FACULTY RESEARCH TALKS

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Zoom talk | Friday, July 23, 2021 | Noon to 1 p.m.

PRESENTER 1:
AKIHIRO KUSHIMA
Assistant Professor, Materials Science and Engineering, AMPAC, NanoScience Technology Center

In-Situ Electron Microscopy for Characterization and Development of Energy Storage Materials

Dr. Kushima's research group focuses on understanding the fundamental science of materials in atomic- and nano-scales using in-situ transmission electron microscopy (TEM) and atomistic modeling. In this talk, he will discuss some of his recent works on applications of in-situ TEM and computer simulations to understand the electro-chemo-mechanics in all-solid-state lithium batteries and develop new electrode materials with improved performance.

Dr. Kushima received his Ph.D. from Kyoto University, Japan. Prior to UCF, he conducted postdoctoral studies at Massachusetts Institute of Technology and the University of Pennsylvania, and held a research scientist position at MIT. His research focuses on understanding the complex nano-scale phenomena through combination of experiment and atomistic simulation, with particular emphasis on in-situ TEM and energy storage devices. He received the NSF CAREER award for his research on electro-chemo-mechanics at the interfaces in all-solid-state lithium batteries.

PRESENTER 2:
KARIN CHUMBIMUNI TORRES
Associate Professor, Dept. of Chemistry

Chemical Sensors for Biological Applications

In this presentation, Dr. Chumbimuni-Torres will introduce her research related to the development of electrochemical and optical sensors for the future generation of chemical sensors and its applications for detection of nucleic acids and biological ions. She will show the advances in virus, bacteria and microRNA detections towards point of care analysis and ion detection towards wearable sensors.

Dr. Chumbimuni-Torres' research interests focus on the understanding, characterization and development of chemical sensors for bioanalytical applications using electrochemical and optical systems and nanomaterials towards point of care analysis. She works towards direct electrochemical detection of long sequences of DNA/RNA using isothermal techniques for amplification. She also uses blended materials to create highly reproducible paper-based sensors for ions detection. Her research interests extend to optical sensors, where her team uses photoactive compounds to create controllable sensors for biomedical applications. Dr. Chumbimuni-Torres has been funded by various funding agencies, including the NSF, NIH, USDA, Florida department of Health and Powers of America, among others.

PRESENTER 3:
MUBARAK SHAH
UCF Trustee Professor, Founding Director, Center for Research in Computer Vision

Current Research in Computer Vision

Computer vision deals with automatic analysis of images and videos by computers, with applications in self-driving cars, video surveillance, medical imaging, smart cities and more. Dr. Shah will share a brief overview of the Center for Research in Computer Vision. He will also discuss his funded research projects on human activity recognition, cross-view geo-localization, grounded visual question answering, perturbations for machine vision disruption and multi-object tracking, and share his education and training related projects.

Dr. Shah is a fellow of the IEEE, NAI, IAPR, AAAS and SPIE; and a member of the Academy of Science, Engineering and Medicine of Florida. He has published extensively on visual surveillance, tracking, human activity and action recognition, object detection and categorization, geo registration and visual crowd analysis. Dr. Shah is a recipient of the ACM SIGMM Technical Achievement Award; ACM SIGMM Test of Time Honorable Mention Award; and International Conference on Pattern Recognition 2020 Best Scientific Paper Award.