School of Materials Science and Engineering

Seminar Topic:
Stimuli Responsive Deformable Devices for Intelligent Autonomous Systems

Professor Lee Pooi See

Abstract

The emergence of deformable devices is driven by the need to realize free-form properties for conformable and wearable applications. To achieve these needs, approaches to fabricate flexible and stretchable devices have embraced extensive exploitation of materials for active responsive coatings and structural modifications of conventional rigid substrates. In this talk, I will discuss our recent progress in creating free-form, shapeable, flexible wearable electronics and energy devices. We have fabricated wearable energy harvestors using textiles with coatings which control surface properties to convert mechanical energy into power output. Based on the triboelectric effect, the wearable textile energy scavengers can harvest energy from contact. Stretchable and transparent energy harvestors have been attained using elastomeric composites and hydrogel, allowing them to be mounted on the skin or machines. In addition, extremely stretchable and self-healable strain sensors which can monitor strain, flexion and twist deformations are also realized. Progress on stretchable energy storage, responsive electrochromics, haptics and actuators will also be discussed.

Biography

Dr Lee Pooi See received her PhD degree from the National University of Singapore in 2002 in the field of semiconductor materials. She joined the School of Materials Science and Engineering at Nanyang Technological University, Singapore as an Assistant Professor in 2004. Her research focuses on nanomaterials for electronics and energy applications. She became an Associate Professor with tenure in 2009 and Full Professor in 2015. She was awarded the prestigious National Research Foundation Investigatorship Award in 2015 and the Nanyang Research Award in 2016. Pooi See has been working on hybrid nanostructures for deformable electronics, sensors, actuators and haptics, energy storage and conversion, for human-machine interfaces. She holds more than 25 filed or granted patents and has authored 8 book chapters, with more than 250 publications in international refereed journals. She is currently the Associate Dean (Faculty Recruitment and Development) in the College of Engineering in NTU. She serves as a member of the editorial board in Advanced Energy Materials, Scientific Reports, Frontiers in Materials, Nano-structures and Nano-objects and is also the Associate Editor of Science and Technology of Advanced Materials.

Wednesday, 11 April 2018 ǁ Time: 2:00 pm – 3:00 pm
Venue: MSE Meeting Room (N4.1-01-28)
Hosted by: Professor Lam Yeng Ming

Office of Associate Chair (Research)
Email: vd-mse@ntu.edu.sg
www.ntu.edu.sg/mse