

**P.2** DR. LUCIO SOIBELMAN  
REAPPOINTED DEPARTMENT CHAIR

**P.6** USC-CMAA COMPETED IN THE 28TH  
ANNUAL SPARKS COMPETITION

**P.7** NEW DMWA CO-PRESIDENTS  
ARE NAMED



*Environmental engineering faculty solve water supply problems through biotechnology, wastewater treatment technologies, and city structure modifications.*

## USC Environmental Engineering Faculty Members Work to Solve Drought Problems

Because of climate variability, drought, and population growth, there is a rising interest in using nontraditional water sources. Researchers are studying how reclaimed water (treated wastewater), desalinated seawater, and optimization of groundwater resources could provide a stable and long-term supply of drinkable water. Several faculty members in the **environmental engineering program** are investigating how to utilize these nontraditional water sources resources to help solve water supply problems.

A research group, led by **Dr. Felipe de Barros**, is using physically based stochastic models to investigate how droughts lead to changes in well pumping operations, water table levels, and groundwater recharge rates. These changes impact groundwater flow and the dilution of contaminants in the subsurface environment. Properly estimating contaminant dilution is so important because it leads to aquifer remediation strategies and protects human health. The

modeling framework he is developing determines how contaminants react in the subsurface under drought conditions.

**Dr. Adam Smith** is leading a research team exploring how emerging biotechnologies could treat domestic wastewater so it can be used for agricultural irrigation. Anaerobic treatment technologies such as anaerobic membrane bioreactors require less energy and have lower environmental and economic impacts than conventional aerobic treatment processes. These biotechnologies could also offset the environmental and economic impact of artificial fertilizers.

**Dr. Amy Childress** and her research group are developing a highly efficient wastewater treatment and water reuse system at military forward operating bases. The system is centered on membrane bioreactor technology, which utilizes a forward osmosis membrane module inside a bioreactor. Childress is also designing a compact,

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## USC Environmental Engineering Faculty Members Work to Solve Drought Problems

adaptable membrane distillation powered by on-site waste heat that can measure and remove drinking water contaminants and contaminant classes. She is also working to design, construct, and test a second-generation pilot scale reverse osmosis—pressure-retarded osmosis (RO-PRO) system which has the potential to alleviate the concerns associated with seawater desalination brine disposal and reduce the energy required for seawater desalination.

**Dr. Massoud Pirbazari** and his research team are developing and synthesizing a new genre of ultrafiltration and nanofiltration membranes with fouling-resistance characteristics for high quality water reuse. These membranes can be used in sustainable hybrid advanced wastewater treatment technologies with less energy consumption and fewer problematic waste streams.

The research team, that **Dr. Kelly Sanders** leads, is working with power industry stakeholders to develop a better understanding of how severe drought impacts electric power grid reliability. Currently, 93 percent of power generation in the United States requires water for cooling or, in the case of hydroelectric power plants, for moving mechanical turbines. Drought can also constrain power generation when water is not available. The team is also researching how drought affects power grid emissions.



A research team, led by **Dr. George Ban-Weiss**, is investigating how global climate affects exchanges of energy and water between land surfaces and the atmosphere. He is looking at how small modifications to a city's structures, such as "cool roofs" and "cool pavements," can avert the urban heat island effect. Because drought is often accompanied by increased temperatures, energy usage, and water usage, making cities cooler can reduce air conditioning needs and evaporative losses of water. ■



Chair Dr. Lucio Soibelman

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*Dr. Lucio Soibelman was reappointed Department Chair for a second term, which will end in May 2018. Dean Yannis C. Yortsos first appointed Dr. Soibelman as Chair in 2012. Before coming to USC, Dr. Soibelman was a professor of civil and environmental engineering at Carnegie Mellon University and the University of Illinois at Urbana-Champaign. He received his Ph.D. in Civil Engineering Systems from MIT.*

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## FACULTY NEWS



*Dr. Qiming Wang*

**Dr. Qiming Wang** was appointed as Assistant Professor in May 2015. He earned a bachelor's degree in Theoretical and Applied Mechanics at Fudan University, a Ph.D. in Mechanical Engineering and Materials Science at Duke University, and received postdoctoral training in Mechanical Engineering at MIT.

