

## Engineering Technology Professor Leads Key Risk Management Research

Rapidly evolving technologies in engineering and manufacturing – as well as changing perspectives on natural resources, urban living and nuclear safety – have enabled designs that go beyond what was historically possible.

In some cases, new materials and systems are being discovered and put to use quickly. These materials and systems have unclear failure mechanisms, yet far-reaching consequences if failure should occur. Evaluating risk is essential, and one professor – **Roger Ghanem** – is on the forefront of key studies in this area.

Ghanem is the Gordon S. Marshall Professor of Engineering Technology at USC. He is an expert in probabilistic modeling and risk assessment with a focus on inferences predicated on large-scale computational models or large datasets. Probabilistic risk assessment is a systematic and comprehensive methodology to evaluate risks associated with complex engineered technologies or the effects of environmental stressors.

Nowadays, decisions must be made rapidly on issues such as climate change and urban growth – all of which involve complex interactions between humans, nature and technology, with irrevocable consequences that may not be felt for decades. Insight from past experience can be misleading, so science must guide these decisions.

Ghanem's research on these interactions has been supported for more than 20 years by the National Science Foundation, Defense Advanced Research Projects Agency, Air Force Office of Scientific Research, Office of Naval Research, Department of Energy and a host of industries.

For more information about Ghanem, including his prestigious research roles, publications and many awards recognizing his scientific contributions, visit [viterbi.usc.edu/directory/faculty/Ghanem/Roger](http://viterbi.usc.edu/directory/faculty/Ghanem/Roger). ■



Roger Ghanem is an expert in probabilistic modeling and risk assessment.

### Roger Ghanem's current research includes:

- Designing lightweight vehicles with GM
- Developing the Scramjet with Sandia National Laboratories
- Analyzing the safety of spent nuclear fuel in collaboration with Professor Bora Gencturk at USC
- Assessing the influence of governance on sovereign risk and ratings in collaboration with the World Bank
- Studying climate predictability in collaboration with Lawrence Livermore National Laboratory
- Predicting ocean surges in collaboration with Professor Patrick Lynett at USC
- Assessing infrastructure resilience in collaboration with New York University

## DEPARTMENT NEWS



Construction Management's Executive Training Programs

### Executive Training Program Launches with Industry Pros

Chinese executives had an opportunity to take classes in pre-fabrication, building information modeling, sustainability and pre-cast and post-tension concrete, in addition to visiting local construction sites, as part of Construction Management's new Executive Training Programs. The first session was held last December for the Chinese Construction

Industry Association, with 20 senior-level construction executive participants from the province of Henan. Professor Henry Koffman, director of the Construction Engineering and Management Program, said the programs were a great success and to expect more sessions in the near future. ■



The CEE Holiday Party

### Celebrating the Holidays with Music and Art

*The USC Sonny Astani Department of Civil and Environmental Engineering holiday party drew its largest attendance yet, welcoming 175 guests to Town and Gown on December 9, 2016. At the party, a harpist, pianist and an award-winning operatic singer entertained faculty and staff. George Chilingar, Professor Emeritus, presented two portraits created by famed Iranian-American artist Pari Amini – one of Lucio Soibelman, Department Chairman, and the other of Sonny Astani, founder of Astani Enterprises, Inc., and the CEE department's namesake. ■*

## FACULTY NEWS



Chair Dr. Lucio Soibelman

### Soibelman Appointed Dean's Professor

**Lucio Soibelman**, Chairman of the Sonny Astani Department of Civil and Environmental Engineering, received the appointment of Dean's Professor by Dean Yannis Yortsos on January 2, 2017. Along with this honor, Soibelman recently won the 2016 Richard R. Torrens Award from the American Society of Civil Engineers and the 2017 Construction Management Award from the American Society of Civil Engineers Construction Institute. ■



Felipe de Barros, Assistant Professor  
of Environmental Engineering

**Felipe de Barros**, assistant professor of environmental engineering, received the National Science Foundation CAREER Award for his proposal, "CAREER: An Integrative Probabilistic Approach for Assessing Solute Transport in Multi-Scale Heterogeneous Aquifers." One of NSF's most prestigious honors, the award recognizes junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. ■

