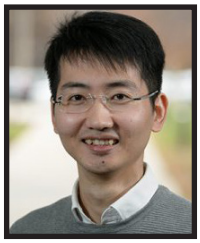
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

FACULTY RESEARCH TALKS

LISTEN. LEARN. COLLABORATE.

Zoom talk | Friday, Feb. 17, 2023 | Noon to 1 p.m.



PRESENTER 1:
ZHAOMIAO "WALTER" GUO
Assistant Professor, Civil, Environmental and Construction Engineering

Towards an Electrified Transportation System: Planning, Operation and Market Design

Transportation electrification is gaining momentum, introducing new challenges and opportunities in both the transportation and power sectors. Dr. Guo will present ongoing efforts in his research group, from planning, operation and market design perspectives to mitigate the challenges introduced by transportation electrification, to maximizing opportunities to improve the efficiency, reliability and resilience of both transportation and power systems.

Dr. Guo received his Ph.D., M.S. and B.S. in civil engineering from the University of California, Davis, UC Berkeley and Tsinghua University, respectively. Before joining UCF in 2018, he was a postdoctoral researcher with Energy Systems Division, Argonne National Laboratory. Dr. Guo's research centers around network modeling and computational strategies for smart and resilient critical infrastructure systems, particularly in transportation and energy systems. His research is supported by the NSF, U.S. DOE, UTC, FDOT and AAA.

PRESENTER 2:
JIYU FANG
Professor, Materials Science and Engineering, Director, Advanced Materials Processing and Analysis Center

Molecular Engineering of Liquid-Crystal Droplets for Biosensing

Liquid crystals are a stimuli-responsive material. The orientation ordering of liquid crystals is very sensitive to the nature of the surfaces they contact. The surface-induced local ordering can be amplified into bulk phases, providing novel optically amplified probes for the simple and rapid detection of biologically important species. In this talk, Dr. Fang will discuss tailoring the surface of liquid-crystal droplets dispersed in an aqueous solution by surfactants, lipids, peptides and biopolymers and the application of tailored liquid-crystal droplets for sensitive and selective detection of biomarkers, virus and bacteria in biological fluids.

Dr. Fang received his Ph.D. in biomedical engineering from Southeast University, China and completed postdoctoral fellowships at Iowa State University and the University of California, Los Angeles. Prior to joining UCF in 2003, he worked in the Center of Bio/Molecular Science and Engineering at Naval Research Laboratory. His research falls within the general domain of soft materials. Specifically, he utilizes biomolecules as building blocks for engineering stimuli-responsive materials for biosensor and drug delivery applications. Dr. Fang has published more than 150 journal papers with an H-index of 41.

PRESENTER 3:
KEVIN MACKIE
Professor, Civil, Environmental and Construction Engineering

Experimental Testing and Numerical Modeling in Support of More Resilient Bridge Infrastructure

Repair, renewal and management of the deteriorating civil infrastructure in the U.S. are ongoing societal, educational and research challenges. Infrastructure solutions require research in novel materials and designs, condition assessment and maintenance, and integrated performance assessment for asset management. This talk showcases recent research on repair using fiber-reinforced polymers, controlling performance using ultra-high performance concrete, understanding seismic response sensitivity analysis, and novel user-driven parameterization of finite element analysis and design.

Dr. Mackie's primary research interests focus on using numerical, probabilistic and experimental methods to assess, design and repair bridges. Research applying similar numerical and probabilistic tools are ongoing on buildings and foundations, lifeline systems, behavior under fire, storm surge modeling, and many other interdisciplinary areas. Dr. Mackie received his M.S. and Ph.D. from the University of California, Berkeley in 1999 and 2004, both in structural engineering. He is a member and former chair of several national technical committees within ASCE and ACI.

ZOOM LINK: https://bit.ly/3lLqC1l | PREVIOUS TALKS: www.cecs.ucf.edu/faculty-research-talks