

## Water and Urban Development: Addressing Challenges Through Policy and Innovation

October 14<sup>th</sup>  
Program Participants

### **Christophe Beck**

[Christophe Beck](#) is executive vice president and president of Nalco Water for Ecolab Inc., the global leader in water, hygiene and energy technologies and services that protect people and vital resources.

In his current role, Beck leads Nalco Water, Ecolab's Water and Process Services business, the global leader in industrial water treatment. Nalco Water's solutions help companies operate more efficiently and increase productivity while reducing water use. The business serves many industries, from manufacturing, primary metals, mining, paper, food processing and power generation to hospitals, hotels and restaurants.

Prior to his International Regions role, Beck was executive vice president and president of Global Integration, overseeing the merger of Ecolab and Nalco. Beck's earlier roles at Ecolab include executive vice president, Institutional Sector; senior vice president and general manager, Institutional Foodservice – North America; and senior vice president, Corporate Marketing and Strategy.

Prior to joining Ecolab in 2007, Beck was senior executive at Nestlé for 16 years, where he ran major regional and global businesses out of several regions before leading the European corporate sales. Earlier in his career, he worked on a space shuttle project for the European Space Agency.

In 2006, Beck was nominated as a Young Global Leader of the World Economic Forum for his accomplishments and commitment to shape a better world.

Beck holds a degree in Engineering from the Swiss Federal Institute of Technology. He also serves on the institution's strategic advisory board.

Ecolab is a trusted partner at more than one million customer locations. With 2015 sales of \$13.5 billion and 47,000 associates, Ecolab delivers comprehensive solutions and on-site service to promote safe food, maintain clean environments, optimize water and energy use and improve operational efficiencies for customers in the food, healthcare, energy, hospitality and industrial markets in more than 170 countries around the world. [www.ecolab.com](http://www.ecolab.com).

### **Junhong Chen**

[Junhong Chen](#) is currently a Distinguished University Professor, a Professor of Mechanical Engineering, a Professor of Materials Science and Engineering, an Excellence in Engineering Faculty Fellow in Nanotechnology at the University of Wisconsin-Milwaukee (UWM), and a Regent Scholar of UW-System. He is also the Director of the Industry-University Cooperative Research Center (IUCRC) on Water Equipment and Policy, supported by the U.S. National Science Foundation (NSF) and water-based industrial partners, and the founder of NanoAffix Science, LLC. Dr. Chen received

his B.E. degree (in Thermal Engineering) in 1995 from Tongji University, China, and his M.S. and Ph.D. degrees (both in Mechanical Engineering) in 2000 and 2002, respectively, from the University of Minnesota (Advisor: Professor Jane Davidson). He is an elected Fellow of the American Society of Mechanical Engineers (ASME).

Professor Chen's current research focuses on nanomaterial innovations for sustainable energy and environment, including various chemical/biological sensors and energy conversion/storage devices based on emerging nanomaterials particularly hybrid nanomaterials (For more details, please visit his research group website at <http://www.uwm.edu/nsee> ). Most of his research projects are at the intersection of interesting fundamental science and industrial applications with ample opportunities for new discoveries, which creates an excellent vehicle for educating students.

Professor Chen has made seminal contributions to general areas of hybrid nanomaterials and their device applications (e.g., various sensors, solar cells, lithium-ion batteries, and supercapacitors), and corona discharge-induced chemical reactions (e.g., ozone production). His research program at UWM has attracted about \$8M in research funding from the U.S. NSF (15 grants as the PI), the U.S. Department of Energy (DOE), various industries (e.g., MMSD, We Energies, Rockwell Automation, Johnson Controls, Sigma-Aldrich, Xerox Corporation), the State of Wisconsin, and internal sources. In addition, his research has been recognized with prestigious awards and thousands of citations.

### **Don L. Coursey**

[Don Coursey](#) is the Ameritech Professor of Public Policy at Chicago Harris and the College and served as dean of Chicago Harris from 1996 to 1998. He is an experimental economist whose research elicits reliable measures of preferences and monetary values for public goods, such as environmental quality. Coursey's research has focused on demand for international environmental quality, environmental legislation in the United States, and public preferences for environmental outcomes relative to other social and economic goals.

