

Clint L. Schow – Curriculum Vitae

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EMPLOYMENT

The University of California (Santa Barbara, CA)

Professor (2015-present)

- Principal Investigator (PI) for ARPA-E ENLITENED/INTREPID program (\$4.4M, 2017 - present)
- Co-PI for AIM Photonics High-Capacity High-Radix Optical Switch (\$2M, 2015 - 2018)

IBM T. J. Watson Research Center (Yorktown Heights, NY)

Manager (2011-2015), ***Research Staff Member*** (2004-2015)

- PI for DARPA programs: C2OI/Terabus (2011-2013), APS/NOBS (2011-2012), POEM (2011-2012), TOPS (2012-2015)
- Led numerous cross-department, multi-site international R&D projects
- Actively mentored and taught many graduate interns, post-docs, and junior staff
- Conceived, designed and implemented generations of parallel VCSEL-based optical transceivers that set records in bandwidth, power efficiency, and density
- Designed SiGe chipsets that set world record speeds for optical links
- Led circuit design and physical layout for >20 tape outs in multiple CMOS and SiGe technologies
- Established computer and data center optics as a key focus for the premier worldwide optical conference, the *Optical Fiber Communications Conference* (OFC) with >14,000 attendees each year
- Transceivers and high-speed links were the subject of multiple press releases picked up by worldwide media (2007, 2008, 2012, 2013, 2014)

Agility Communications (Santa Barbara, CA)

Senior Development Engineer (2001-2004)

- Core-team member developing 2.5 Gb/s electro-absorption (EA) and 10Gb/s Mach-Zehnder (MZ) modulators integrated with tunable lasers; led high-speed chip, sub-mount, and package designs
- PI for a Phase I and II SBIR program (\$850k) on large-area, high-bandwidth, low-noise APDs

IBM Corporation (Rochester, MN)

Development Engineer (1999-2001)

- Responsible for optical receiver development and support for all datacom optical transceiver products
- Bridged R&D, product test and qualification, and customer engagement
- IBM's primary representative to the Fibre Channel Standard's Optical Working Group

PROFESSIONAL CONSULTING

- Aurion Inc., Goleta CA (2015)
- Freedom Photonics LLC., Goleta CA (2015-2016)

EDUCATION

The University of Texas at Austin (Austin, TX)

Ph.D. (1999, GPA 3.86/4.0), B.S. (1994, High Honors), Electrical and Computer Engineering
Dissertation: "Development of a High-Speed, Monolithically Integrated Silicon Optical Receiver"
Dr. Joe Campbell, Advisor

SERVICE AND HONORS

IEEE FELLOW

OSA FELLOW

INTERNATIONAL CONFERENCE ORGANIZATION

- **Optical Fiber Communications Conference (OFC)**
 - Conference General Chair (2015)
 - Technical Program Chair (2013)
 - Steering Committee (2012-2017) representing the Optical Society of America (OSA)
 - Long-Range Planning Committee (2013-present) responsible for future directions
 - Short Course Instructor, “Photonic Technologies in the Datacenter”, 2016-present
 - Optoelectronic Devices Subcommittee, Member 2008-2010, Chair 2011
 - Chair, Special Symposia on Computer Interconnects 2010 & 2011
- **European Conference on Optical Communications (ECOC)**
 - International Advisory Committee (2017-present)
 - Program Committee (2016-present)
- **Optical Interconnects Conference**, General Chair (2018)
- **Photonics in Switching**, General Chair (2016, 2017), Technical Program Chair (2015)
- **Photonics Society Topicals**, “Photonics for Routers and Interconnects,” Program Committee (2010)

INVITED TALKS AT INTERNATIONAL CONFERENCES

- Optical Fiber Communications Conference (2007, 2012)
- European Conference on Optical Communications (Tutorial 2015, Invited talk 2018)
- IEEE Photonics Society Annual Meeting (2006, 2013)
- Conference on Lasers and Electro-Optics (2019)
- North American Workshop on Silicon Photonics for High Performance Computing (2018, 2019)
- International Solid State Circuits Conference (2017)
- Next-Generation Optical Networks (2017)
- IEEE International Conference on Group IV Photonics (2015)
- OSA Advanced Photonics Congress (2016)
- Optical Interconnects Conference (2012)
- OSA Frontiers in Optics (2007, 2012)
- Photonics West (2007, 2014)
- OIDA Workshop on Quantitative Metrics in the Data Center (2012)
- GOMACTECH (2014)
- IEEE/LEOS Workshop on Interconnections Within High Speed Digital Systems (2005)

KEYNOTE AND PLENARY PRESENTATIONS

- OIDA Workshop on Photonic Integration (2008)
- Energy Efficient Super Computing (E2SC) at Supercomputing 2014
- VICTORIES Symposium (2016)
- IEEE CPMT Symposium Japan (2018)

POST DEADLINE PAPERS AT MAJOR INTERNATIONAL CONFERENCES

- 9 at OFC: 2006, 2010 (two), 2011 (two), 2012, 2013, 2014, 2015
- 2 at the Conference on Lasers and Electro-Optics (CLEO): 2011, 2013
- International Electron Devices Meeting (IEDM): 2012
- IEEE Photonics Conference: 2012

Multiple papers highlighted by OFC as “Must See Hot Topics” (2007, 2008, 2013, 2014)

- Each year less than 5 out of >1,100 papers are chosen

IBM RESEARCH DIVISION AWARDS

Outstanding Technical Achievements

- “Optical Printed Circuit Board and Ultra-High Bandwidth Transceiver Technologies” (2008)
- “The Science of Silicon Nanophotonics” (2012)
- “Technologies for Terabit/s Optical Transceivers” (2013)

Technical Accomplishment: “Silicon Nanophotonics Toolkit” (2009)

Eighth Plateau Invention Achievement for 32 filed patents (2015)

UNIVERSITY ENGAGEMENTS

- Invited seminar, University of Minnesota, ECE department (2017)
- Invited seminar, California Institute of Technology, EE department (2015)
- Invited seminar, U. C. Santa Barbara, the Institute for Energy Efficiency (2015)
- Invited seminar, Science and Engineering Council of Santa Barbara (2015)
- Established joint study agreements for international students to gain industrial experience at IBM
 - Dublin City University (4-month internship, 2014)
 - Technical University of Denmark (6-month internship, Jan. – June 2015)
- Invited seminar, U. C. Santa Barbara, the Institute for Energy Efficiency (2014)
- Invited talk at the U. C. Berkeley Symposium on Energy Efficient Systems (2013)
- Invited seminar, University of Virginia, ECE Department Eminent Speaker Series (2006)
- Dissertation Committee Member, Dr. Shuling Wang, The University of Texas at Austin (2002)

GUEST EDITOR

IEEE/OSA Journal of Lightwave Technology, Special Issues on OFC: 2013-2015

IEEE/OSA Journal of Optical Communications and Networking, “Optics in the Data Center,” 2011

