

Monolithic Silicon Lasers on SOI

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Silicon photonic integration has gained great success in many application fields, such as data communications, sensing, *optical* computing, etc., owing to the excellent optical device properties and CMOS compatibility. However, due to the in-direct bandgap properties, silicon is inefficient in lasing, and realizing monolithic integration of III-V lasers and silicon photonic components on single silicon wafer is recognized as a long-standing puzzle for ultra-dense photonic integration. In this report, we will report the embedded InAs/GaAs quantum dot (QD) lasers directly grown on trenched silicon-on-insulator (SOI) substrate, enabling the first demonstration of monolithic integration with butt coupled silicon waveguides. We show that this can provide a scalable and low-cost epitaxial method for monolithical integration of III-V laser with other optical circuits on the same Si wafer, paved the way for the future wafer-scale full-functional silicon photonic circuits including the light sources.



Short Bio:Xuhan Guo received his BSc (2009) from Huazhong University of Science and Technology, China, and Ph.D. (2014) from University of Cambridge, UK. He conducted his research in University of Cambridge as the research associate from 2013 to 2017. He joined the faculty of Shanghai Jiao Tong University, Shanghai, China in

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