Coursey led an investigation of environmental equity in Chicago, documenting the prevalence of hazardous industrial sites in poor, minority neighborhoods. He has examined public expenditures on endangered species. He has also consulted with the National Oceanic and Atmospheric Administration in the wake of the Exxon Valdez oil spill to develop federal response guidelines for environmental disasters.

He received both a BA in mathematics and a PhD in economics from the University of Arizona and has previously taught at the University of Wyoming and Washington University in St. Louis, MO. He has received the Burlington-Northern Foundation Award for Distinguished Achievement in Teaching; Greater St. Louis Award for Excellence in University Teaching; John M. Olin School of Business Teacher of the Year Award in 1989 and 1990; and has been named Professor of the Year for six consecutive years by Chicago Harris students.

### **Seth B. Darling**

[Seth B. Darling](#) is a Scientist at Argonne National Laboratory and a Fellow at the Institute for Molecular Engineering at the University of Chicago. After receiving his Ph.D. from the University of Chicago in physical chemistry, he came to Argonne as the Glenn Seaborg Distinguished Postdoctoral Fellow in the Materials Science Division. Following his postdoc, Dr. Darling joined the Center for Nanoscale Materials at Argonne as a staff scientist. His group's research is motivated by humankind's grand challenges and centers around molecular engineering with a particular emphasis on solar energy and water treatment. In the area of water, his group is developing photocatalytic membranes, isoporous ultra/nanofiltration membranes, and tailored sorbents for environmental remediation. Dr. Darling has published over 100 papers and a popular book on climate change, holds several patents, and lectures widely on topics related to energy, climate, and water.

### **Steve Edwards**

[Steve Edwards](#) is the Executive Director of the University of Chicago's non-artisan Institute of Politics, which was founded and is led by former White House Senior Advisor David Axelrod to cultivate the next generation of political and public service leaders.

Before joining the Institute, Steve was an award-winning journalist. His work has appeared on the BBC, Bloomberg News, PBS and on numerous public radio stations around the United States. Most recently, he served as host of the acclaimed daily shows The Afternoon Shift and Eight Forty-Eight at WBEZ, Chicago's NPR member station.

As a journalist, he's reported on a range of water and environmental issues, including bi-national Great Lakes governance, the Blue Economy, water diversion, ecosystem impacts, infrastructure, and Chicago's drinking water supply. Steve also served as the host of two live broadcast specials focusing on water issues, which were heard on public radio stations across the Great Lakes states and select Canadian provinces. He is the recipient of the Grand Award in Radio from the National Headliner Club and was a Knight-Wallace Fellow at the University of Michigan.

A native of Kansas City, Steve earned his B.A. in political science from Amherst College.

### **Supratik Guha**

[Supratik Guha](#) is a materials scientist whose research is on new semiconductors and oxide materials and devices for new computing architectures, cyberphysical sensing systems, and energy conversion technologies. He is particularly interested in the discovery of thin film materials and novel devices that can be used for ultra-low power non Boolean computing and sensing; and believes in a top down, system level perspective for the need for specific materials and devices. More recently his activities have included sensor-based analytics for geo-spatial applications such as high-resolution agriculture and the tracking of pollutants in rivers.

Supratik joined the University of Chicago in August 2015. Concurrently, he is also Director of the Nanoscience and Technology Division at Argonne National Laboratory. He has extensive industrial research and development experience, having spent twenty years at IBM Research where he was the Director of Physical Sciences since 2010.

Supratik received his Ph.D. in Materials Science from the University of Southern California in 1991. Supratik is a member of the National Academy of Engineering, and a Fellow of the Materials Research Society and the American Physical Society. He received the 2015 Industrial Applications of Physics award from the American Institute of Physics in 2015 and IBM Corporate Award in 2013.

### **Jin Huang**

Jin Huang serves as the chief engineer of [Shanghai Urban Construction Design and Research Institute](#), one of the top design institutes in China. She has over 25-year experience in consulting service, project feasibility study and general planning, basic and detailed engineering design, permission procedure, as well as project bidding.