PEER REVIEWER

IEEE Photonics Technology Letters; IEEE/OSA Journal of Lightwave Technology; IEEE Journal of Selected Topics in Quantum Electronics; IEEE/OSA Journal of Optical Communications and Networking; IET Circuits, Devices & Systems; Optics Express; Electronics Letters; and others

INVENTIONS

Issued Patents (33)

- Optical transceiver module (7,539,366)
- Detection of data transmission rates using passing frequency-selective filtering (7,062,164)
- Switchable-bandwidth optical receiver (6,862,322)
- Method and apparatus for a monolithic integrated mesfet and p-i-n optical receiver (6,673,645)
- Optical power meter derived from common-mode voltage of optical transimpedance amplifier (6,528,777)
- Method and apparatus for a monolithic integrated MESFET and p-i-n optical receiver (6,429,499)
- Ultra-High Bandwidth, Multiple-Channel Full-Duplex, Single-Chip CMOS Optical Transceiver (8,231,284)
- Optical Transceiver Module with Optical Windows (8,265,432)
- Packaged Multicore Fiber Optical Transceiver Module (8,488,921)
- Differential Amplifier Stage with Integrated Offset Cancellation Circuit (8,482,352)
- Low Distortion High Bandwidth Adaptive Transmission Line for Integrated Photonic Applications (8,592,743)
- Parallel Optical Transceiver Module (8,536,610)
- Transimpedance Amplifier (8,593,226)
- Designing Photonic Switching Systems Utilizing Equalized Drivers (8,775,992) (9,268,890)
- Adaptive Power-Efficient Receiver Architecture (8,718,492)
- Fabricating a Semiconductor Chip with Backside Optical Vias (8,399,292)
- Photonic Modulator with Forward- and Reverse-Biased Diodes for Separate Tuning and Modulating Elements (8,805,126)
- Optical De-Multiplexing Device (8,867,920) (9,069,127)
- Silicon Photonics Wafer Using Standard Silicon-On-Insulator Processes Through Substrate Removal or Transfer (8,901,576)
- Optical Receiver using Infinite Impulse Response Decision Feedback Equalization (8,798,484)
- Optical Receiver Based on a Decision Feedback Equalizer (8,879,927)
- Optical Interconnect Using Optical Transmitter Pre-Distortion (9,048,954)
- Optical Switch Fabric with Bias Control (9,485,552)
- Through-Substrate Optical Coupling to Photonics Chips (9,285,554) (9,671,563)
- Lens Array Optical Coupling to Photonic Chip (9,229,169) (9,568,679)
- Near Threshold Optical Transmitter Pre-Distortion (9,735,879)
- Optical Component with Angled-Facet Waveguide (9,658,398) (9,645,311)
- Realizing Coarse Wavelength-Division Multiplexing Using Standard Multimode Optical Fibers (9,584,225) (9,608,761)
- Feed-forward optical equalization using an electro-optic modulator with a multi-segment electrode and distributed drivers (US20180292682A1)
- Nested feed-forward optical equalization using an electro-optic modulator with a multi-segment electrode (US10084619B2)
- Multichannel optical transceiver for matching data traffic classes to channel numbers (US10148386B2)
- Data transfer over bi-directional links leveraging counter-propagating back channel for low-latency responses (US20180083706A1)
- Optical switch fabric with bias control (US20170238075A1)

PUBLICATIONS

BOOK CHAPTER

K. P. Jackson and **C. L. Schow**, "VCSEL-Based Transceivers for Data Communications," in *VCSELs: Fundamentals, Technology and Applications of Vertical-Cavity-Surface-Emitting Lasers*, R. Michalzik, Ed., Berlin, Germany: Springer, 2013, ch. 14, pp. 431-448.

PEER-REVIEWED JOURNALS (55)

Invited
(16)

