The Laboratoire de technologies de réseaux includes an optical layer networking infrastructure composed of 18 network nodes equipped with 5 fully-equipped metropolitan, and long haul WDM systems, a DP-QPSK 40G live optical link, a 10G optical recirculating loop, as well as a silicon photonics test bed that are used for research and teaching on advanced optical fiber transmission technologies and networks. The research interests are in the area of optical communications and include flexible coherent (filterless) optical networking, optical layer characterization, field experiments using coherent systems, as well as silicon photonics.

**Current Research Activities**

**Filterless optical networking**
Exploration of flexible network architectures based on coherent transceiver technology and filterless concepts. Network design, RWA/RSA, link engineering, control plane. Metro, core and submarine network applications. *Collaboration Ciena; Royal Institute of Technology KTH, Sweden. Telecommunication Systems DOI: 10.1007/s11235-013-9725-y*

**Field experiments using 40G DP-QPSK coherent systems**
Optical performance monitoring using coherent modems. Experimental and theoretical analysis of polarization effects on fiber routes of coherent core networks carrying live traffic. *Collaboration Verizon, USA; Ciena*

**Silicon microring resonator devices for energy efficient switching applications**
Theoretical and experimental study of integrated optic devices based on silicon microring resonators for switching and signal processing applications. *Collaboration Shanghai Jiao Tong University, China*

**Optical layer test bed**
10G WDM recirculating loop test bed. Component characterization at the system level (ROADM, silicon photonic devices, etc.). Physical layer impairments, performance measurements and dynamic effects in optically amplified links. Small-scale optical networking experiments.

**Optical layer modeling**
Physical layer and link engineering models for core, metro and access networks. Silicon photonic device modeling. *VPtransmissionMaker™, Matlab, OMNeT++/PhoenixSim, OPNET, NetCalc Optical Planner, etc.*

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**Short Courses** (http://www.ofcconference.org)

**SC314 Hands-on Fiber Characterization for the Engineering of Long Haul and Metro Deployments**
Daniel Peterson, Verizon, USA; Christine Tremblay, École de technologie supérieure, Canada

**SC210 Hands-on Polarization-Related Measurements**
Daniel Peterson, Verizon, USA; Tasshi Dennis, NIST, USA; Brian Teipen, ADVA Optical Networking, USA; Christine Tremblay, École de technologie supérieure, Canada