SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
FACULTY OF ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Microelectronic Technologies & Devices

Host: Dr Xie Hang

TOPIC	:	**AC Excited Spin Hall Magnetic Sensor With Simple Structure And High Sensitivity**
SPEAKER	:	**Ms Lu Ling** **Graduate Student, ECE Dept, NUS**
DATE	:	**Tuesday, 4 January 2022**
TIME	:	**11.00AM to 12.00PM**
WEBINAR	:	**Join Zoom Meeting** **https://nus-sg.zoom.us/j/86169194129?pwd=UXUxNXoraXhUSVhtVlZ1V01zUHo5QT09** **Meeting ID: 861 6919 4129** **Passcode: 160549**

ABSTRACT

Magnetoresistance (MR) sensors is useful in various industries and consumer applications, including emerging fields of internet-of-things (IoT), artificial intelligence, and smart living. Commercially available MR sensors based on anisotropic magnetoresistance (AMR), giant magnetoresistance (GMR) or tunnel magnetoresistance (TMR) typically require a bias scheme to achieve linearized output and to suppress noise. The requirement of a bias scheme results in increased structural complexity and manufacturing cost. In our work, an all-in-one spin Hall magnetoresistance (SMR) sensor is fabricated. The built-in AC excitation and rectification detection effectively eliminate the requirements of linearization or domain stabilization mechanisms. This is due to coexistence of SMR and spin-orbit torque (SOT) in the ultrathin NiFe/Pt bilayer structure. Despite the simple structure, the sensor exhibits zero DC offset, negligible hysteresis, and a detectivity of around 1 nT/√Hz at 1 Hz.

BIOGRAPHY

Ling Lu received her B. App. Sc. degree in 2015 from National University of Singapore. She has been working in WinTech-Nano Technology Services Pte Ltd as a failure analysis (FA) engineer since 2016. She is also pursuing the Ph. D degree at ECE of NUS. Her research focuses on study of spin-orbit torque and its applications.