1. A. Rylyakov, J. Proesel, S. Rylov, B. G. Lee, J. Bulzacchelli, A. Ardey, B. Parker, M. Beakes, C. Baks, **C. L. Schow**, M. Meghelli, "A 25 Gb/s Burst-Mode Receiver for Low Latency Photonic Switch Networks," *IEEE Journal of Solid-State Circuits*, vol. 50, no. 12, pp. 3120-3132, Dec 2015.
2. B. G. Lee, N. Dupuis, P. Pepeljugoski, L. Schares, R. Budd, J. R. Bickford, and **C. L. Schow**, "Silicon Photonic Switch Fabrics in Computer Communications Systems," *IEEE J. of Lightw. Technol.*, vol. 33, no. 4, pp. 768-777, Feb 2015.
3. N. Dupuis, B. Lee, J. Proesel, A. Rylyakov, R. Rimolo-Donadio, C. W. Baks, A. Ardey, **C. L. Schow**, A. Ramaswamy, J. Roth, R. Guzzon, B. Koch, D. Sparacin, G. Fish, "30Gbps Optical Link Combining Heterogeneously Integrated III-V/Si Photonics with 32nm CMOS Circuits," *IEEE J. of Lightw. Technol.*, vol. 33, no. 3, pp. 657-662, Feb 2015.
4. L. Schares, B. G. Lee, F. Checoni, R. Budd, A. Rylyakov, N. Dupuis, F. Petrini, **C. L. Schow**, P. Fuentes, O. Mattes, C. Minkenber, "A Throughput-Optimized Optical Network for Data-Intensive Computing," *IEEE Micro*, vol.34, no.5, pp.52-63, Sept.-Oct. 2014.
5. B. G. Lee, A. V. Rylyakov, W. M. J. Green, S. Assefa, C. W. Baks, R. Rimolo-Donadio, D. M. Kuchta, M. H. Khater, T. Barwicz, C. Reinholm, E. Kiewra, S. M. Shank, **C. L. Schow**, Y. A. Vlasov, "Monolithic Silicon Integration of Scaled Photonic Switch Fabrics, CMOS Logic, and Device Driver Circuits," *IEEE J. of Lightw. Technol.*, vol. 32, no. 4, pp.743-751, Feb. 2014.
6. F. E. Doany, B. G. Lee, D. M. Kuchta, A. V. Rylyakov, C. Baks, C. Jahnes F. Libsch, **C. L. Schow**," Terabit/Sec VCSEL-based 48-channel optical module based on holey CMOS transceiver IC," *IEEE J. of Lightw. Technol.*, vol. 31, no. 4, pp.672-680, Feb. 2013.
7. J. E. Proesel, B. G. Lee, A. V. Rylyakov, C. W. Baks, and **C. L. Schow**, "Ultra Low Power 10- to 28.5-Gb/s CMOS-Driven VCSEL-Based Optical Links," *J. of Optical Comm. And Networking (JOCN)*, vol.4, no.11, pp. B114-B123, Nov. 2012.
8. F. E. Doany, **C. L. Schow**, B. G. Lee, R. A. Budd, C. W. Baks, C. K. Tsang, J. U. Knickerbocker, R. Dangel, B. Chan, H. Lin, C. Carver, J. Huang, J. Berry, D. Bajkowski, F. Libsch, J. A. Kash, "Terabit/s-Class Optical PCB Links Incorporating 360-Gb/s Bidirectional 850 nm Parallel Optical Transceivers," *IEEE J. of Lightw. Technol.*, vol.30, no.4, pp.560-571, Feb. 2012.
9. A.V. Rylyakov, **C. L. Schow**, B. G. Lee, F. E. Doany, C. Baks, and J. A. Kash, "Transmitter Pre-Distortion for Simultaneous Improvements in Bit-Rate, Sensitivity, Jitter, and Power Efficiency in 20 Gb/s CMOS-driven VCSEL Links," *IEEE J. of Lightw. Technol.*, vol.30, no.4, pp.399-405, Feb. 2012.
10. A.V. Rylyakov, **C. L. Schow**, B. G. Lee, W. M. J. Green, S. Assefa, F. E. Doany, M. Yang, J. Van Campenhout, C. V. Jahnes, J. A. Kash, Y. A. Vlasov, "Silicon Photonic Switches Hybrid-Integrated With CMOS Drivers," *IEEE J. Solid-State Circuits*, vol.47, no.1, pp.345-354, Jan. 2012.
11. **C. L. Schow**, F. E. Doany, A. V. Rylyakov, B. G. Lee, C. Jahnes, Y. Kwark, C. Baks, D. M. Kuchta, J. A. Kash, "A 24-Channel 300 Gb/s 8.2 pJ/bit Full-Duplex Fiber-Coupled Optical Transceiver Module Based on a Single "Holey" CMOS IC," *IEEE J. of Lightw. Technol.*, vol. 29, no. 4, pp.542-553, Feb 2011.
12. F. E. Doany, B. G. Lee, S. Assefa, W. M. J. Green, M. Yang, **C. L. Schow**, C. V. Jahnes, S. Zhang, J. Singer, V. I. Kopp, J. A. Kash, Y. A. Vlasov, "Multichannel High-Bandwidth Coupling of Ultra-Dense Silicon Photonic Waveguide Array to Standard-Pitch Fiber Array," *IEEE J. of Lightw. Technol.*, vol. 29, no. 4, pp.475-482, Feb 2011.
13. **C. L. Schow**, F. E. Doany, J. A. Kash, "Get on the Optical Bus," *IEEE Spectr.*, vol. 47, no. 9, p. 32, Sep. 2010.
14. F. E. Doany, **C. L. Schow**, C. W. Baks, D. M. Kuchta, P. Pepeljugoski, L. Schares, R. Budd, F. Libsch, R. Dangel, F. Horst, B. J. Offrein, and J. A. Kash, "160 Gb/s Bidirectional Polymer Waveguide Board-Level Optical Interconnects using CMOS-Based Transceivers," *IEEE Adv. Packag.*, vol. 32, pp. 345-359, May 2009.

**Regular
(39)**

15. **C. L. Schow**, F. E. Doany, C. Chen, A. V. Rylyakov, C. W. Baks, D. M. Kuchta, R. A. John, and J. A. Kash, "Low-power 16 x 10 Gb/s Bi-Directional Single Chip CMOS Optical Transceivers operating at < 5 mW/Gb/s/link," *IEEE J. Solid-State Circuits*, vol. 44, pp. 301-313, Jan 2009.
16. S. J. Koester, **C. L. Schow**, L. Schares, G. Dehlinger, J. D. Schaub, F. E. Doany, and R. A. John, "Ge-on-SOI-Detector/Si-CMOS-Amplifier Receivers for High-Performance Optical Communications Applications," *IEEE J. of Lightw. Technol., Special Issue on OFC 2006*, Jan. 2007.
17. A. S. P. Khope, M. Saeidi, R. Yu, X. Wu, A. M. Netherton, Y. Liu, Z. Zhang, Y. Xia, G. Fleeman, A. Spott, S. Pinna, **C. L. Schow**, R. Helkey, L. Theogarajan R. C. Alferness, A. A. M. Saleh, and J. E. Bowers, "Multi-wavelength selective crossbar switch," *Opt. Express*, vol. 27, no. 4, pp. 5203-5216, 2019.
18. A. S. P. Khope, T. Hirokawa, A. M. Netherton, M. Saeidi, Y. Xia, N. Volet, **C. L. Schow**, R. Helkey, L. Theogarajan, A. A. M. Saleh, J. E. Bowers, and R. C. Alferness, "On-chip wavelength locking for photonic switches," *Opt. Lett.*, vol. 42, no. 23, pp. 4934-4937, 2017.
19. R. L. Chao, J. W. Shi, A. Jain, T. Hirokawa, A. S. P. Khope, **C. L. Schow**, J. E. Bowers, R. Helkey, and J. F. Buckwalter, "Forward bias operation of silicon photonic Mach Zehnder modulators for RF applications," *Opt. Express*, vol. 25, no. 19, pp. 23181-23190, 2017.
20. Z. Zhang, R. Wu, Y. Wang, C. Zhang, E. J. Stanton, **C. L. Schow**, K.-T. Cheng, and J. E. Bowers, "Compact Modeling for Silicon Photonic Heterogeneously Integrated Circuits," *IEEE J. of Lightw. Technol.*, vol. 35, no. 14, pp. 2973-2980, July 2017.
21. N. Dupuis, A. Rylyakov, **C. L. Schow**, D. Kuchta, C. Baks, J. Orcutt, D. Gill, W. Green, B. Lee, "Nanosecond-scale Mach-Zehnder-based CMOS Photonic Switch Fabrics," *IEEE J. of Lightw. Technol.*, vol. 35, no. 4, pp. 615-623, Feb 2017.
22. N. Dupuis, A. V. Rylyakov, **C. L. Schow**, D. M. Kuchta, C. W. Baks, J. S. Orcutt, D. M. Gill, W. M. J. Green, and B. G. Lee, "Ultralow crosstalk nanosecond-scale nested 2×2 Mach-Zehnder silicon photonic switch," *Opt. Lett.*, vol. 41, pp. 3002-3005, 2016.
23. T. N. Huynh, N. Dupuis, R. Rimolo-Donadio, J. E. Proesel, D. M. Gill, C. W. Baks, A. V. Rylyakov, **Clint L. Schow**, W. M. J. Green, and B. G. Lee, "Flexible Transmitter Employing Silicon-Segmented Mach-Zehnder Modulator With 32-nm CMOS Distributed Driver," in *Journal of Lightwave Technology*, vol. 34, no. 22, pp. 5129-5136, Nov.15, 2016.
24. T. N. Huynh, A. Ramaswamy, R. Rimolo-Donadio, **C. L. Schow**, J. E. Roth, E. J. Norberg, J. Proesel, R. S. Guzzon, J. Shin, A. Rylyakov, C. Baks, B. Koch, D. Sparacin, G. Fish, B. G. Lee, "Four-Channel WDM Transmitter with Heterogeneously Integrated III-V/Si Photonics and Low Power 32nm CMOS Drivers," *IEEE J. of Lightw. Technol.*, vol. 34, no. 13, pp. 3131-3137, July 2016.
25. N. Dupuis, B. G. Lee, A. V. Rylyakov, D. M. Kuchta, C. W. Baks, J. S. Orcutt, D. M. Gill, W. M. J. Green, **C. L. Schow**, "Modeling and Characterization of a Non-Blocking 4×4 Mach-Zehnder Silicon Photonic Switch Fabric," *IEEE J. of Lightw. Technol.*, vol. 33, no. 20, pp. 4329-4337, Oct. 2015.
26. N. Dupuis, B. G. Lee, A. V. Rylyakov, D. M. Kuchta, C. W. Baks, J. S. Orcutt, D. M. Gill, W. M. J. Green, **C. L. Schow**, "Design and Fabrication of Low-Insertion-Loss and Low-Crosstalk Broadband 2×2 Mach-Zehnder Silicon Photonic Switches," *IEEE J. of Lightw. Technol.*, vol. 33, no. 17, pp. 3597-3606, Sept. 2015.
27. J. Heroux, T. Kise, M. Funabashi, T. Aoki, **C. L. Schow**, A. Rylyakov, S. Nakagawa, "Energy-efficient 1060nm optical link operating up to 28 Gb/s," *IEEE J. of Lightw. Technol.*, vol. 33, no. 4, pp. 733-740, Feb. 2015.
28. D. Kuchta, A. Rylyakov, F. Doany, **C. L. Schow**, J. Proesel, C. Baks, P. Westbergh, J. Gustavsson, A. Larsson, "A 71 Gb/s NRZ Modulated 850 nm VCSEL-based Optical Link," *IEEE Photon. Technol. Lett.*, vol. 27, no. 6, pp 577-580, Mar. 2015.
29. D. M. Kuchta, A. V. Rylyakov, **C. L. Schow**, J. E. Proesel, C. W. Baks, P. Westbergh, J. S. Gustavsson, A. Larsson, "A 50 Gb/s NRZ Modulated 850nm VCSEL Transmitter Operating Error Free to 90°C," *IEEE J. of Lightw. Technol.*, vol. 33, no. 4, pp. 802-810, Feb. 2015.
30. J. H. Song, R. A. Budd, B. G. Lee, **C. L. Schow**, F. R. Libsch, "Focusing Grating Couplers in Unmodified 180-nm Silicon-on-Insulator CMOS," *IEEE Photon. Technol. Lett.*, vol.26, no.8, pp. 825-828, Apr. 2014.
31. B. H. Hamel-Bissell, J. Proesel, B. G. Lee, D. M. Kuchta, A. V. Rylyakov, **C. L. Schow**, "30-Gb/s 90-nm CMOS-driven equalized multimode optical link," *Optics Express*, vol. 21, no. 9, pp. 10962-10968, 2013.