His research has been reported on by The Discovery Channel, The Washington Post, BBC Focus, NBC News, The Wall Street Journal, and Physics Today. He has won a number of prestigious awards, including the ACS Arthur K. Doolittle Award, the NSF-PACAM Fellowship, and the Duke Lew Pre-doctoral Fellowship.

Dr. Wang will establish the USC Bioinspired Materials and Structures Laboratory (BMSL) which will address engineering challenges, such as urban infrastructure, carbon sequestration, and energy storage. BMSL will design materials and structures with 3-D printing, construct theoretical and computational models to understand the mechanics across multiple length scales, and explore applications—including designing environmentally friendly biocompatible materials that remove biofouling. ■

**Dr. David Ashley** was appointed as Professor of Engineering Practice in August 2015. Previously, he was President of the University of Nevada, Las Vegas, and Executive Vice Chancellor and Provost at the University of California, Merced, where he also was the Shaffer-George Chair in Engineering. He also was Dean of Engineering at Ohio State University and held civil engineering faculty positions at the University of California, Berkeley, the University of Texas at Austin, and the Massachusetts Institute of Technology.

His central research area is developing and implementing risk analysis techniques to make project management and construction engineering decisions. His research has been recognized by The American Society of Civil Engineers (ASCE) and The National Academy of Construction, among others.

Dr. Ashley received his Ph.D. in Civil Engineering and a master's degree in Engineering from Stanford University, as well as a master's degree and a bachelor's degree in Civil Engineering from MIT. ■



*Dr. David Ashley*

# NEWSLETTER

## FACULTY NEWS



Dr. Ketan Savla

Assistant Professor **Dr. Ketan Savla** received an NSF (Faculty Early Career Development Program) CAREER grant to fund transportation research.

Dr. Savla's project will develop an integrated research and education program to use a control design for intelligent infrastructure systems, with an emphasis on transportation. He will generate case studies for integrated corridor management based on data from transportation patterns in Los Angeles. Beyond its immediate emphasis on dynamical network flows, the project aims to develop elements of robust control theory for networked dynamical systems.

Dr. Savla's research is based on the thesis that societal systems are too complex and dynamic for users to practice individually optimal strategies. So, in the context of transportation, he will explore how to change to socially optimal sustainable behavior while also improving the benefits to individuals. His research team will also develop cooperative control algorithms to enable a team of unmanned mobile vehicles to monitor infrastructure systems. ■

### FACULTY AWARDS

- In August, **Dr. Patrick Lynett** and **Dr. Costas Synolakis** received a joint award from the National Science Foundation for their project "Collaborative Research: Nonlinear Long Wave Amplification in the Shadow Zone of Offshore Islands." Dr. Lynett also received an award from Oregon State University for his work "Assimilation of Wave Imaging Radar Observations for Real-time Wave by-Wave Forecasting."
- **Dr. George Ban-Weiss** received an award from the National Science Foundation in June for his proposal "Collaborative Research: Development of a Multi-scale Model to Determine Optimal Urban Heat Mitigation Strategies for Vulnerable Populations in a Changing Climate." This award will continue until 2017. The Rose Hills Foundation also renewed his award for a second year, which started in July.
- **Dr. Constantinos Sioutas** received two awards this summer. He was recognized by Westat Incorporated for his proposal "Measurement of Outdoor Ambient Ultrafine Particles for a Study of Lung Cancer Risk in California," and by the University of California, Davis for his proposal "Association between Long-Term Ultrafine Particulate Matter Exposure and Premature."
- In May, Qatar University awarded **Dr. Sami Masri** for his proposal "Novel Approaches in the Development and Application of Robust Fiber Optic-Based Structural Health Monitoring (SHM) of Civil/Environmental Engineering."

## GRADUATE STUDENT NEWS

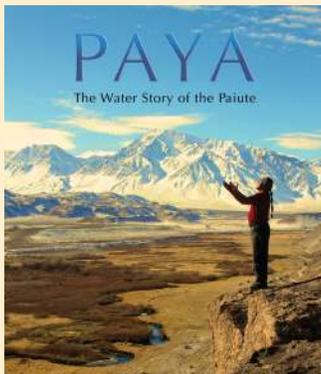
**Ryan Gustafson**, a Department Ph.D. fellow, made a research presentation in Ravello, Italy at the 2nd International Workshop on Membrane Distillation and Innovating Membrane Operations in Desalination and Water Reuse.

