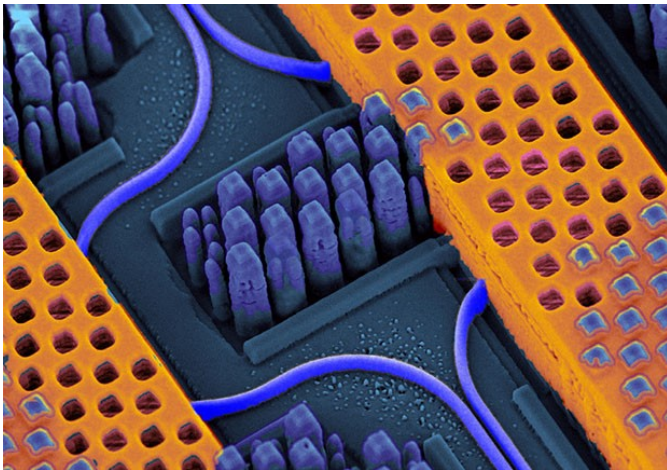


IBM makes a breakthrough in what it calls "silicon nanophotonics" as it integrates optical components with electrical circuits on a single silicon chip using 90nm semiconductor technology.



Silicon nanophotonics uses pulses of light for communications (rather than electricity), providing "a super highway for large volumes of data to move at rapid speeds between computer chips." The technology is ideal for crunching big data, since it pushes terabytes of data through optical fibre at distances ranging from centimetres up to kilometres.

According to IBM nanophotonic transceiver data rates exceed 25Gbps per channel, and the technology uses "compact on-chip wavelength-division multiplexing devices" to feed multiple parallel optical data streams through a single fibre.

The company had already built a proof of concept for the technology back in 2010, but now it is ready for the commercial foundry-- through the addition of silicon nanophotonic components (wavelength division multiplexers (WDM), modulators and detectors) to a high-performance 90nm CMOS fabrication line.

IBM will present further details on the breakthrough at the IEEE International Electron Devices Meetings (IEDM) later this week, with a paper titled "A 90nm CMOS Integrated Nano-Photonics Technology for 25Gbps WDM Optical Communications Applications."

IBM Brightens Silicon

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