She has been in charge of engineering design for more than 100 important domestic and abroad projects in different fields such as water supply and drainage, wastewater treatment, stormwater control, solid waste management, as well as pipe gallery. In recognition of her achievement, she has been awarded National Design Award once, Shanghai Municipal Consulting Award for 3 times, and Shanghai Municipal Design Award for 9 times. She has been in charge of more than 10 important national and Shanghai research projects and awarded Shanghai Science and Technology Progress Award for 5 times. She has more than 10 invention patents.

### **Steven Kloos**

[Steve Kloos](#) is a Partner with True North Venture Partners, a Chicago-based firm that invests in early stage disruptive innovations in energy, water, waste, and agriculture and supports those companies on their journey to transform and lead global industries over time. At True North, Steve focuses on identifying technology trends and market needs, sourcing and leading investment opportunities, assisting portfolio companies, and helping with firm and fund management. Steve is the Chairman of the board of Current, the Chicago region water platform, he serves on the ImagineH2O Advisory Board, and he is as a judge for the Global Cleantech 100.

### **Aaron Koch**

[Aaron Koch](#) serves as the Chief Resilience Officer in the City of Chicago under Mayor Rahm Emanuel. In this role, he is leading the creation of Chicago's resilience strategy through the City's participation in the Rockefeller Foundation's 100 Resilient Cities program. Prior to joining the Mayor's Office, Aaron served as the Deputy Commissioner for Sustainability in Chicago's Department of Water Management. Before moving to Chicago, Aaron served as a Senior Policy Advisor in the New York City Mayor's Office of Long-Term Planning and Sustainability under Mayor Michael Bloomberg and as the Director of the Mayors' Institute on City Design in Washington, DC.

Aaron holds a Bachelor of Science in Architecture from the University of Minnesota-Twin Cities and a Master of City Planning from the University of Pennsylvania. He was previously a faculty member in Columbia University's Master of Sustainability Management program.

## **Zhong Ma**

[Zhong Ma](#) is Dean and Professor at the School of Environment and Natural Resources, Renmin University of China. He is the leading scholar in China in researching and implementing environmental economics and policies. Professor Ma has been working extensively with the governments and international agencies on a variety of researches in China, and engaged in the national and international environmental policy making including the environmental finance and taxation, Montreal Protocol for ODS, SO<sub>2</sub> emission trading, and water pricing. In the past ten years he also has been working on the institutional reform of environmental administration in China. Prof. Ma serves as senior advisor to the China Ministry of Environmental Protection (MEP) as well as the provincial governments, and the member of the China Council for International Cooperation of Environment and Development (CCICED). In 2009 Ma Zhong was awarded as the China's Annual Green Person.

## **Scott Moore**

[Scott Moore](#) is a political scientist whose research focuses on environmental politics and policy reform, especially related to climate change and water scarcity. Scott is currently a Young Professional with the World Bank Group's Global Water Practice, where he works primarily on transboundary water security and climate change in East and South Asia. Previously, he served as Environment, Science, Technology, and Health Officer for China at the U.S. Department of State through a Council on Foreign Relations International Affairs Fellowship. In that capacity, he was responsible for developing and coordinating all aspects of U.S. – China environmental cooperation, and worked extensively on the Paris Agreement on climate change, ocean conservation, and civil space cooperation.

Before joining State, Scott was Giorgio Ruffolo Post-Doctoral Research Fellow with the Belfer Center for Science and International Affairs at Harvard University, where he focused on water scarcity in China. Scott's research and commentary has appeared in a variety of leading scholarly journals and media outlets, including *Nature*, *Foreign Affairs*, and *The New York Times*. Scott holds master's and doctoral degrees from Oxford University and an undergraduate degree from Princeton. He is a Truman, Fulbright, and Rhodes Scholar.

