

Sonny Astani Civil and Environmental Engineering

NEWSLETTER

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Dr. Ronald C. Henry is Retiring

After more than 30 years of service within the USC Sonny Astani Department of Civil and Environmental Engineering, **Dr. Ronald C. Henry** will retire at the close of the spring semester.

Dr. Henry began his career at USC in 1984 as an assistant professor and has become a prominent Environmental Engineering professor with a research focus in air pollution. He has served on the Engineering Faculty Council of the School of Engineering, the Health Benefits Committees of the Faculty Senate, and the University Presidential Advisory Committee, as well as on faculty search and initiation committees. He is also a member of the Air & Waste Management Association.

As a professor at USC, his research interests included perception and measurement of visibility degradation, identifying sources of air pollution by receptor-oriented modeling, multivariate statistical analysis of environmental data, and materials damage caused by acid precipitation. Those who worked with him recognized his passion for research.

"Ron was unusual among environmental engineers in that he was comfortable with some very advanced mathematics," says colleague Dr. Joseph Devinny. "He created complex models of how pollutants move in the atmosphere, particularly including receptor models, which could indicate the geographic sources of pollutants from the variation in their concentrations measured at monitoring stations. As with most good science, seeing the results often made one think 'that's obvious.' But, of course, it was only obvious because of Ron's exceptionally creative work."

Before joining USC, Dr. Henry earned his bachelor's degree from the Stevens Institute of Technology in New Jersey in 1966 and his master's degree in mathematics from USC in 1968. He then joined the U.S. Peace Corps to work as a teacher in East Malaysia and returned to the United States to earn his Ph.D. in applied physics in 1977 from the Oregon Graduate Center.

Despite his retirement, Dr. Henry will continue with his research, thanks to the Faculty Early Retirement Capstone Research Grant he received for his research on the effects of airport-related emissions. He confirms this, saying, "In retirement, I have plans to continue my research, visit with my children Isaac and Samantha – both graduates of VSoE – and spend more time at my mountain retreat with my wife."



A Legacy of 30 Years: Dr. Ronald C. Henry will retire at the end of the spring semester after a 30-year career teaching environmental engineering at USC.

Reflecting on his time at USC, Dr. Henry says, "It has been an honor and pleasure to have been part of the Astani Department these 31 years. I would like to thank the past and current staff for the many times they went beyond the call of duty to help me, the faculty of the department for being gracious and valued colleagues, and the administration of the department and school for making me part of the Trojan family. Of course, the main goal of us all has been the education of our outstanding students, who have been the true joy of my time here." ■

NEWSLETTER

Renovated Environmental Lab Advances Research Capabilities

In July 2014, work was completed on the Environmental Lab – home to a wide variety of water-based research studies conducted by **Dr. Amy Childress**, professor and director of the Environmental Engineering program; **Dr. Mike Pirbazari**, associate director of the Environmental Engineering program; and **Dr. Adam Smith**, assistant professor. Approximately 4,000 square feet of ENE laboratory space underwent complete renovation, and process and analytical equipment will soon be installed for use by environmental engineering faculty, staff, and students.



The laboratory houses membrane bench- and pilot-scale systems for seawater desalination and wastewater reclamation, each equipped with online monitoring and data acquisition. As part of Dr. Childress', Dr. Pirbazari's, and Dr. Smith's start-up package, USC will also purchase instrumentation for membrane and particle characterization and general analytical studies. This newly renovated water laboratory will enable fundamental understanding of complex transport and reaction processes, implementation of new modeling approaches, and development of laboratory and pilot systems. Together, the water faculty intends to build a portfolio of integrated modeling and processes for the production of water and energy. Research efforts will focus on advanced water and wastewater treatment processes to reduce energy consumption in clean water production and to reuse water during energy production and other industrial processes, as well as new methodologies to leverage uncommon sources to produce energy. ■

The Albert Dorman Lecture Series



This year's distinguished speaker for the Albert Dorman Lecture Series was **Dr. G. Wayne Clough**, secretary of the Smithsonian Institute and President Emeritus of the Georgia Institute of Technology. His lecture, "From the Eocene to the Anthropocene: An Engineer's View of Climate Change," focused on Smithsonian science in multiple disciplines that is adding to the body of evidence about how the climate is changing, what effects that change is producing, and how that information can guide engineers' thinking in creating a more sustainable, resilient future.

