

**University of Macau**

**Faculty of Science and Technology**

**Institute of Applied Physics and Materials Engineering**

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**Research on GaN Power Electronic Material and Device on Si  
Substrate**

*By*

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**Time: 4:00p.m.**

**Venue: E4 -1052**

### **Abstract**

Power electronic devices are the core components in the field of power conversion. The performance of these devices can directly affect the energy utilization efficiency. The III-nitride semiconductor (being a representative: GaN) is known as a promising material for the next generation of power electronic devices, owing to its excellent physical properties. Compared with the conventional Si-based devices, GaN can carry higher power density and deliver higher energy conversion efficiency with lightweight and miniaturized power conversion system. Currently, GaN grown on Si substrate now become the mainstream technology in GaN power electronic industry, because of its low fabrication cost and the ability to be integrated with the mature Si-based CMOS technology platform. Here aimed at the critical technical issues faced by this industry, the talk will introduce the latest progresses, in Sun Yat-sen University,

on the high breakdown voltage GaN material epitaxy on Si substrate and the fabrication of GaN-based MOSFET devices.

### **Biography**

Yang Liu received the B.E. degree, M.S. degree and Ph.D in Microelectronics and Solid state Electronics from Jilin University, Changchun, China, in 1991, 1994 and 2000, respectively. In 2001, he became a visiting research fellow in Nagoya Institute of Technology, Aichi, Japan, where he was engaged in the research of GaN based material growth by MOCVD and devices for optoelectronics and power switching applications. Since 2007, he has been with School of Physics and Engineering, Sun Yat-sen University, Guangzhou, China, being a professor, where he has been engaged in the development of GaN power semiconductor devices.

**All are Welcome!**