

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Faculty of Engineering

Website: <https://www.eng.nus.edu.sg/ece/>

Area: Microelectronic Technologies & Devices

Host: Assoc Prof Vivian Ng

TOPIC	:	Conductive-AFM to image conductive-insulating granular films
SPEAKER	:	Mr Alexander Toh Kang Jun Graduate student, ECE Dept, NUS
DATE	:	22 November 2019, Friday
TIME	:	9am to 10am
VENUE	:	E4-04-03, Engineering Block E4, Faculty of Engineering, NUS
ABSTRACT		
The Conductive Atomic Force Microscope (CAFM) measures both the topography and current flow of the sample simultaneously and was first developed as a solution to characterize local defects in oxide thin-films that were too thick for scanning tunneling microscopy. However, this technique is not limited to characterizing defects in pure oxide thin films. We have used the CAFM to image the conductive nanoparticles in conductive-insulating granular films, which are typically imaged by Transmission Electron Microscopy (TEM). A bias (up to 10 V) was applied using a Bruker CAFM between the AFM tip to Co-HfO granular films, and the current flow data was post-processed using ImageJ. Nanoparticle count and size analysed from the CAFM are similar to those predicted by the Langevin-function fitting analysis. Increasing bias showed increasing numbers of nanoparticles appearing hints at the possibility of the CAFM being able to image the granular film topographically. In this presentation, the potential of using the CAFM technique to image conductive-insulating granular films, as well as, the sample preparation and practical challenges will be discussed.		
BIOGRAPHY		
Alex Toh is currently a PhD student under Associate Professor Vivian Ng from Information Storage Material Laboratory, Electrical and Computer Engineering Department at National University of Singapore. His thesis topic is on the fabrication and characterization of Co-HfO₂ granular films.		

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