Gustafson is part of Dr. Amy Childress' group working on research projects, sponsored by the EPA and the Strategic Environmental Research and Development Program (SERDP). Dr. Childress' research group focuses on innovative water treatment technologies for wastewater reuse and desalination. Gustafson's work specifically focuses on developing a membrane distillation process that utilizes waste heat and produces a very high-quality water for potable use.

At the conference, Gustafson also learned about new innovative research being done on membrane distillation by researchers around the world. Gustafson looks forward to applying the concepts and technologies that he is studying to help Southern California and similar regions, reduce dependence on imported water resources, and develop local and sustainable water resources through water recycling and desalination. ■



Ryan Gustafson



Chris Morrow is the cinematographer and editor of the documentary "Paya: The Water Story of the Paiute."

### Student Documents the Story of Paiute Indian Water Practices

**Chris Morrow**, an Environmental Engineering Ph.D. student, has investigated the ancient irrigation systems of the Owens Valley Paiute Indians in the Eastern Sierra.

For thousands of years, the Paiute irrigated more than 60 square miles of land in the Owens Valley before settlers came in the 1860s and well before the creation of Los Angeles' "water colony" called the Los Angeles Aqueduct. The locations of the Paiute water systems were mapped in 1856 and recently uncovered in the archives at UC Berkeley's Bancroft Library.

With the help of a Paiute elder, Morrow mapped the remnants of the Paiute ditch systems on a Geographic Information System (GIS). Based on numerical simulations using a surface water model he developed, Morrow quantified the volume of water that would have flowed through the systems. The results were given to the Owens Valley Indian Water Commission to help provide a legal framework to regain Paiute water rights under California's prior appropriation water rights law.

To help bring attention to the issue, Morrow worked as cinematographer and editor on the documentary by USC M.F.A. student Jenna Cavelle called "Paya: The Water Story of the Paiute." "Paya" (which means water in Paiute) shows how water was a cornerstone to Paiute culture, and how the struggle to regain water rights continues to the present day. The film will premiere in November 2015.

# NEWSLETTER

## UNDERGRADUATE STUDENT NEWS



Sparks Commercial Team (left to right, top to bottom): Rana Kashani, Lance Webber, Stephen Wood, Ethan Zisk, David Kang, Kristy Beal, Maisie Gwynne, Julianne Lucas, Kaylee Knudsen, Alexia Gutierrez

In February, undergraduate members of **USC-CMAA** competed in the 28th annual Sparks Competition in Nevada. The competition encourages development and advancement of construction education. USC won first place in Commercial and Preconstruction Services and third place in Virtual Design and Construction. USC-CMAA alternate member Holly Marin won second place in the Alternate Competition.



In May, the **2015 Viterbi Undergraduate Awards** were held to honor students who have proven themselves through academic achievements, leadership, and service to the engineering community. **Berkeley Johnston** won the David M. Wilson Affiliates Award for Civil Engineering and **Kyleen Marcella** won the David M. Wilson Affiliates Award for Environmental Engineering. Civil Engineering student **Nicole Aeina** won Outstanding Achievement by a Transfer Student and **The American Society of Civil Engineering** won the Alumni Advisory Board Award For Outstanding Student Organization.



Left to right: Chair Dr. Lucio Soibelman, Kyleen Marcella, Berkeley Johnston, and Dean Yannis C. Yortsos

# ALUMNI NEWS



Left to Right: Atman Kadakia, Gregg Brandow, Farzad Naeim, Dr. Lucio Soibelman, and Ed Reynolds

## THIRD ANNUAL ALUMNI AWARDS EVENT

The third annual **Alumni Awards Event** was held in April at the Jonathan Club to honor Department alumni who have shown outstanding leadership, achievement and have contributed to the engineering community. This year's winners included **Gregg Brandow**, recipient of the 2015 Lifetime Achievement Award; **Farzad Naeim**, recipient of the 2015 Senior Award; **Atman Kadakia**, recipient of the 2015 Junior Award; and **Ed Reynolds**, recipient of the 2015 Service Award. Department Chair **Dr. Lucio Soibelman** gave out the awards.