#### FACULTY AWARDS AND HONORS:

- **Amy Childress** joined *Desalination* as a co-editor in January. *Desalination* is one of Elsevier's journals, dedicated to promoting "leading-edge progress on the globally important topic of water desalting."
- **Bora Gencturk** received two grants for 2017: one from the National Science Foundation for "BRIGE: Damage Evaluation and Life-Cycle Assessment of Reinforced HPFRC Beam-Column Joints under Multi-Axial Loading," and the other from the University of Houston for "Cask Mis-Loads Evaluation Techniques."
- **Roger Ghanem** was noted as an American Association for the Advancement of Science Fellow in November, recognizing his outstanding contributions to practical, mathematical and computational aspects of uncertainty.
- **Patrick Lynett** received a grant from the National Science Foundation in October for "RAPID: Recording Tsunami Impacts from the Taan Fjord, Alaska Landslide of October 17th, 2015."
- **Adam Smith** received a National Science Foundation grant in October for "GOALI: Advancing Decentralized Anaerobic Membrane Bioreactor Treatment of Food Waste."

## STUDENT EVENTS



### CEE ON THE SLOPES

*An adventurous group of 70 Sonny Astani Department of Civil and Environmental Engineering students and faculty attended the annual ski trip on January 21, 2017 at Big Bear Mountain Resort.*



### CMAA STUDENT CHAPTER FUNDS NEW SCHOLARSHIP

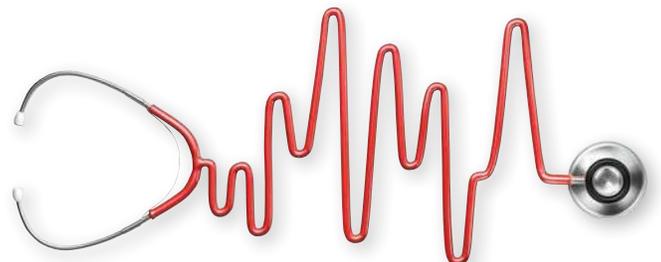
*A new \$100,000 scholarship will be awarded to students enrolled in the Construction Management Program and in good standing with the Construction Management Association of America student chapter. The scholarship is funded by annual CMAA symposia and SPARKS events. Recipients will be chosen by a committee made up of the CMAA student president, faculty advisor, alumni advisor and the department chair.*



## CMAA's 22nd Annual Symposium Highlights Healthcare's Industry Impacts



USC's Construction Management Association of America student chapter's November 3 symposium, "Constructing the Future of Healthcare," featured a discussion of healthcare's impact on architecture, engineering and construction industries. Panelists included Lloyd Silberstein, VP and Executive Director of USC Capital Construction and Facilities Management; Ivan Caso, director of Southern California Construction Management at Kaiser Permanente; Sean Collins, director of Facilities Planning, Design, and Construction at Cedars-Sinai Medical Center and Health Services; and Edward Avila, Principal in Charge at HMC Architects. Nearly 200 industry professionals, USC students and faculty attended. CMAA's Kristen Briggs, Jordan Leake, Steve Pokwo, Saina Vosoghi and Rana Kashani received monetary awards funded by last year's symposium. ■



## GRADUATE NEWS



Jiachen Zhang

### GRADUATE STUDENT SPOTLIGHT:

## Jiachen Zhang

**Jiachen Zhang**, a third-year environmental engineering PhD student advised by George Ban-Weiss, is a productive researcher and sustainable development ambassador. Her research centers on computational modeling of interactions between land use, air pollution and climate change. Zhang's paper, "Revisiting the Climate Impacts of Cool Roofs around the Globe Using an Earth System Model" was published in *Environmental Research Letters*, and her study "Long-Range Transport of Black Carbon over the Pacific Ocean and its Dependence on Aging Timescales" was published in *Atmospheric Chemistry and Physics*.

Zhang leads a collaborative project with Lawrence Berkeley National Laboratory evaluating the impact of solar-reflective cool walls on climate and air pollution in Los Angeles. She has presented at international conferences and presented her group's research on heat mitigation strategies to the L.A. mayor's office.

Beyond her research, Zhang seeks to inspire interest in science through middle school classroom lectures. She operates a social media account (Wechat) and edits posts for Peking University Alumni Association of Southern California. She was invited to emcee PUAASC conventions and the fifth Southern California innovation forum, organized by PlusYoo, an NPO aiming to build a cross-border startup ecosystem. She promotes public understanding of sustainable development and environmental protection in China through articles on a popular website. ■



### GRADUATE STUDENT AWARDS:

- **Farimah Shirmohammadi**, a PhD student advised by Constantinos Sioutas, received the poster presentation competition award at the 35th annual American Association of Aerosol Research conference in Portland, Ore., in October 2016.
- In December 2016, **Evangelos Pantazis**, a PhD student advised by David Gerber, received an Autodesk BUILDers in Residence Award for his collaboration with the Institute for Advanced Architecture in Catalonia and Autodesk Inc.

