

# Overview of Laser Sources for Silicon Photonic Transceivers

Sylvie MENEZO<sup>1\*</sup>

<sup>1</sup> CEA-Leti, Minatec Campus, Grenoble, 38054 Cedex 9, France

\* sylvie.menezo@cea.fr

Several strategies have been adopted and are still being developed for providing Si-Photonic Integrated Circuits with lasers. “Hybrid integration” architectures (integration of processed and finished III-V chips, e.g. SOAs and Lasers) and “Heterogeneous integration” schemes (integration of unprocessed III-V material on Silicon, followed by wafer level processing) will be reviewed and compared.

## References

- [1] Peter De Dobbelaere, *Light source approach for silicon photonics transceivers*, ECOC Workshop, Sept. 2014.
- [2] A. J. Zilkie, *Power-efficient III-V/Silicon external cavity DBR lasers*, OPTICS EXPRESS, vol. 20, n° 21, 2012
- [3] Jae-Woong Nah, e.a., *Flip chip Assembly with Sub-micron 3D Re-alignment via Solder Surface Tension*, Electronic Components & Technology Conference (ECTC), 2015
- [4] Shinsuke Tanaka, e.a., *Four-Wavelength Silicon Hybrid Laser Array with Ring-Resonator Based Mirror for Efficient CWDM Transmitter*, in Proceedings of the OFC Conference, OTh1D.3, 2013
- [5] Jin Hyoung Lee, e.a., *High power and energy-efficient WDM Si/III-V hybrid external cavity lasers*, in Proceedings of the ‘Optical Interconnect Conference’, TuB2, 2014
- [6] Tin Komljenovic, e.a., *Widely Tunable Narrow-Linewidth Monolithically Integrated External-Cavity Semiconductor Lasers*, IEEE JSTQE, VOL. 21, NO. 6, Nov-Dec 2015
- [7] Daniel Sparacin and Greg Fish, *Uniting silicon and InP to make versatile, low cost photonic chips*, www.compoundsemiconductor.net, Industry Photonic Integration, 2013
- [8] Sylvie Menezo, e.a., *Hybrid III-V on Silicon Lasers: Heterogeneous 200mm-wafer-level Integration for WDM-Dense-optical-interconnects*, in Proceedings of the ‘IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS)’, Oct. 2014
- [9] H el ene Duprez, e.a., *Heterogeneously Integrated III-V on Silicon Distributed Feedback Lasers at 1310 nm*, in Proceedings of OFC 2015.
- [10] Guang-Hua Duan, e.a., *Hybrid III-V on Silicon Lasers for Photonic Integrated Circuits on Silicon*, IEEE JSTQE, Vol. 20, n° 4, 2014
- [11] Po Dong, e.a., *Novel integration technique for silicon/III-V hybrid laser*, OPTICS EXPRESS, vol. 22, n° 22, 2014
- [12] Timothy Creazzo, *Integrated tunable CMOS laser*, OPTICS EXPRESS, vol. 21, n°23, 2013
- [13] Shinji Matsuo, *Excelling in the efficiency of lasers formed on silicon*, in Proceedings of the ‘PIC International Conference’, Brussels, Feb. 2016
- [14] Siming Chen, e.a., *Electrically pumped continuous-wave III-V quantum dot lasers on silicon*, Nature Photonic Letter, DOI: 10.1038/NPHOTON.2016.21, 2016