## **Sabina Shaikh**

[Sabina Shaikh](#) is an environmental economist and lecturer in the Program on Global Environment and Public Policy Studies, and the Director of the Environment, Agriculture and Food Working Group at the University of Chicago. Sabina's research focuses on understanding how humans value the environment and natural resources, with local applications to urban environment and global applications to water sustainability and food security. She currently teaches courses in environmental economics, food and agricultural policy and economics for public policy. She also teaches experiential learning courses, utilizing environmental and natural resources applications in the field.

Dr. Shaikh has published in many scholarly journals and contributed chapters to several books, including a chapter on the economics of sports and the environment in the forthcoming *Handbook on Sport, Sustainability and the Environment*. Sabina works closely with local environmental and policy groups



throughout Chicago advising on topics related to water management, land use and environmental markets.

Dr. Shaikh holds a B.A. in Economics from the University of Wisconsin and a Ph.D. in Agricultural and Resource Economics from the University of California at Davis.

Visit the Environment, Agriculture and Food Working Group at <http://eaf.uchicago.edu>  
Facebook, Twitter and Instagram @UChicagoEAF

### **Biplav Srivastava**

[Biplav Srivastava](#), Research Staff Member & Master Inventor, IBM Research and an ACM Distinguished Scientist and Distinguished Speaker, is currently based out of New York, USA. For the last 6 years, he has been working on AI-driven innovations in smart city areas of water and traffic with global relevance.

The theme of Biplav's research is enabling people to make rational decisions despite real world complexities of poor data, changing goals and limited resources. His expertise is in Artificial Intelligence, Services and Sustainability, and has over 22 years of experience, primarily in research, working with collaborators, customers, governments and universities around the world, resulting in many science firsts and high-impact commercial innovations (up to \$B+), 100+ papers and 40+ US patents issued.

Biplav focuses on how AI techniques like planning, machine learning and semantics can be used along with open data and APIs for real world usage applications. He is currently exploring issues around data management practices for water that have prevented their widespread dissemination, reconciling data from multiple pollution sensing techniques, data platforms for integration and novel analytics to aid routine decisions for environment impact use-cases.

Biplav received Ph.D. in 2000 and M.S. in 1996 from Arizona State University, USA and B.Tech. in 1993 from IIT-BHU, India, all in Computer Science. He actively participates in professional services globally including running the 'AI in India' virtual Google group with ~200 members, organizing conference tracks, workshops and tutorials, and as a Program Committee member for more than 50 events.

### **David St. Pierre**

[David St. Pierre](#) is the Executive Director of the Metropolitan Water Reclamation District of Greater Chicago where he manages a staff of nearly 2,000. The District covers 883 square miles and provides wholesale wastewater treatment for over five million residents in Cook County, Illinois. The District operates seven wastewater treatment plants which treat one billion gallons/day. The District also provides regional storm water services. The District has been a leader in the industry since its creation in 1889, and David is committed to ensuring this rich tradition of leadership continues under his tenure. Among other tasks, the District is leading efforts among utilities in adopting a resource

recovery model. David has been committed to excellent service and fiscal responsibility throughout his 30 year career in the water industry.

### **Thomas J. Stanley**

[Tom Stanley](#) holds the position of Chief Technology Officer for Water & Process Technologies leading the Global Technology organization and partnering with the Commercial, Product Management and Supply Chain organizations to maximize growth through new products and technology initiatives.

Previously, Tom was SABIC's Vice President of Technology where he developed new products, applications, and enabling chemical and compounding process technologies, established IP position supporting new technologies, and led a team of over 850 technologists, continuing the role he held with GE Plastics before the acquisition. SABIC Innovative Plastics, a \$7B business unit of Saudi Basic Industries Corporation (SABIC), was formed from SABIC's acquisition of GE Plastics.

Tom has served in a number of engineering and technology positions for GE including Technology General Manager for the Silicones business, Global Technology Manager for High Performance Polymers, Technology Manager and Six Sigma Master Black Belt for Lexan\* resins, and Noryl\* GTX Product Line Leader. Tom joined GE in 1986 as a staff engineer at the Corporate Research and Development Center in New York, where he worked on process development programs supporting a number of GE businesses.