32. B. G. Lee, J.-O. Plouchart, A. V. Rylyakov, J. H. Song, F. E. Doany, **C. L. Schow**, "Passive Photonics in an Unmodified CMOS Technology with No Post-Processing Required," *IEEE Photon. Technol. Lett.*, vol.25, no.4, pp.393-396, Feb.15, 2013.
33. H. Pan, S. Assefa, W. M. J. Green, D. Kuchta, **C. L. Schow**, A. V. Rylyakov, B. G. Lee, C. W. Baks, S. M. Shank, Y. A. Vlasov, "High-speed receiver based on waveguide germanium photodetector wire-bonded to 90nm SOI CMOS amplifier," *Optics Express*, vol. 20, no. 16, pp.18145-18155, 2012.
34. **C. L. Schow**, A. V. Rylyakov, C. Baks, F. E. Doany and J. A. Kash, "A 25 Gb/s, 6.5 pJ/bit, 90-nm CMOS-Driven Multimode Optical Link," *IEEE Photon. Technol. Lett.*, vol. 24, no. 10, May 2012.
35. B.G. Lee, D. M. Kuchta, F. E. Doany, **C. L. Schow**, P. Pepeljugoski, C. Baks, T. F. Taunay, B. Zhu, M. F. Yan, G. Oulundsen, D. S. Vaidya, W. Luo, N. Li, "End-to-End Multicore Multimode Fiber Optic Link Operating up to 120 Gb/s," *IEEE J. of Lightw. Technol.*, vol.30, no.6, pp.886-892, March 2012.
36. **C. L. Schow** and A. V. Rylyakov, "30 Gbit/s, 850 nm, VCSEL-based optical link," *Electron. Lett.*, vol.47, no.18, pp.1035-1036, September 1, 2011.
37. S. Assefa, F. N. Xia, W. M. J. Green, **C. L. Schow**, A. V. Rylyakov, Y. A. Vlasov, "CMOS-Integrated Optical Receivers for On-Chip Interconnects," *IEEE J. Sel. Topics Quantum Electron.*, vol. 16, no. 5, pp. 1376-1385, Sep./Oct. 2010.
38. M. Yang, W. M. J. Green, S. Assefa, J. Van Campenhout, B. G. Lee, C. V. Jahnes, F. E. Doany, **C. L. Schow**, J. A. Kash, and Y. A. Vlasov, "Non-Blocking 4x4 Electro-Optic Silicon Switch for On-Chip Photonic Networks," *Optics Express*, vol. 19, no. 1, pp.47-54, 2011.
39. B. G. Lee, **C. L. Schow**, A. V. Rylyakov, J. Van Campenhout, W. M. J. Green, S. Assefa, F. E. Doany, M. Yang, R. A. John, C. V. Jahnes, J. A. Kash, Y. A. Vlasov, "Demonstration of a Digital CMOS Driver Co-Designed and Integrated with a Broadband Silicon Photonic Switch," *IEEE J. of Lightw. Technol.*, vol. 29, no. 8, pp. 1136-1142, 2011.
40. **C. L. Schow**, F. E. Doany, C. Baks, Y. H. Kwark, D. M. Kuchta, and J. A. Kash, "A single-chip CMOS-based parallel optical transceiver capable of 240 Gb/s bi-directional data rates," *IEEE J. of Lightw. Technol.*, vol. 27, pp. 915-929, Apr. 2009.
41. **C. L. Schow**, L. Schares, S. J. Koester, G. Dehlinger, R. John, and F. E. Doany, "A 15-Gb/s, 2.4-V Optical Receiver Using a Ge-on-SOI Photodiode and a CMOS IC," *IEEE Photon. Technol. Lett.*, vol. 18, no. 19, pp. 1981-1983, Oct. 2006.
42. L. Schares, J. A. Kash, F. E. Doany, **C. L. Schow**, C. Schuster, D. M. Kuchta, P. K. Pepeljugoski, J. M. Trehwella, C. W. Baks, R. A. John, L. Shan, Y. H. Kwark, R. A. Budd, P. Chiniwalla, F. R. Libsch, J. Rosner, C. K. Tsang, C. S. Patel, J. D. Schaub, R. Dangel, F. Horst, B. J. Offrein, D. Kucharski, D. Guckenberger, S. Hegde, H. Nyikal, C. K. Lin, A. Tandon, G. R. Trott, M. Nystrom, D. Bour, M. R. T. Tan, D. W. Dolfi, "Terabus: Terabit/Second-Class Card-level Optical Interconnect Technologies", *IEEE J. Sel. Topics Quantum Electron.*, special issue on *Optoelectronic Packaging*, vol. 12, no. 5, pp. 1032-1045, Sept/Oct. 2006.
43. **C. L. Schow**, L. Schares, R. A. John, L. S. Fischer, D. Guckenberger, "25-Gb/s transimpedance amplifier in 0.13- μ m CMOS", *IEE Electron. Lett.*, vol. 42, no. 21, pp. 1240-1241, 2006.
44. P. Kozodoy, T. A. Strand, Y. A. Akulova, G. Fish, **C. L. Schow**, P.-C. Koh, Z. X. Bian, J. Christofferson, A. Shakouri, "Thermal effects in monolithically integrated tunable laser transmitters," *IEEE Trans. Compon. Packag. Technol.*, vol. 28, no. 4, pp. 651-657, 2005.
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PRESENTATIONS AT PEER-REVIEWED INTERNATIONAL CONFERENCES (157)

