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Civil and Environmental Engineering

FROM THE CHAIR / Winter 2020

Dear colleagues and friends,

I am pleased to share with you some recent achievements and discoveries from my fellow civil and environmental engineering faculty at Northwestern. In the stories below you will find how we are working to unravel the mysteries of urban transit, coral bleaching, and antibiotic resistance. CEE researchers are devising strategies to make composite materials stronger and to design foundations to both support and power buildings.

Please join me in congratulating CEE faculty for their many honors and awards. May these early winter months of 2020 be kind to you — in Evanston, that translates to “Please, no polar vortex.”



Kimberly Gray

Kay Davis Professor and
Chair of Civil and Environmental Engineering
McCormick School of Engineering

Nie Wins ‘Best Paper Award’ for Analysis of Ridesourcing Impact on Taxi Industry



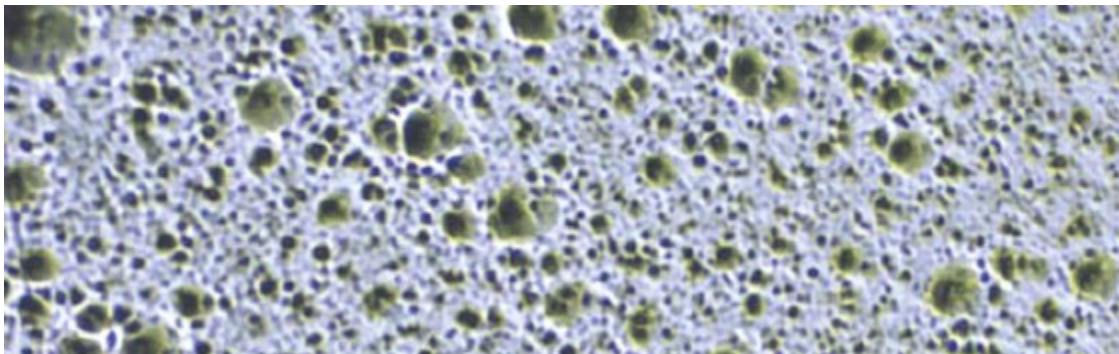


Professor **Yu (Marco) Nie** earned the 2019 Transportation Research Part C Best Paper Award for his paper titled “How can the Taxi Industry Survive the Tide of Ridesourcing?”

After studying three years of GPS data from more than 2,700 taxis in Shenzhen, China, Nie found that despite suffering notable losses in ridership, taxi usage eventually stabilized and competed effectively during peak traffic times and in areas with high population density.

[Read about the award »](#)

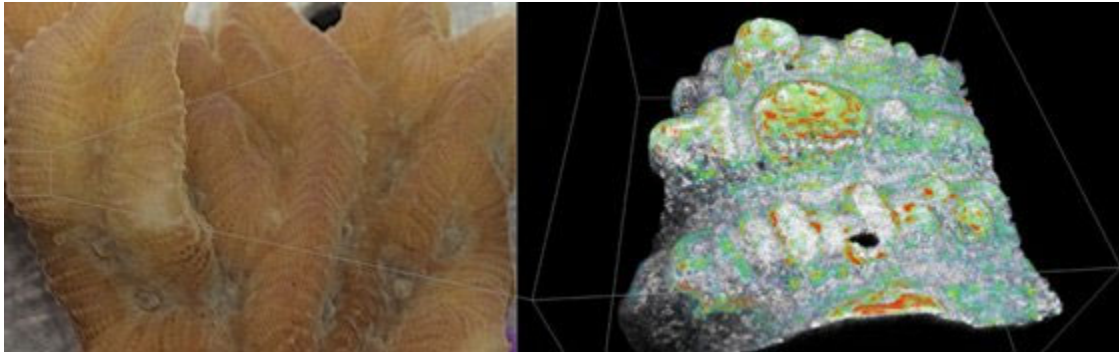
Engineering Defects to Build Strength



New research from Professor **Ange-Therese Akono** uncovered the dual role of air voids in dictating the strength response of geopolymer composites, an inorganic polymeric material with applications in green concrete, affordable housing, building cooling, and fire-resistant structural elements.

[Read about the research »](#)

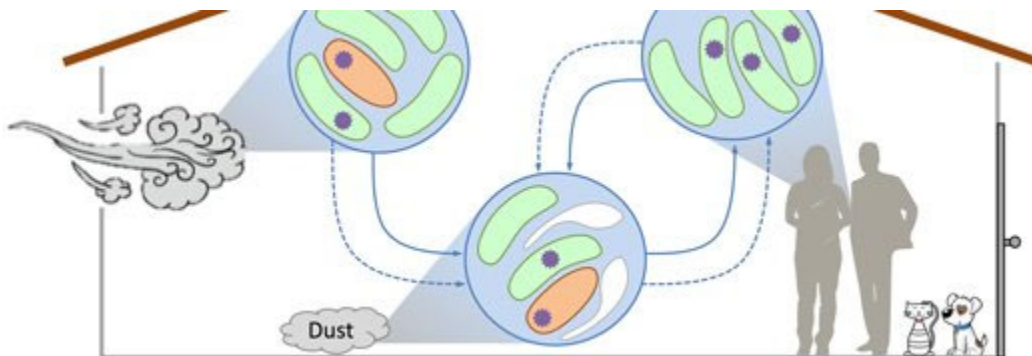
New Imaging Platform Examines Mechanisms Behind Coral Bleaching



As coral reefs deteriorate in the face of climate change, an interdisciplinary Northwestern Engineering research team including Professor **Luisa Marcelino** has developed an innovative method to image coral nanoscale structures and quantify pigment absorption in live corals, an indicator of coral health.

[Read about the research »](#)

Stressed-out Dust is Sharing Antibiotic Resistance Genes



A new study from Professor **Erica Hartmann** is the first to find that bacteria living in household dust can spread antibiotic resistance genes. Although most bacteria are harmless, Hartmann believes these genes could potentially spread to pathogens, making infections more difficult to treat.

[Read about the research »](#)

New Book Spotlights Resource-saving Potential of Energy Geostructures



Professor **Alessandro Rotta Loria**'s new book, *Analysis and Design of Energy Geostructures: Theoretical Essentials and Practical Applications*, highlights the theory and practical application behind the analysis and design of energy geostructures. These technologies integrate geothermal energy carriers within building foundations, providing an environmentally friendly way to heat and cool indoor spaces and sustain hot water production.

[Read about the book »](#)

HONORS & AWARDS

Professor **Karen Chou** was named a Structural Engineering Institute Fellow, a designation from the American Society of Civil Engineers that distinguishes members as leaders and mentors in the profession.

Professor **Raymond Krizek** received the 2020 Outstanding Projects and Leaders award from the American Society of Civil Engineers for demonstrated excellence in furthering civil engineering education.

Professor **Alessandro Rotta Loria** received the 2019 Zeno Karl Schindler Prize from the Swiss Federal Institute of Technology in Lausanne (EPFL) Research Commission in recognition of his distinguished research performed at EPFL in the field of sustainability or environmental sciences.

Emeritus Professor **Surendra Shah**, who produced new innovations in the knowledge of cement and concrete materials and their behavior, was among 167 new fellows elected to the 2019 class of the National Academy of Inventors.

FACTS & FIGURES

90

Years of research and
education

6

National Academy of
Engineering members

5

NSF Young Investigator
Awards



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