

A Platform for Silicon-on-Insulator Nanophotonics on Industrial CMOS Tools

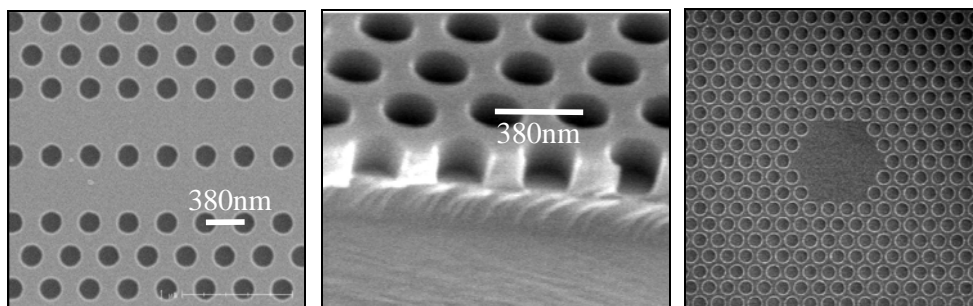
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Silicon nanophotonics has established itself as a promising technology to scale up photonic integrated circuits in functionality, integration, while reducing size and cost. However, the main requirement for a widespread application is the availability of a commercial manufacturing route. Leveraging the expertise and technology of CMOS electronics can provide a short-cut for the deployment of silicon nanophotonics. Deep-UV fabricated photonic wires in Silicon-on-Insulator (SOI) have already been demonstrated to perform equally or better than their e-beam fabricated counterparts [1]. Also, working photonic crystal devices have been demonstrated with this technology [2]. Using lithography at 193nm instead of 248nm has already been shown to improve device quality [3], with photonic crystal waveguides with acceptable propagation losses [4].

The *Silicon Photonics Platform* [5] is a European initiative in the framework of the Network of Excellence *ePIXnet* [6]. It allows research groups, projects and companies in silicon photonics research to use the wafer-scale fabrication processes in the state-of-the-art CMOS technology fabs of IMEC and CEA-LETI for SOI nanophotonic waveguides. Already more than a dozen research groups worldwide have made use of these facilities in various collaborations.



Photonic crystals made with 193nm lithography at IMEC (left, middle), LETI(right).

- [1] W. Bogaerts et al. *Optics Express*, **12(8)**, p. 1583 (2004)
- [2] R. Jacobson et al. *Nature* 04706 (2006)
- [3] A. Lupu et al. *Optics Express*, **12(23)**, p. 5690 (2004)
- [4] M. Settle et al. *Optics Express*, **14(6)**, P. 2440 (2006)
- [5] Silicon Photonics Platform: www.siliconphotonics.eu
- [6] ePIXnet Network of Excellence: www.epixnet.org