- Keynote
and Plenary
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56. **C. L. Schow**, "Opportunities for Si Photonics in Next-Generation Data Centers," *IEEE CPMT Symposium Japan 2018*, Kyoto, Japan, 2018.
 57. **C. L. Schow**, "Silicon Photonics for Future Datacenters and Computing," *9th VICTORIES Symposium*, Tokyo, Japan, Nov. 1, 2016.
 58. **C. L. Schow**, "Photonic Technologies for Future Systems: Efficiently Delivering and Routing Massive Bandwidth," *Energy Efficient Super Computing Workshop at Supercomputing 2015*, New Orleans, LA, Nov. 2014.
 59. **C. L. Schow**, "Optical Interconnects in Next-Generation High-Performance Computers," *OIDA Workshop on Photonic Integration*, Monterey, CA, 2008.
- Invited
(36)**
60. **C. L. Schow**, "Low Power Coherent Links to Enable New System Architectures," 2nd North American Workshop on Silicon Photonics for High Performance Computing, Estes Park, CO, USA, May 2019.
 61. **C. L. Schow**, "Low Power Analog Coherent Links for Next-Generation Datacenters," *Conference on Lasers and Electro-Optics (CLEO) 2019*, paper STh4N.3, San Jose, CA, USA, May 2019.
 62. **C. L. Schow** and K. Schmidtke, "INTREPID: Developing Power Efficient Analog Coherent Interconnects to Transform Data Center Networks," *Open Compute Project (OCP) Global Summit 2019*, pp. 1-2, San Jose, CA, March 2019.
 63. **C. L. Schow** and K. Schmidtke, "INTREPID: Developing Power Efficient Analog Coherent Interconnects to Transform Data Center Networks," *Optical Fiber Communication (OFC) Conference 2019*, Paper M4D.9, pp. 1-3, San Diego, CA, USA, Mar. 2019.
 64. **C. L. Schow**, "Beyond 400G for Hyperscale Data Centers," *Optical Fiber Communication (OFC) Conference 2019*, panelist, San Diego, CA, USA, Mar. 2019.
 65. **C. L. Schow**, "Low Power Analog Coherent Links for Next-Generation Datacenters," JIEP OPT Workshop, Tokyo, Japan, November 2018.
 66. **C. L. Schow**, "Ultra-Low Power Short-Reach Interconnects for 100G and Beyond," 6th International Symposium for Optical Interconnect in Data Centres," *European Conference on Optical Communications (ECOC) 2018*, Rome, Italy, Sept. 2018.
 67. **C. L. Schow**, "Can Coherent Optics Invade the Datacenter, and then HPC Systems?" North American Workshop on Silicon Photonics for High Performance Computing, Fort Collins, CO, USA, May 2018.
 68. **C. L. Schow**, "Low Power Analog Coherent Links for Next Generation Datacenters," *Next Generation Optical Networks (NGON)*, San Francisco, CA, USA, Oct. 2017.
 69. **C. L. Schow**, "Optics Invading Copper? The Future of Backplane Communication," *2017 IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS)*, panelist, Miami, FL, USA, Oct. 2017.
 70. **C. L. Schow**, "Large-Scale Electronic/Photonic Integration to Transform Future Data Centers," *International Solid State Circuits Conference (ISSCC) Forum: Wireline Transceivers for Mega Data Centers: 50 Gb/s and Beyond*, San Francisco, CA, Feb 9, 2017.
 71. D. M. Kuchta, A. V. Rylakov, F. E. Doany, **C. L. Schow**, J. E. Proesel, C. W. Baks, P. Westbergh, J. S. Gustavsson, and A. Larsson, "70+Gb/s VCSEL-Based Multimode Fiber Links," *2016 IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS)*, Oct. 2016.
 72. **C. L. Schow**, "Photonics for Next-Generation Datacenters," *OSA Advanced Photonics Congress, Photonic Networks and Devices 2016*, Vancouver, BC, July 2016.
 73. **C. L. Schow**, "Next Generation Data Centres: How will Optics be Employed," *European Conference on Optical Communications (ECOC) 2015*, Tutorial, paper 1.2.4, Valencia, Spain, Sept. 2015.
 74. **C. L. Schow**, "Potential and Challenges for Silicon Photonics in Future Datacenters," *International Conference on Group IV Photonics*, Vancouver, BC, Aug. 2015.
 75. **C. L. Schow**, "Transforming Computing Architectures with a Fast and Scalable Photonic Switch Fabric," *Proceedings of the SPIE, Photonics West 2014*, San Francisco, CA, Jan., 2014.
 76. **C. L. Schow**, "Moving Optics Beyond Wire Replacement," *Third Berkeley Symposium on Energy Efficient Electronic Systems*, Berkeley, CA, Oct. 2013.
 77. **C. L. Schow**, "Moving Optics Beyond Wire Replacement" *IEEE Photonics Conference*, Seattle, WA, Sept. 2013.