Dr. Clough oversees construction and renovation programs for the world's largest museum and research complex. He holds a bachelor's degree and a master's degree from Georgia Tech and a Ph.D. from the University of California, Berkeley, with specialties in geotechnical and earthquake engineering.

Attending guests at the October 8 event included Dean Yannis Yortsos; John O'Brien, Executive Dean for Engineering; Albert Dorman; and Civil and Environmental Engineering faculty, staff, and students.

The annual lecture series honors Dorman, an architect and civil engineer, USC alumnus, and founding chairman of AECOM Technology Corporation. Dorman is the first person to become both a fellow of the American Institute of Architects and an honorary member of the American Society of Civil Engineering (ASCE). He is a member of the National Academy of Engineering and the winner of the ASCE Outstanding Lifetime Achievement Award in Leadership. ■

FACULTY NEWS



Dr. Adam Smith

Dr. Adam Smith Joins Faculty

Dr. Adam Smith, assistant professor, is the Department's newest faculty member. He teaches a civil engineering course on biological processes in environmental engineering, and his research is focused on resource recovery from waste streams, microbial syntrophy in anaerobic systems, implications of low temperatures on microbial communities, biofilm-based treatment systems, and sustainability assessment applied to water infrastructure systems.

His lab is researching global environmental protection through improving water infrastructure and water resources, as well as studying the potential for wastewater as a valuable resource of energy, nutrients, and water.

Smith has published multiple peer-reviewed articles focusing on his biological research interests. He also mentors students and volunteers with the WonderKids program, helping elementary students better understand weather, water, and droughts around the world.

Smith earned his bachelor's degree in civil engineering from Marquette University and his master's degree and Ph.D. in environmental engineering from the University of Michigan. ■

FACULTY GRANTS

■ **Dr. Roger Ghanem**

Project Title: Collaborative Research: RIPS Type 1: Human Geography Motifs to Evaluate Infrastructure Resilience
Agency: National Science Foundation

■ **Dr. Erik Johnson**

Project Title: SAVI/Collaborative Research: Pacific Rim Earthquake Engineering Mitigation Protective Technologies International Virtual Environment (PREEMPTIVE)
Agency: National Science Foundation

■ **Dr. Ketan Savla**

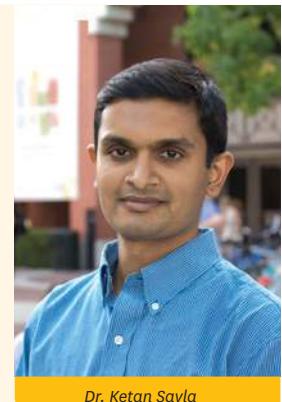
Project Title: A Dynamical Framework for Integrated Corridor Management
Agency: Metrans

■ **Dr. Costas Synolakis**

Project Title: Southern California Coastal Climate Change Impacts Outreach Work Plan for Combined Outreach and Capacity Building
Agency: California Coastal Conservancy

NSF Career Award

In February 2015, **Dr. Ketan Savla** received the renowned National Science Foundation Career Award, along with \$500,000 in research funding, for his proposal on Control Design for Dynamical Network Flow with Applications to Transportation. Dr. Savla's project will focus on transportation network reliability. He wishes to develop an integrated research and education program on rigorous control design for intelligent infrastructure networks. To learn more about Dr. Savla's award from the NSF's Division of Electrical, Communications and Cyber Systems, visit nsf.gov/awardsearch/showAward?AWD_ID=1454729.