## UNDERGRADUATE NEWS



### The New AAEES@USC Connects Campus and Industry

The department is proud to introduce a new student organization on campus that promotes leadership and excellence in environmental engineering and science. The **American Academy of Environmental Engineers (AAEES@USC)**, created by environmental engineering and environmental studies students, serves as a resource for young professionals considering environmental careers and acts as a liaison conveying national AAEES opportunities to USC student members.

Through networking, mentoring, speaker events, awards, workshops and seminars, AAEES provides a forum for students to explore career options and facilitates interdepartmental connection. AAEES also seeks to enhance student experience in USC's environmental engineering and science programs, encourage non-major students to consider environmental careers and prepare members for next steps.

AAEES has hosted a panel discussion featuring two recent USC alumni, Luyue Zhang and Kevin Gibson; CEE graduate student Rebecca Peer; and post-doctoral scholar in environmental biology Eric T. Watson. AAEES also offered resume and cover letter review before the Viterbi Career Fair with sustainable design firm LPA Inc. The organization collaborated with the Environmental Student Assembly to host entrepreneur and USC alum Walter Singer at its February general gathering and met with local green technology startups at the Los Angeles Cleantech Incubator (LACI) campus in March 2017.

To learn more or join the AAEES@USC newsletter, email [uscaaees@gmail.com](mailto:uscaaees@gmail.com). Check out the national AAEES website ([www.aeas.org](http://www.aeas.org)) for upcoming events, conferences and publications. ■



*The 30th Annual ASC Student Competition, in Sparks, Nev., gave USC students the opportunity to demonstrate their engineering skills in a competition against 45 other universities. USC won first place in Design Build, second place in Integrated Project Delivery and third place in Virtual Design and Construction.*

## ALUMNI NEWS

### Alumni Receive Prestigious Awards

The Sonny Astani Department of Civil and Environmental Engineering celebrated its fourth annual Alumni Awards Event at the Jonathan Club in downtown Los Angeles on November 30. The awards honor alumni who have gone above and beyond in their experience, service and contributions to the engineering community. The following awards were presented:

- Lifetime Achievement Award – **Richard Hunsaker**, BS CE, '63
- Distinguished Alumni Award – **Patrick Fuscoe**, BS CE, '72
- Outstanding Junior Alumni Award – **Jay Todd Max**, BS ENE, '13; **Viv Pitter**, BS ENE, '13; and **Kirsten Rice**, BS CE, '13
- Alumni Service Award – **Kim Grant**, BS CE, '81



*Our very active AEC Alumni Group visited the Westfield Shopping Mall, which is currently undergoing remodeling and addition-construction, in Century City on January 19.*





Chair Dr. Lucio Soibelman

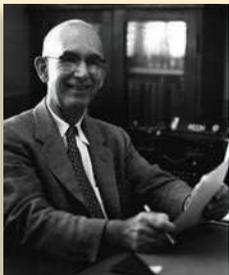
## Chair's Message

Greetings!

As we come to the end of another successful year at the USC Sonny Astani Department of Civil and Environmental Engineering, I wish to say how proud I am of our young faculty's accomplishments and how they continue to prove their worth in the engineering world.

Our junior faculty has had some standout achievements this year. **Felipe de Barros'** National Science Foundation CAREER Grant is a prestigious honor that reflects his outstanding research and teaching. **Adam Smith** and **Bora Gencturk** each received multiple grants. Their achievements have made me feel very confident in our department's future.

Along with our faculty's accomplishments, we celebrate the achievements of our students. CEE students hosted industry panelists at the **22nd Annual CMAA Symposium**, created an environmental engineering student organization and demonstrated their engineering skills at the **30th Annual ASC Student Competition**. Across the board, our students went above and beyond making their experiences at USC count toward their post-grad futures. The successful alumni we just honored at our Alumni Awards event are a testament to the value of this well-rounded college experience. Our department improves with every semester, and I look forward to seeing what's in store for our future. ■



*Continue the Trojan tradition of alumni support for students' academic opportunities as a member of the David M. Wilson Affiliates. DMWA provides scholarships to undergraduate and graduate students, continuing Professor Wilson's legacy of rewarding hardworking civil and environmental engineering students. As a member, you will meet fellow civil engineering supporters and students who benefited from your generosity at DMWA events. A small yearly gift is all we ask, and the first year of membership immediately after graduation is FREE! **For more information, visit [cee.usc.edu/people/alumni-friends](http://cee.usc.edu/people/alumni-friends).***