78. D. M. Kuchta, **C. L. Schow**, A. V. Rylyakov, J. E. Proesel, F. E. Doany, C. Baks, B. H. Hamel-Bissell, C. Kocot, L. Graham, R. Johnson, G. Landry, E. Shaw, A. MacInnes, and J. Tatum "A 56.1Gb/s NRZ modulated 850nm VCSEL-based optical link," *Optical Fiber Communication (OFC) Conference 2013*, Paper OW1B5, Anaheim, CA, USA, Mar. 2013.
79. S. Assefa, H. Pan S. Shank, W.M.J. Green, A. Rylyakov, **C. L. Schow**, M. Khater, S. Kamlapurkar, E. Kiewra, C. Reinholm, T. Topuria, P. Rice, C. Baks, Y. Vlasov, "Monolithically integrated silicon nanophotonics receiver in 90nm CMOS technology node," *Optical Fiber Communication (OFC) Conference 2013*, Paper OW1B5, Anaheim, CA, USA, Mar. 2013.
80. **C. L. Schow**, "Power efficient Tb/s optical interconnects," *Frontiers in Optics (FiO)*, paper FTh2D.2, Rochester, NY, USA, Oct. 2012.
81. **C. L. Schow**, "Low energy VCSEL links," *IEEE Optical Interconnects Conference*, paper TuC1, Santa Fe, NM, May 2012.
82. **C. L. Schow**, "Power-efficient transceivers for high-bandwidth, short-reach interconnects," *Optical Fiber Communication (OFC) Conference 2012*, paper OTh1E4, Los Angeles, CA, Mar. 2012.
83. J. C. Rosenberg, W. M. J. Green, S. Assefa, **C. L. Schow**, A. V. Rylyakov, D. M. Gill, B. G. Lee, C. Jahnes, T. Barwicz, S. M. Shank, Y. A. Vlasov, "High-Speed and Low-Power Microring Modulators for Silicon Photonics," Annual Meeting of the IEEE Photonics Society 2011, Tu11, Oct 2011.
84. J. A. Kash, A. Benner, F. E. Doany, D. Kuchta, B. G. Lee, P. Pepeljugoski, L. Schares, **C. L. Schow**, M. Taubenblatt, "Optical interconnects in future servers," *Optical Fiber Communication (OFC) Conference 2011*, paper OWQ1, Los Angeles, CA, Mar. 2011.
85. F. Doany, **C. L. Schow**, B. Lee, A. Rylyakov, C. Jahnes, Y. Kwark, C. Baks, D. Kuchta, and J. Kash "300 Gb/s bidirectional fiber-coupled optical transceiver module based on 24 TX + 24 RX "holey" CMOS IC," *Proceedings of the SPIE, Photonics West 2011*, paper 7944-17, San Francisco, CA, Jan., 2011.
86. W. M. J. Green, S. Assefa, J. Van Campenhout, B. G. Lee, M. Yang, F. Doany, **C. L. Schow**, A. Rylyakov, C. Jahnes, J. Kash, Y. A. Vlasov, "Silicon Integrated Nanophotonic High-radix Switch Arrays for Next Generation Computer Systems," *Annual Meeting of the IEEE Photonics Society 2010*, Nov. 2010.
87. J. A. Kash, A. F. Benner, F. E. Doany, D. M. Kuchta, B. G. Lee, P. K. Pepeljugoski, L. Schares, **C. L. Schow**, M. Taubenblatt, "Optical Interconnects in Exascale Supercomputers," *Annual Meeting of the IEEE Photonics Society 2010*, Nov. 2010.
88. B. G. Lee, J. Van Campenhout, A. V. Rylyakov, **C. L. Schow**, W. M. J. Green, S. Assefa, M. Yang, F. E. Doany, C. V. Jahnes, R. A. John, J. A. Kash, Y. A. Vlasov, "Broadband Silicon Photonic Switch Integrated with CMOS Drive Electronics," *Conference on Lasers and Electro-Optics (CLEO) 2010*, paper CThJ1, May 2010.
89. J. A. Kash, **C. L. Schow**, F. E. Doany, B. G. Lee, C. K. Tsang, C. Baks, Y. H. Kwark, J. U. Knickerbocker, "24-Channel Optical Transceiver Module for Waveguide-on-Card Interconnects," *Optical Fiber Communication (OFC) Conference 2010*, paper OTuH3, San Diego, CA, Mar. 2010.
90. F. E. Doany, **C. L. Schow**, J. A. Kash, C. Baks, R. Budd, D. M. Kuchta, P. Pepeljugoski, R. Dangel, F. Horst, and B. J. Offrein, "Terabus: 160-Gb/s Bidirectional Board-Level Optical Data Bus", *20th Annual Meeting of the IEEE Lasers and Electro-Optics Society-LEOS 2007*, Orlando, FL, Oct. 2007.
91. **C. L. Schow**, F. Doany, O. Liboiron-Ladouceur, C. W. Baks, D. M. Kuchta, L. Schares, R. A. John, and J. A. Kash, "160-Gb/s, 16-Channel Full-Duplex, Single-Chip CMOS Parallel Optical Transceiver", *Optical Fiber Communications Conference- OFC 2007*, paper OThG4, Anaheim, CA, March 26-29, 2007.
92. **C. L. Schow**, S. J. Koester, L. Schares, R. John, "High-Performance Optical Receivers in CMOS Using Ge-on-SOI Detectors," *Frontiers in Optics: the OSA Annual Meeting - FiO-07*, paper FTuG5, San Jose, CA, Sept. 2007.
93. **C. L. Schow**, S. J. Koester, L. Schares, G. Dehlinger, R. A. John, "High-speed, low-voltage optical receivers consisting of Ge-on-SOI photodiodes paired with CMOS ICs", *Proceedings of the SPIE, Photonics West 2007*, San Jose, CA, Jan. 2007.
94. **C. L. Schow**, S. J. Koester, L. Schares, G. K. Dehlinger, and R. A. John, "Optical Receivers in CMOS using Ge-on-SOI Photodiodes," *LEOS 2006*, Montreal, Canada, Oct. 2006.
95. **C. L. Schow**, "Terabus: A Parallel 10Gbps/channel "Chip on Board" Optical Interconnect," *IEEE Workshop on Interconnections in High Speed Digital Systems (HSD)*, Santa Fe, NM, May 2005.