Tom holds a Bachelor's degree in Chemical Engineering from the University of Massachusetts, a Master's Degree in Chemical Engineering from Carnegie Mellon University, and a PhD in Chemical Engineering from the University of Pennsylvania. Tom holds eight patents.

### **Mark N. Templeton**

[Mark N. Templeton](#) is Associate Clinical Professor of Law, Director of the Abrams Environmental Law Clinic at the University of Chicago Law School, and a Research Affiliate of the Energy Policy Institute at Chicago. The Abrams Clinic is dedicated to addressing some of the most pressing environmental problems in our region and country; it challenges those who pollute illegally; fights for stricter permits; advocates for changes to regulations and laws; holds environmental agencies accountable; and develops innovative approaches for protecting and improving the environment.

Previously, Templeton was a Trustee and Executive Director of the Office of Independent Trustees for the \$20 billion Deepwater Horizon Oil Spill Trust. He served the cabinet-level Director of the Missouri Department of Natural Resources, leading the state's efforts in energy, environmental protection, state parks, and water resources and overseeing a staff of approximately 1750 FTEs and a \$310 million annual budget. From 2005 to 2009, Templeton served as Associate Dean and COO at Yale Law School. From 2001 to 2005, he developed environmental and sustainability strategies at McKinsey & Company, among other projects. Prior to joining McKinsey, Templeton was special assistant and senior adviser to the U.S. Assistant Secretary of State for Democracy, Human Rights and Labor and an

adviser to the U.S. Delegation to the U.N. Commission on Human Rights. He was a Financial Analyst at Goldman Sachs from 1994 to 1996.

Templeton earned an A.B., magna cum laude, in Social Studies from Harvard College in 1994 and a J.D. from Yale Law School in 1999.

### **Matthew Tirrell**

[Matthew Tirrell](#) is the Founding Pritzker Director of the Institute for Molecular Engineering (IME) at The University of Chicago. His personal research specializes in the manipulation and measurement of polymer surface properties. Tirrell's work has provided new insight into phenomena such as adhesion, friction, and biocompatibility, and contributed to the development of new materials based on self-assembly of synthetic and bio-inspired materials.

Tirrell also serves as Deputy Laboratory Director for Science at Argonne National Laboratory. He is responsible for integrating the laboratory's research and development efforts and science and technology capabilities. He develops and drives strategy to support integrated teams across disciplines in support of Argonne's strategic initiatives.

Tirrell received his B.S. in chemical engineering from Northwestern University and his Ph.D. in polymer science and engineering from the University of Massachusetts. He has received many honors, including the Polymer Physics Prize of the American Physical Society and election to the National Academy of Engineering and the American Academy of Arts and Sciences.

### **May Wu**

[May Wu](#) is a principal environmental system analyst at Argonne National Laboratory, a member of the Water Initiative at Argonne, and the Principal Investigator of a multi-year water analysis project supported by DOE. Her research focuses on water use, water quality and water resource availability as related to the development of conventional and renewable energy (conventional fuel, electricity, and emerging fuels).

Dr. Wu is the principal author of a spatial-explicit online model, WATER (Water Analysis Tool for Energy Resources), which develops the water footprint of biofuels in the United States with geospatial resolution, to help support decision making. Dr. Wu also heads a project developing watershed models for the Mississippi River basin and its tributaries. The work examines the impact of integrated landscape design, best management practices, and climate change on water quality at varying scales. Dr. Wu is a member of Modeling Working Group in Hypoxia Task Force, a member of GBEP AG6 Bioenergy and Water Working Group, served as an expert advisor to the Water Working Group of the Council on Sustainable Biomass Production, and currently chairs Future Risk Technical Committee at AWRP.



Dr. Wu has a diverse background that encompasses engineering and microbiology in the areas of biofouling control in cooling system, wastewater treatment, online monitoring, microbial-induced corrosion, fermentation, and membrane separation. Dr. Wu has a combined 17 years of experiences in process engineering R&D and 11 years of environmental sustainability analysis. Dr. Wu holds several U.S. patents, 50<sup>+</sup> publications, and a dual Ph.D. in Environmental Engineering and Environmental Toxicology from Michigan State University.

