

---

## Heterogenous integration platform for photonic integrated circuits

*Shanghai Institute of Microsystem and Information Technology,  
Chinese Academy of Sciences, China*

**Xin Ou**

**Email: [ouxin@mail.sim.ac.cn](mailto:ouxin@mail.sim.ac.cn)**

To date, multi-layer heterogeneous integration is emerging as a promising approach for large-scale photonic integrated circuits (PICs), enabling a leap in a myriad of applications such as optical communications, LiDAR and quantum computing. However, several technical points must be addressed to make it possible, in particular the wafer-scale material platform, facile device manufacturing and on-chip system design. Here, we present a wafer-scale integration technique, termed ion-cutting technique, to obtain functional thin films on insulator (X-on-insulator, XOI) with ultra-high crystallinity, thus offering the commercial possibility of PICs. Given the potential of the XOI materials, such as Lithium Niobate on insulator (LNOI), Lithium Tantalate on insulator (LTOI), Silicon Carbide on insulator (SiCOI) and Indium phosphide on insulator (InPOI), we will also discuss some advanced microfabrication methods and versatile photonic devices, establishing a path towards the practical realization of monolithic photonic system.



### **Short Bio:**

**Xin Ou** is a full professor of Shanghai Institute of Microsystem and Information Technology (SIMIT), Chinese academy of science, China. Currently, he leads a research group working on the advanced SOI materials, heterogeneous Integration and nanofabrication.