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(13)**

96. A. Ramaswamy, J. E. Roth, E. J. Norberg, R. S. Guzzon, J. H. Shin, J. T. Imamura, B. R. Koch, D. K. Sparacin, G. A. Fish, B. G. Lee, R. Rimolo-Donadio, C. W. Baks, A. Rylyakov, J. Proesel, M. Meghelli, **C. L. Schow**, "A WDM 4x28Gbps Integrated Silicon Photonic Transmitter driven by 32nm CMOS driver ICs," *Optical Fiber Communication (OFC) Conference 2015*, Paper Th5B.5, Los Angeles, CA, USA, Mar. 2015.
97. N. Dupuis, B. G. Lee, J. Proesel, A. Rylyakov, R. Rimolo-Donadio, C. W. Baks, **C. L. Schow**, A. Ramaswamy, J. E. Roth, R. S. Guzzon, B. Koch, D. K. Sparacin, and G. A. Fish, "30Gbps Optical Link Utilizing Heterogeneously Integrated III-V/Si Photonics and CMOS Circuits," *Optical Fiber Communication (OFC) Conference 2014*, Paper Th5A.6, San Francisco, CA, USA, Mar. 2014.
98. B. G. Lee, A. V. Rylyakov, W. M. J. Green, S. Assefa, C. W. Baks, R. Rimolo-Donadio, D. M. Kuchta, M. H. Khater, T. Barwicz, C. Reinholm, E. Kiewra, S. M. Shank, **C. L. Schow**, and Y. A. Vlasov, "Four- and eight-port photonic switches monolithically integrated with digital CMOS logic and driver circuits," *Optical Fiber Communication (OFC) Conference 2013*, Paper PDP5C.3, Anaheim, CA, USA, Mar. 2013.
99. B. G. Lee, A. V. Rylyakov, J. E. Proesel, C. W. Baks, R. Rimolo-Donadio, **C. L. Schow**, A. Ramaswamy, J. E. Roth, M. Jacob-Mitos, G. A. Fish, "60-Gb/s receiver employing heterogeneously integrated silicon waveguide coupled photodetector," *Conference on Lasers and Electro-Optics (CLEO) 2013*, Paper CTh5D.4, San Jose, CA, USA, June 2013.
100. S. Assefa, S. Shank, W. Green, M. Khater, E. Kiewra, C. Reinholm, S. Kamlapurkar, A. Rylyakov, **C. L. Schow**, F. Horst, H. Pan, T. Topuria, P. Rice, D. M. Gill, J. Rosenberg, T. Barwicz, M. Yang, J. Proesel, J. Hofrichter, B. Offrein, X. Gu, W. Haensch, J. Ellis-Monaghan, and Y. Vlasov, "A 90nm CMOS Integrated Nano-Photonics Technology for 25Gbps WDM Optical Communications Applications," *IEEE International Electron Devices Meeting (IEDM)*, postdeadline session 33.8, December 10-12, 2012.
101. D. M. Kuchta, A. V. Rylyakov, **C. L. Schow**, J. E. Proesel, C. Baks, C. Kocot, L. Graham, R. Johnson, G. Landry, E. Shaw, A. MacInnes, and J. Tatum, "55Gb/s directly modulated 850nm VCSEL-based optical link," *IEEE Photonics Conference*, paper PDP1.5, Burlingame, CA, Sept. 2012.
102. F. E. Doany, B. G. Lee, A. V. Rylyakov, D. M. Kuchta, C. Baks, C. Jahnes, F. Libsch, **C. L. Schow**, "Terabit/sec VCSEL-based parallel optical module based on holey CMOS transceiver IC," *Optical Fiber Communication (OFC) Conference 2012*, paper PDP5D9, Los Angeles, CA, Mar. 2012.
103. S. Assefa, B. G. Lee, **C. L. Schow**, W. Green, A. Rylyakov, R. John, Y. Vlasov, "20Gbps Receiver Based on Germanium Photodetector Hybrid-Integrated with 90nm CMOS Amplifier," *Conference on Lasers and Electro-Optics (CLEO) 2011*, PDPB11, May 2011.
104. **C. L. Schow**, A. V. Rylyakov, B. G. Lee, F. E. Doany, C. Baks, R. A. John, J. A. Kash, "Transmitter pre-distortion for simultaneous improvements in bit-rate, sensitivity, jitter, and power efficiency in 20 Gb/s CMOS-driven VCSEL links," *Optical Fiber Communication (OFC) Conference 2011*, paper PDPC6, Los Angeles, CA, Mar. 2011.
105. **C. L. Schow**, F. E. Doany, B. G. Lee, R. Budd, C. Baks, R. Dangel, R. A. John, F. Libsch, J. A. Kash, B. Chan, H. Lin, C. Carver, J. Huang, J. Berry, D. Bajkowski, "225 Gb/s bi-directional integrated optical PCB link," *Optical Fiber Communication (OFC) Conference 2011*, paper PDPA2, Los Angeles, CA, Mar. 2011.
106. B. G. Lee, F. E. Doany, S. Assefa, W. M. J. Green, M. Yang, **C. L. Schow**, C. V. Jahnes, S. Zhang, J. Singer, V. I. Kopp, J. A. Kash, Y. A. Vlasov, "20- μ m-Pitch Eight-Channel Monolithic Fiber Array Coupling 160 Gb/s/Channel to Silicon Nanophotonic Chip," *Optical Fiber Communication (OFC) Conference 2010*, paper PDPA4, San Diego, CA, Mar. 2010.
107. A. V. Rylyakov, **C. L. Schow**, F. E. Doany, B. G. Lee, C. Jahnes, Y. Kwark, C. Baks, D. M. Kuchta, J. A. Kash, "A 24-Channel 300 Gb/s 8.2 pJ/bit Full-Duplex Fiber-Coupled Optical Transceiver Module Based on a Single "Holey" CMOS IC," *Optical Fiber Communication (OFC) Conference 2010*, paper PDPA8, San Diego, CA, Mar. 2010.
108. L. Schares, **C. L. Schow**, S. K. Koester, G. Dehlinger, R. John, and F. E. Doany, "A 17-Gb/s low-power optical receiver using a Ge-on-SOI photodiode with a 0.13-mm CMOS IC," *Optical Fiber Communication (OFC) Conference 2010*, Anaheim, CA, Mar. 2006.

**Contributed
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109. S. Pinna, S. Dwivedi, L. Coldren, **C. L. Schow** and J. Klamkin, "Power Optimization for Datacenter Optical Transmitters," OSA Advanced Photonics Congress Integrated Photonics Research (IPR) 2019, paper NeM4D.2, pp. 1-2, Burlingame, CA, July 2019.