Dr. Ketan Savla

FACULTY HONORS AND AWARDS

■ **Professor Eric Shen**, part-time lecturer, has been selected to receive the Orange County Engineering Council (OCEC) Outstanding Engineering Educator Award.

■ **Dr. George Ban-Weiss** was recognized by MIT's Technology Review as a top 35 Innovator under the age of 35 in August 2014. ■

NEWSLETTER

GRADUATE STUDENT NEWS

Striving for Sustainability

In fall 2015, **Farrokh Jazizadeh Karim** will join the Department of Civil and Environmental Engineering at Virginia Tech as an assistant professor with a focus on sustainable infrastructures. There, he will pursue his vision of establishing an internationally recognized program and advancing his research and teaching goals. Following urbanization trends and recognizing the need to improve quality of life and economic competitiveness in these environments, urban infrastructures must become more resource-efficient and environmentally friendly. Context-aware management of operations within these infrastructures could improve their adaptability and efficiency, enable integration of renewable energy sources, and reduce dependency on fossil fuels.

Accordingly, Karim's academic vision is to move toward the realization of sustainable infrastructures in smart cities – where there is a bidirectional flow of information among facilities, users, and regional infrastructure – to achieve cyber-physical systems (CPS) solutions capable of increasing adaptability for sustainability and resiliency.

To make this vision a reality, his research and pedagogical interests are at the intersection of data management, data-driven informatics, and built-environment sustainability and adaptability. His principal goals are to enable optimal sensing and actuation techniques, formalize infrastructures' operational data management, quantify the dynamics of the built environment, and devise effective mechanisms that improve operations from both energy conservation and operational constraints perspectives at different scales, from building facilities to regional/urban levels. As a result of his research at USC, he has authored and co-authored 11 peer-reviewed journal articles as well as 13 peer-reviewed conference articles. ■



Farrokh Jazizadeh Karim



2014 RA/TA Awards

Each year, **the CEE RA/TA Awards** recognize Ph.D. students who show excellence in teaching and research. For 2013-2014, Aykut Ayca and Zheng Yang received Teaching Assistant Awards, and Sina Hasheminassab, Mahdi Ebrahimian, and Zheng Yang received Research Assistant Awards. (RA Sina Hasheminassab and Chair and Professor Lucio Soibelman, pictured left to right.)

UNDERGRADUATE STUDENT NEWS



The 2014 CEE tailgate was held outside of Kaprielian Hall during Homecoming Weekend in October and attracted 160 attendees, including several David M. Wilson board members. The fantastic barbecue chicken and beef were prepared by Dr. Dave Wong.

Students Place First in ASC Competition

In October, a team of six civil engineering undergraduate students placed first in the **National Preconstruction Services Competition** held at the Associated Schools of Construction (ASC) Region 3 Student Competition in Chicago. The competition was sponsored by Pepper Construction.

Jennifer Callahan, Emily Edelstone, Ben Liu, Mary Martikian, Vincent Nguyen, and Sylvia Tran comprised the first USC team to compete in the Region 3 (Great Lakes Region) competition.



ASC Winners: USC students placed first in this past year's ASC Competition. Pictured here are (from left): Ben Liu, Jennifer Callahan, Emily Edelstone, Sylvia Tran, Mary Martikian, and Vincent Nguyen with their awards.

"We usually compete in ASC Region 7, in Reno, Nevada, every February," says Liu. "We wanted to test our skills against other regions; thus we brought our most experienced students to this competition."

Though each student had participated in other ASC competitions, this was their first preconstruction challenge. According to the ASC Region 3 website, the Preconstruction Services Competition is designed to expose student competitors to the everyday challenges of preconstruction services in the construction industry.

This year's competition focused on the proposed construction of a \$70 to \$100 million hospital with an attached central utility plant. The student teams, acting as general contractors, were required to submit a proposal that addressed team selection, logistics planning, conceptual estimating, risk analysis, constructability review, resource allocation, and safety. Judges served as the clients/owners in the scenario.

