

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: <https://cde.nus.edu.sg/ece>

Area: Microelectronic Technologies & Devices

Host: Dr. Zhang Enze

TOPIC	:	Study on Magnetic Domain Wall Creep Scaling Constant
SPEAKER	:	Ms. Hu Fanrui Graduate Student, ECE Dept, NUS
DATE	:	Thursday, 21 July 2022
TIME	:	10.00AM to 10.30AM
WEBINAR	:	Join Zoom Meeting https://nus-sg.zoom.us/j/83134530450?pwd=TmtKUnA5aUFOk2JsdkVBYWlaL1ZSUT09 Meeting ID: 831 3453 0450 Passcode: 941158

ABSTRACT

Magnetic domain-wall (DW) has been actively studied in recent decades because of its promising applications towards next-generation magnetic memory/logic devices. To achieve higher performance of these devices, faster DW speed is required. Therefore, understanding DW dynamics is of importance. In this work, we studied DW dynamics in Pt/Co/X magnetic heterostructures, where X=Ta, Ti, Ru, Pd. By changing ferromagnetic Co layer thickness and capping layer materials, we investigated the variation of DW dynamics. As a result, we observed universal correlations of creep scaling constant, which decides the DW speed, with respect to the ferromagnetic layer thickness, and saturation magnetization; the creep scaling constant is found to be linearly proportional to ferromagnetic layer thickness, as well as saturation magnetization. Based on these observations, we finally demonstrated that the magnetic moment is the main governing factor of DW dynamics. We expect that our present work provides a new paradigm of DW speed engineering.

BIOGRAPHY

Ms. Hu Fanrui is currently working towards her Ph.D. degree in electrical and computer engineering at the National University of Singapore, Singapore. Her research interests are spintronics, magnetic domain wall motion and optoelectronics.

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