Inc., where he works on a variety of interesting projects and has the opportunity to apply and develop his skills in environmental sensors and data science, many of which were fostered and honed by projects and coursework supported by SAGE and BCGC. Shortly after finishing up the SAGE IGERT program, Drew had the pleasure of working for a short time as a contractor with Apple. He also has experience consulting with Berkeley Air Monitoring Group in the household energy and air pollution space and working on projects with high-impact organizations such as the World Bank.

## Ann Blake



Ann Blake is an environmental and public health consultant with over 24 years of experience with over 100 groups, including more than a dozen NGO coalitions locally, nationally and internationally, over 50 state and local governments, federal agencies, business-NGO coalitions, leading sustainability companies, third-party standards-setting organizations, and academic institutions. She's created ecolabels, rating systems, purchasing policies, and contributed to international, national, state and local laws and regulations pushing for innovative safer chemicals. Ann has worked with US EPA Department Heads, company CEOs, Chief Science Officers, and Chief Technical Officers, as well as hotel and house-cleaning workers, to create jobs, services and products that are better for our communities, the health of the planet, and long-term profitability. She is currently working jointly on a project with the Berkeley Center for Green Chemistry to advise Costco on their chemicals management policies.



## Miriam Rotkin-Ellman



Miriam Rotkin-Ellman researches industrial air pollution, pesticides, and other toxic chemicals, as well as the links between public health and global warming. Since joining NRDC, she has studied the effects of the 2006 California heat wave, Hurricane Katrina in New Orleans, and the BP oil spill in the Gulf of Mexico. She has worked with California's Climate Action Team's Public Health Workgroup and has also served as an advisor to the California Environmental Health Tracking Program. Prior to joining NRDC, Rotkin-Ellman was an environmental scientist with the New Mexico Environment Department. She earned her bachelor's degree in environmental sciences from Brown University and her master's in environmental health sciences from the University of California, Berkeley.

## David Faulkner



David Faulkner is a former SAGE-IGERT fellow and current postdoctoral researcher at the Berkeley Center for Green Chemistry at the University of California Berkeley where he assists with toxicological and risk assessments. His dissertation research used computational and high-throughput methods to improve the process of hazard assessment for industrial chemicals. David is also member of the Society of Toxicology and Treasurer of the Society of Toxicology Postdoctoral Association. He has a B.A., B.S., and MPH from the University of Michigan, and a PhD in Molecular Toxicology from the University of California Berkeley.



## Jennifer Lawrence



Jennifer Lawrence is a PhD student in the Department of Civil & Environmental Engineering and currently supported through the Berkeley Center for Green Chemistry as a SAGE-IGERT fellow. She is interested in the development of microbial technologies for sustainable water and wastewater treatment. Currently, Jennifer is studying the interactions between anaerobic ammonium oxidizing (anammox) bacteria and zeolite particles for the enhanced removal of nitrogen from wastewater effluent. Jennifer is interested in this technology's applications in both developed and developing countries.

## Emily Gonthier



Emily Gonthier is a PhD student in the Department of Civil & Environmental Engineering. Her research focuses on using natural systems to improve water quality. Emily is currently a part of the anaerobic ammonium oxidization (anammox) group and is particularly fascinated by microbial communities' potential to play an integral role in creating more sustainable clean water systems worldwide.