"Not only did we win first place, but we also learned much about construction in the Midwest," said Liu. ■

NEWSLETTER

STAFF NEWS



Kaela Berry



Geraldine Lorenzo



Katie Russo



Kyoko McCarthy



Elizabeth Nguyen

Kaela Berry is the chair's new assistant, responsible for maintaining the department website, newsletters, and events calendar, along with administrative tasks. Berry employs creative skills to make the CEE department initiatives and events more fun and memorable. Building upon her organizational and multitasking abilities every day, Berry has been a beneficial addition to the department.

Geraldine Lorenzo is the new director of Undergraduate Student Services. She is working very closely with students to guide them through programs and services toward their academic and career goals. Lorenzo aims to improve community-building in the Department to enrich student experience. She looks forward to meeting each CEE student.

As the new graduate advisor, **Katie Russo** advises master's and Ph.D. students for the CEE department. She helps students make positive educational experiences in the department and at USC. She hopes to create events that will bring students together and connect them to the Department and the University.

Kyoko McCarthy is one of the department's new budget/business analysts. She coordinates pre- and post-award activities for departmental contracts and grants, prepares research grant proposals, works on the administration of assigned budgets, and monitors grant activity. She intends to help improve the overall efficiency and effectiveness of proposal preparation and research grant administration, as well as provide enhanced support to faculty.

Elizabeth Nguyen's position as a budget/business analyst entails supporting departmental and research activities, proposal preparation, and account management for budgeting, reconciliation, and expenditures. She is a USC alumna with a bachelor's degree in business administration and she has a J.D. degree from Southwestern Law School. With her legal and business background, she aims to bring a different perspective to the department and improve workflow between the faculty and staff. ■

ALUMNI NEWS

Students Bring Water to Rural Rwanda

The goal of the Community Water Project – an initiative started by a team of engineers from USC – is to bring safe, clean water to a community of about 200 people in the rural town of Bwana, Rwanda.

Four years ago, **Viv Pitter** (B.S. '13) and **Kirsten Rice** (B.S. '14) began research on the effectiveness of bio-sand filtration and **Jay Todd (J.T.) Max** (B.S. '13, M.S. '14) joined them later on to develop the innovative water treatment system. With the help of Sonny Astani professor Dr. Massoud Pirbazari, they developed a low-cost system to help the people of Bwana.

Worldwide, an estimated 768 million people lack access to clean drinking water. According to the World Health Organization, a lack of safe drinking water and sanitation has been the leading cause of cholera and other diarrheal diseases with an estimate of 2.2 million deaths annually, according to the World Health Organization.

"I believe access to clean water is a basic human right," said Max.

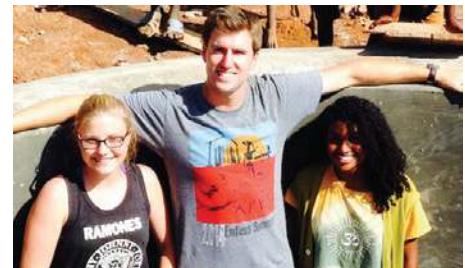
With a grant from National Geographic and a successful Indiegogo campaign, they were able to raise \$20,000 for their trip and left for Rwanda on September 14.

During their trip to Rwanda, the team installed a pipe from Lake Muhazi to the filtration system. They employed 30 workers who live near the project

site to dig down 0.7 meters for the 300-meter-length from the lake. The young engineers hosted meetings with volunteer community health workers and the Nyarubuye community and discussed the effectiveness of the filter, at-home treatment, and reducing distance. The Community Water Project team plans to visit again one day to check on the system and keep in contact with the friends they have made there.

Over 200 community members showed their appreciation by clapping, cheering, and shouting "morakoze" ("thank you") at the project meeting, said Rice, who was infected with worms from contaminated water during her stay at Rwanda.

