Workshop Speaker	
Name	Jason Png
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Presentation Title	High-Speed Integrated Silicon Photonics

Biography

Png Ching Eng (Jason)received his Ph.D. degree in Silicon Photonics from Surrey University in 2004, executive MBA degrees from INSEAD and Tsinghua University in 2014. He also completed the Innovative Business Leadership Program at Massachusetts Institute of Technology (MIT) Sloan School in 2013. He was with Agilent Technologies from 1999 to 2000. Since 2005, he is with Institute of High Performance Computing (IHPC) A*STAR in Singapore. He co-founded Optic2Connect Pte Ltd to commercialize silicon photonics developed at IHPC and are funded by Skolkovo Foundation and Spring Singapore.

200 words abstract

Integrated silicon photonics is an attractive platform for realizing high-speed and low cost data transmission for applications ranging from telecommunications down to chip-to-chip interconnects. In particular, it has received increased attention in recent years due to the increasing demand for high-speed data transmission above 100 Gbit/s. The compatibility of silicon photonics with existing CMOS fabrication process, allow the possibility of large scale manufacturing of on-chip photonics solution for miniaturized and low-cost commercial products for high-performance communication applications. However, the design of on-chip silicon photonics devices that are able to fulfil the requirements of broad optical bandwidth (≥ 50 nm), low loss (< 2 dB), high-speed (≥ 25 GHz), and low driving voltage (< 2V) for high-performance data transmission is a unique practical challenge. This design challenge is further complicated by the fact that the devices must conform to the process design rules of photonic foundries so that large scale photonics manufacturing can be supported.
In this work, we present a library of passive and active on-chip silicon photonic devices that can be used forhigh-speed communication applications. These devices have wide fabrication tolerance of at least ±20nm and can be easily manufactured using standard photonic foundry processes. Design rules for achieving high performance photonic devices at the silicon thickness of 220 nm will also be highlighted for the optical wavelength of 1310 nm and 1550 nm. It will also be demonstrated that our simulated devices are in good agreement with experimental results.