Department Newsletter

DREXEL UNIVERSITY
Civil, Architectural, and Environmental Engineering
College of Engineering

Civil, Architectural, and Environmental Engineering — Winter 2015

New Faculty Member Dr. James Lo

The Civil, Architectural, and Environmental Engineering (CAEE) Department welcomes new Assistant Professor James Lo. Dr. Lo's areas of expertise will enhance the Architectural Engineering program with research specializations in: Computational Fluid Dynamics (CFD) and airflow simulation, Indoor Environmental Quality, building control integration with building information management systems. He received his PhD in Civil Engineering at the University of Texas, Austin and his MS and BS in Architectural Engineering also from the University of Texas, Austin. Most recently, he was a postdoctoral research fellow with the Indoor Air Quality and Ventilation Group, Energy and Environment Division at The National Institute of Technology and Standards in Gaithersburg, Maryland. Dr. Lo is teaching AE 380/790: Airflow Simulation in Built Environment in the Winter Term.

Alliance formed to address regional water problems

Drexel students performing field work

The Colleges of Engineering at **Drexel University**, **New Jersey Institute of Technology**, and **Rowan University** recently signed a Memorandum of Understanding that facilitates research collaborations amongst faculty and students of these institutions; to improve water quality and to tackle complex water related challenges in the region. These collaborative efforts will make it more accessible for industry to obtain guidance and solutions from highly skilled water researchers, and will include the organization of key presentations on water, the joint offering of short courses on water that draw on expertise at the three institutions, and the establishment of a portal to facilitate communication between the faculties of the three institutions. Efforts will also be made to spur economic growth through industry collaboration and workforce development. Dr. Charles Haas represented Drexel at this signing event. More information can be found here.

How do cleaning products affect indoor air quality?

Dr. Michael Waring and doctoral student Somayeh Youssefi's recent research involving the organic compound limonene, which is used to give cleaning products and air fresheners their pleasant smell, was recently published in Environmental Science & Technology. Dr. Waring and his team are taking a closer look at the chemical reactions that occur when volatile organic gases such as limonene react with ozone in the indoor environment. Secondary organic aerosols (SOAs) are created when organic compounds react with the ozone. This naturally occurring process happens all of the time in the outdoor environment as well, but few researchers have focused on these reactions in the indoor environment. This research will be significant in determining the effects that heavy use of these scented products have on human exposure to aerosols. More information about Dr. Waring's research can be found in this DrexelNow article.

Drexel participates in The Smart Forest Network

Researcher in Alley Pond Park

Dr. Franco Montalto and his Sustainable Water Research Engineering Lab are working with the U.S. Forest Service and the New York City Department of Parks and Recreation on a research initiative called The Smart Forest Network. Dr. Montalto and his students have been collecting data in Alley Pond Park, Queens, New York, since 2010, as an ecological reference site for urban green infrastructure sites in New York City and other cities. A recent collaboration between Drexel, the Forest Service, and NYC Parks has positioned Alley Pond Park as one of the first urban forests to join the U.S. Forest Service's Smart Forest Network and to be wired with Smart Forest Technology. Environmental sensors and wireless communications will allow researchers to monitor the urban forest as it undergoes intense climatic, pollutant, and land-use pressures in order to better manage and maintain these environments. More information can be found in a recent New York Times article as well as in a DrexelNow article.

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Ebola Virus Research

Dr. Charles N. Haas published a study "On the Quarantine Period for Ebola Virus," in *PLOS Currents: Outbreaks*. This timely study looks at the basis for current knowledge about the virus and questions the validity of the 21-day quarantine period for individuals who may have been exposed to the virus in order to reduce the risk of contagion. This 21-day quarantine period was used during previous outbreaks of the virus (Zaire, 1976 and Africa, 2000). Dr. Haas questions if there is systematic method in place for how the Center for Disease Control and Prevention warrants the 21-day period and perhaps this needs to be re-examined for this most recent outbreak. This study received significant media attention in news outlets such as CNN, MSNBC, Washington Post, Fox News, CBS, WHYY.

Dr. Haas and researchers from the University of Pittsburgh have recently published an article in the journal Environmental Science & Technology Letters that addresses the question as to how long the Ebola pathogen survives on surfaces and in water; knowledge critical to developing effective methods in helping to stop the spreading of the disease. Similar research will also be funded by an NSF RAPID grant, and researchers will study pathogens physiologically similar to Ebola to determine their survival rates in water and wastewater. The findings of this study will inform water treatment and waste handling procedures in a timely manner.

Adam Regnier wins Best Demo Award at ACM BuidSys Conference

Doctoral student Adam Regnier was awarded "Best Demo" at the 2014 ACM BuildSys Conference, for his demonstration titled *Automated Diagnostics for AHU-VAV Systems Using Pattern Matching*. The conference focused on embedded systems for energy-efficient buildings, and Adam's work demonstrated a novel, low-cost method to automatically detect and diagnose faults in HVAC systems. This diagnostic tool was demonstrated with an interactive user interface that had been previously deployed to perform real-time diagnostics at a commercial building in the Philadelphia Naval Yard. His project has been performed in conjunction with his advisor, Dr. Jin Wen, and funded by the Department of Energy as part of the Consortium for Building Energy Innovation.

Kerry Hamilton presents at her high school thru Drexel's HEATA program

Doctoral student Kerry Hamilton lectured at Commack and South Side High Schools in New York on December 15-17 through the Drexel Higher Education Advocate Travel Award (HEATA). The purpose of the HEATA is for Drexel graduate students to return to their alma maters (high schools and universities) to share the opportunities higher education has afforded them. Kerry gave an overview of environmental engineering while describing her "journey into engineering research" for students in the science research classes offered at Commack and South Side High Schools. She also provided practical advice for succeeding in STEM classes and becoming involved in research at the college level. She was extremely impressed that many of the high school students had already made contributions to cutting edge research, and even in some cases published their work in top journals. She hopes that in the future, more connections can be made between university researchers and motivated high school students to encourage the next generation of STEM innovators.

Faculty and graduate students execute bridge testing and evaluation

A Drexel team from the CAEE Department recently tested and evaluated a bridge in West Virginia for load carrying capacity, foundation integrity, and performance. The team instrumented the bridge with accelerometers, tilt meters, and strain gauges to monitor both bridge and foundation behavior under typical and maximum loading scenarios. The Drexel team consisted of Drs. Kurt Sjoblom (PI), Ivan Bartoli, A. Emin Aktan, Frank Moon (co-PIs) and graduate students **John DeVitis**, **John Braley**, **Dave Masceri**, **Nick Romano**, **Qiang Mao**, and Postdoctoral Researcher **Matteo Mazzotti**. Also collaborating on this project was Drexel alum **Dr. Nate Dubbs** from Pennoni IIS.

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