110. T. Hirokawa, A. Maharry, R. Helkey, J. E. Bowers, Adel A. M. Saleh, and **C. L. Schow**, "Demonstration of a Spectrally-Partitioned 4x4 Crossbar Switch with 3 Drops per Cross-point," *International Conference on Photonics in Switching and Computing 2019 (PSC 2019)*, paper TuF2-2, pp. 1-3, Fukuoka, Japan, July 2019.
111. T. Hirokawa, S. Pinna, J. Klamkin, J. Buckwalter, **C. L. Schow**, "Energy Efficiency Analysis of Coherent Links for Datacenters," *IEEE Optical Interconnects Conference*, paper TuC1, pp. 1-2, Santa Fe, NM, April 2019.
112. S. B. Estrella, D. Renner, T. Hirokawa, A. Maharry, M. Dumont, and **C. L. Schow**, "High-Speed Optical Interconnect for Cryogenically Cooled Focal Plane Arrays," *GOMACTech*, paper 18.1, Albuquerque, NM, March 2019.
113. H. Andrade, T. Hirokawa, A. Maharry, A. Rylyakov, **C. L. Schow**, and J. F. Buckwalter, "Monolithically-Integrated 50 Gbps 2pJ/bit Photoreceiver with Cherry-Hooper TIA in 250nm BiCMOS Technology," *Optical Fiber Communication (OFC) Conference 2019*, Paper M3A.5, San Diego, CA, USA, Mar. 2019.
114. A. Jain, R. L. Chao, J. W. Shi, **C. L. Schow**, J. E. Bowers, R. Helkey, J. Buckwalter, "Forward bias optimization of a silicon photonic modulator for analog applications," *2017 IEEE Avionics and Vehicle Fiber-Optics and Photonics Conference (AVFOP)*, paper WD4, pp. 47-48, Nov 2017.
115. A. S. P. Khope, A. M. Netherton, T. Hirokawa, N. Volet, E. J. Stanton, **C. L. Schow**, R. Helkey, A. A. M. Saleh, J. E. Bowers, and R. C. Alferness, "Elastic WDM optoelectronic crossbar switch with on-chip wavelength control," in *Advanced Photonics 2017 (IPR, NOMA, Sensors, Networks, SPPCom, PS)*, PTh1D.3, pp. 1-3, July 2017.
116. R. Wu, Y. Wang, Z. Zhang, C. Zhang, **C. L. Schow**, J. E. Bowers, K-T Cheng, "Compact Modeling and Circuit-Level Simulation of Silicon Nanophotonic Interconnects," *Design Automation and Test in Europe (DATE) 2017*, pp. 602-605, Lausanne, Switzerland, Mar. 27-31, 2017.
117. D. M. Kuchta, A. V. Rylyakov, F. E. Doany, C. L. Schow, J. E. Proesel, C. W. Baks, P. Westbergh, J. S. Gustavsson, A. Larsson, "70+Gb/s VCSEL-Based Multimode Fiber Links," *IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS)*, pp. 1-4, Austin, TX, Oct. 2016.
118. F. E. Doany, R. A. Budd, L. Schares, T.M. Huynh, M. G. Wood, D. M. Kuchta, N. Dupuis, **C. L. Schow**, B. G. Lee, M. Moehrle, A. Sigmund, W. Rehbein, T. Y. Liow, L. W. Luo, G. Q. Lo, "A Four-Channel Silicon Photonic Carrier with Flip-Chip Integrated Semiconductor Optical Amplifier (SOA) Array Providing >10-dB Gain," *Electronic Components and Technology Conference (ECTC), 2016 IEEE 66th*, pp. 1061-1068, Las Vegas, USA, May 2016.
119. T. N. Huynh, N. Dupuis, R. Rimolo-Donadio, J. Proesel, D. Gill, C. Baks, A. Rylyakov, **C. L. Schow**, W. M. Green, and B. Lee, "Flexible Silicon Photonic Transmitter with Segmented Modulator and 32 nm CMOS Driver IC," *Conference on Lasers and Electro-Optics (CLEO) 2016*, paper STh4E.1, May 2016.
120. L. Schares, T. N. Huynh, M. G. Wood, R. Budd, F. Doany, D. Kuchta, N. Dupuis, B.G. Lee, **C. L. Schow**, M. Moehrle, A. Sigmund, W. Rehbein, T. Y. Liow, L. W. Luo, G. Q. Lo, "A gain-integrated silicon photonic carrier with SOA –array for scalable optical switch fabrics," *Optical Fiber Communication (OFC) Conference 2016*, Paper TH3F.5, Anaheim, CA, USA, Mar. 2016.
121. A. K. Medhin, F. E. Doany, J.-H. Song, N. Dupuis, B. G. Lee, F. R. Libsch, **C. L. Schow**, "Demonstration of a Polarization Insensitive Non-Uniform Grating Coupler," *Asia Communications and Photonics (ACP) Conference 2015*, ASu1B.4, Nov 2015.
122. L. Schares, R. Budd, D. Kuchta, **C. L. Schow**, F. Doany, M. Moehrle, A. Sigmund, W. Rehbein, "Etched-Facet Semiconductor Optical Amplifiers for Gain-Integrated Photonic Switch Fabrics," *European Conference on Optical Communications (ECOC)*, paper Mo.3.2.1, Valencia, Spain, Sept. 2015.
123. R. A. Budd, L. Schares, B. G. Lee, F. E. Doany, C. Baks, D. M. Kuchta, **C. L. Schow**, and F. Libsch, "Semiconductor Optical Amplifier (SOA) Packaging for Scalable and Gain-Integrated Silicon Photonic Switching Platforms," *Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th*, pp. 1280-1286, San Diego, CA, USA, May 2015.
124. A. Rylyakov, J. Proesel, S. Rylov, B. G. Lee, J. Bulzacchelli, A. Ardey, **C. L. Schow**, and M. Meghelli, "A 25 Gb/s Burst-Mode Receiver for Low Latency Photonic Switch Networks," *Optical Fiber Communication (OFC) Conference 2015*, Paper W3D.2, Los Angeles, CA, USA, Mar. 2015.
125. D. Kuchta, T. Huynh, F. Doany, A. Rylyakov, **C. L. Schow**, P. Pepeljugoski, D. Gazula, E. Shaw, and J. Tatum, "A 4- λ , 40Gb/s/ λ Bandwidth Extension of Multimode Fiber in the 850nm range," *Optical Fiber Communication (OFC) Conference 2015*, Paper W1D.4, Los Angeles, CA, USA, Mar. 2015.

126. B. G. Lee, R. Rimolo-Donadio, A. Rylyakov, J. Proesel, J. Bulzacchelli, C. W. Baks, M. Meghelli, **C. L. Schow**, A. Ramaswamy, J. E. Roth, J. Shin, B. Koch, D. K. Sparacin, and G. Fish, "A WDM-Compatible 4×32 -Gb/s CMOS-Driven Electro-Absorption Modulator Array," *Optical Fiber Communication (OFC) Conference 2015*, Paper Tu3G.3, Los Angeles, CA, USA, Mar. 2015.
127. A. Rylyakov, J. Proesel, S. Rylov, B. Lee, J. Bulzacchelli, A. Ardey, B. Parker, M. Beakes, C. Baks, **C. L. Schow**, M. Meghelli, "A 25Gb/s Burst-Mode Receiver for Rapidly Reconfigurable Optical Networks," *Solid-State Circuits Conference Digest of Technical Papers (ISSCC)*, Paper 22.1, San Francisco, CA, Feb., 2015.
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