

## SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

**Area:** Microelectronic Technologies & Devices (MTD)

**Host:** Dr Liu Gan

|         |   |                                                                                                                                                                                                                                         |
|---------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TOPIC   | : | Fluorine Engineering for BEOL Oxide Semiconductor Transistors: From Wide-Temperature Reliability to Threshold-Voltage Control and High-Gain Logic                                                                                       |
| SPEAKER | : | Mr Chen Xuanqi<br>Graduate Student, ECE Dept, NUS                                                                                                                                                                                       |
| DATE    | : | Wednesday, 2 September 2026                                                                                                                                                                                                             |
| TIME    | : | 10:00AM-10:30AM                                                                                                                                                                                                                         |
| VENUE   | : | Join Zoom Meeting<br><a href="https://nus-sg.zoom.us/j/89181089382?pwd=FLb00wT93NI5uCJRuufcKlqTYldSn1.1">https://nus-sg.zoom.us/j/89181089382?pwd=FLb00wT93NI5uCJRuufcKlqTYldSn1.1</a><br>Meeting ID: 891 8108 9382<br>Passcode: 925290 |

### ABSTRACT

This seminar presents fluorine treatment as a BEOL-compatible method for oxide semiconductor transistors. We first examine its effects on the reliability of ITO and IGZO FETs over a wide temperature range, with particular attention to defect passivation and hydrogen-related instability. We then discuss selective room-temperature fluorination for threshold-voltage control and its application in oxide semiconductor inverters. These studies connect device-level reliability improvement with circuit-level design for monolithic three-dimensional integration.

### BIOGRAPHY

Chen Xuanqi is currently pursuing his Ph.D. degree in the Department of Electrical and Computer Engineering (ECE) at the National University of Singapore (NUS), under the supervision of A/Prof. Gong Xiao. His current research interests include ITO FETs for BEOL-compatible logic and monolithic three-dimensional integration.

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