## NEW DMWA CO-PRESIDENTS ARE NAMED

After many years serving as president of the **David M. Wilson Affiliates (DMWA)**, the alumni and friends support group for the Department, alumnus **John Morris** has passed the torch to two deserving members, **Stephen Dopudja** and **Edgar Dymally**, who will be co-presidents. Dopudja is Vice President of West Yost Associates and Dymally is Senior Environmental Specialist for The Metropolitan Water District of Southern California.



Stephen Dopudja



Edgar Dymally



University Village Construction Project Job Walk on April 21, 2015

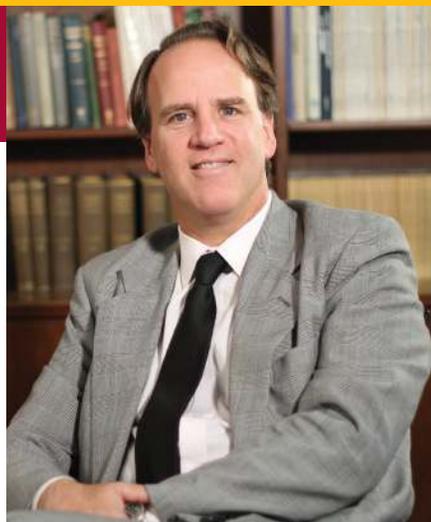
## USC CONSTRUCTION ALUMNI GROUP BUILDS IMPORTANT CONNECTIONS

Since 2013, the USC Construction Alumni Group has brought together USC Alumni, USC students, and industry professionals from Los Angeles and Orange County. The group's mission is to create an environment where USC alumni and current students share ideas, experiences, and knowledge to develop strong professional and social relationships.

For more information about the USC Construction Alumni group, visit [uscmaa.com/alumni](http://uscmaa.com/alumni). Leave your contact information to be notified about future events.

## CURRENT BOARD MEMBERS:

- **USC Viterbi School of Engineering Advisors** – Professor Henry Koffman, Chair Dr. Lucio Soibelman, and Executive Director of Alumni Relations & Annual Giving James Morse
- **Co-Presidents** – Kim Grant (Skanska USA Building), and Andrew MacVey (Swinerton Builders)
- **Director of Finance** – Angela Noah (Westfield)
- **Director of Communications** – Angeles Padilla (Snyder Langston)
- **Technology Chair** – Paul Gomes (LAUSD)
- **Director of Events** – Brad Bangar (CSI Electrical Contractors)
- **Event Committee Chairs** – Caroline Fletcher (Skanska USA Civil), Kameron Burk (Jacobs), David Kang (CSI Electric), and Daniel Camin (Westfield)



Chair Dr. Lucio Soibelman

## Chair's Message

Greetings! A new semester has begun with a bright-looking future for our civil and environmental engineering students and our department.

Our students continue to excel in competitions—such as the CMAA Sparks Competition—and succeed in academics and leadership, as shown by our Viterbi Undergraduate Award winners.

I am proud to introduce two new faculty hires: **Dr. Qiming Wang**, Assistant Professor, with a Ph.D. from Duke University and postdoctoral training from MIT, and **Dr. David Ashley**, Professor of Engineering Practice, former president of the University of Nevada, Las Vegas. I am confident in the skills and knowledge they bring to the department.

The environmental engineering faculty have done research projects with students which has resulted in numerous awards. They include one from the National Science Foundation for “Collaborative Research: Nonlinear Long Wave Amplification in the Shadow Zone of Offshore Islands”; another one from Westat Incorporated for “Measurement of Outdoor Ambient Ultrafine Particulates for a Study of Lung Cancer Risk in California”; and one from the California Air Resources Board in collaboration with the University of California, Davis for “Association Between Long-Term Ultrafine Particulate Matter Exposure and Premature Death.” I am amazed, but not surprised, by how much our faculty and students have achieved.

I am also happy to hear that May 2015 Ph.D. graduates have been offered faculty positions, including **Farrokh Jazizadeh Karimi** at Virginia Tech and **Mohammad Alshaji** at Kuwait University.

I look forward to another successful year! ■



### UPCOMING EVENTS:

- **October 2015**, Le Val Lund Lecture at Town & Gown of USC
- **November 2015**, USC CMAA Symposium at Town & Gown of USC
- **December 2015**, Astani CEE Holiday Party at the Radisson Hotel at USC
- **January 2016**, Construction Job site visit and mixer