



UCF

UNIVERSITY OF CENTRAL FLORIDA | ORLANDO

College of Engineering and Computer Science
FACULTY RESEARCH TALKS

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Zoom talk | Friday, Aug. 21, 2020 | Noon to 1 p.m.



PRESENTER 1:

YANG YANG

Assistant Professor,
Materials Science
and Engineering,
NanoScience
Technology Center,
Energy Conversion and
Propulsion Cluster

Structural and Interfacial Engineering of Advanced Electrode Materials Towards Renewable Energy Devices

Structural and interfacial engineering of advanced materials plays a crucial role in transferring the atomic-level activity of electrode materials to device- and system-level performance. In this talk, Dr. Yang will discuss his group's efforts to develop novel materials and structures for renewable energy devices, including rechargeable batteries, fuel cells, electrolyzers and solar fuel generators. He will also discuss his main research focus on resolving the scientific and engineering challenges for high-efficiency and reliable energy generation and storage.

Dr. Yang's research team is dedicated to investigating electrochemistry and photoelectrochemistry at nanoscale solid-gas-liquid interfaces for renewable energy generation and storage, solar energy harvesting and actual device-level applications. Before joining UCF in 2015, he spent two years as a postdoctoral fellow at Rice University and two years as a postdoctoral fellow at the University of Erlangen Nurnberg. He received a Ph.D. in materials science from Tsinghua University in 2010. Dr. Yang has published more than 100 peer-reviewed research articles in the most prestigious materials science and renewable energy journals.



PRESENTER 2:

HWAN CHOI

Assistant Professor,
Mechanical and
Aerospace Engineering

Analysis of Pathologic Musculoskeletal Dynamics and Developing Smart Assistive Devices to Improve Dynamic Function for People With Disabilities

Ankle assistive devices such as foot orthoses and prostheses are available for individuals with neurological impairments or limb loss. They are designed to provide support and alignment for a better walking function. There are many tuning parameters available for these assistive devices such as adjusting stiffness, energy release timing and joint power. Dr. Choi will present how musculoskeletal modeling can be useful for clinical treatments and developing assistive devices. He will also demonstrate novel semi-passive assistive devices which can provide optimal support for people with walking disabilities.

Dr. Choi's research interests include computational musculoskeletal analyses, assistive device developments and machine learning. His research centers on developing subject-specific computational musculoskeletal modeling for lower limb amputation to identify the role of residual muscle, ubiquitous motion monitoring framework and semi-passive ankle assistive devices. Dr. Choi received his Ph.D. in mechanical engineering from the University of Washington and his M.S. in control engineering from Korea University. Before joining UCF in 2018, he was a postdoctoral research fellow at the University of Michigan.

ZOOM LINK: <https://bit.ly/35unuVe> | QUESTIONS? Email Jennifer.Sutton@ucf.edu

For more information, and to see previous talks, visit www.cecs.ucf.edu/faculty-research-talks



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PRESENTER 3:
**GEORGIOS
APOSTOLAKIS**
Assistant Professor,
Civil, Environmental
and Construction
Engineering

Hierarchical Multiscale Materials Mechanics, Design and Analysis

In this talk, Dr. Apostolakis will introduce his research related to multiscale materials mechanics, design and analysis. His first example will present a hierarchical material framework for the design of band gap meta-materials and protective systems using both classical and size-dependent continuum mechanics. The second example will present a size-dependent couple stress response of micro/nano 3-D architectures using a displacement-based Ritz spline method.

Dr. Apostolakis' experience and research spans broad areas of applied and computational structural mechanics, including mixed Lagrangian formulations, thermomechanics, nonlinear dynamic numerical simulation of large-scale civil infrastructure systems, and computational methods for optimal seismic design of structural systems, with a focus in multi-hazard events and sustainability. He received his Ph.D. and M.S.c degrees from the University at Buffalo in 2010 and 2006, respectively, and his diploma degree from the University of Patras, Greece, in 2004.



PRESENTER 4:
DAMLA TURGUT
Professor,
Computer Science

Networking in the Physical World

In this talk, Dr. Turgut will discuss her recent work on how the field of networking has moved from the abstract plan of routing protocols to applications where networking, sensing and acting are strongly intertwined. She will cover applications in healthcare such as IoT-enabled smart walkers, smart homes (using physical scaled models to study energy efficiency, user behavior and smart grid participation) and AR/VR systems (using smart caching behavior for improving the quality of experience).

Dr. Turgut received her Ph.D. from the University of Texas at Arlington. Her research interests include wireless ad hoc, sensor, underwater and vehicular networks, cloud computing, smart cities, IoT-enabled healthcare and augmented reality, as well as considerations of privacy in the Internet of Things. She is also interested in applying big-data techniques for improving STEM education for women and minorities and leads the broadening participation in computing efforts in the department. Her recent honors and awards include the Women of Distinction Award by the UCF Faculty Excellence Center for Success of Women Faculty, the UCF Research Incentive Award, the University Excellence Award in Professional Service and being featured in the UCF Women Making History series.

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