"We hope to harness biological filtration to provide clean water throughout the developing world, wherever it's needed," said Max. ■

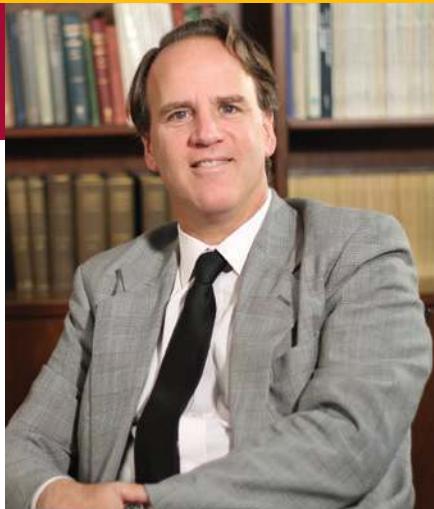


Solving a Water Crisis: USC Viterbi alumni Kirsten Rice, J.T. Max, and Viv Pitter helped out a rural village in Rwanda.



Alumnus Nan Li Selected for 1000-Talents Plan

USC Sonny Astani alumnus Nan Li (Ph.D. '14) was selected as part of the prestigious and competitive 1000-Talents Plan. Dr. Li currently works as an assistant professor in the Department of Construction Management at Tsinghua University, where the General Office of the Central Committee of the Chinese Communist Party implemented this plan for the University in December 2008. The purpose of the 1000-Talent Plan is to recruit top scientists and promote academic research and education. Tsinghua University provides research funds, equipment, daily expenses, and fees for international academic exchanges, as well as support in terms of salaries, housing, offices, laboratories, research assistants, and graduate students. Dr. Li is the first awardee from the School of Civil Engineering at Tsinghua University since the plan started. He gives thanks to his past Ph.D. advisors, USC faculty members Dr. Lucio Soibelman and Dr. Burcin Bercerik-Gerber "for being wonderful advisors in the past few years and for their continuous mentorship."



Dr. Lucio Soibelman

Chair's Message

Greetings! It's been a busy year for the Astani faculty. Congratulations are in order for many. I wish Ron Henry a fulfilling retirement and thank him for 31 years of service to the Department of Civil and Environmental Engineering. I'm thrilled to celebrate Ketan Savla's NSF Career Grant, the promotion of Erik Johnson and Patrick Lynett to full professors, and the promotion of Burcin Becerik-Gerber to associate professor. And, I'm excited to announce new hires in the research administration teams with Kyoko McCarthy, a New Jersey certified public accountant, and Elizabeth Nguyen, a law graduate; new hires in the student services team with Geraldine Lorenzo and Katie Russo, both masters graduates; and the administrative team with Kaela Berry, a 2013 USC graduate.

Change is inevitable in any work environment. It allows us to hear new voices and appreciate new ideas. It offers opportunities to grow and develop our department. Along with those changes, we also uphold traditions that help define who we are. Our annual events, like the CEE tailgate and the USC CMAA Symposium, encourage our faculty and students to connect through a shared team spirit. This mix of change and tradition is what drives our department's successes. Visit us, and let's celebrate together the wonderful things we have accomplished and our bright future that lies ahead. ■



*From left are: Dr. Patrick Lynett,
Dr. Burcin Becerik-Gerber, and Dr. Erik Johnson.*

CONGRATULATIONS

In November 2014, **Dr. Erik Johnson** and **Dr. Patrick Lynett** were promoted from associate professor to professor. Dr. Johnson, also the associate chair, who received his Ph.D. from the University of Illinois at Urbana-Champaign, researches structure, system identification, and building energy efficiency. Dr. Lynett, also the John and Dorothy Shea Early Career Chair, who received his Ph.D. from Cornell University, focuses on modeling of coastal processes and wave dynamics. In March 2015, **Dr. Burcin Becerik-Gerber** was promoted from assistant professor to associate professor. Dr. Becerik-Gerber, also the Stephen Schrank Early Career Chair, who received her Ph.D. from Harvard University, studies human-building environment, situational awareness about built environment building information modeling, smart infrastructure and urbanization, information management, and technology for construction. ■