

# Curriculum Vitae

## Daniel J. Blumenthal

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### EDUCATION

Ph.D.	Electrical Engineering	University of Colorado	Boulder, CO	1993
M.S.	Electrical Engineering	Columbia University	New York, NY	1988
B.S.	Electrical Engineering	University of Rochester	Rochester, NY	1981

### EMPLOYMENT HISTORY

Professor	UCSB	Santa Barbara, CA	2000-Present
Director	Terabit Optical Ethernet Center, UCSB	Santa Barbara, CA	2010-Present
Director of Engineering- Photonics	Coriant Advanced Technologies (CAT)	Santa Barbara, CA	2015-2016
CTO	Packet Photonics, Inc.	Santa Barbara, CA	2014-2015
Associate Director	Multidisciplinary Optical Switching Technology (MOST) Center	Santa Barbara, CA	1997 - 2001
Associate Professor	UCSB	Santa Barbara, CA	1997-2000
Assistant Professor	Georgia Institute of Technology	Atlanta, GA	1993-1997
Graduate Researcher	University of Colorado	Boulder, CO	1990-1993
Research Engineer	University of Pennsylvania	Philadelphia, PA	1988-1990
Research Engineer	Columbia University	New York, NY	1985-1988
Senior Engineer	Sievers Research Inc	Boulder, CO	1984-1985
Engineer	StorageTek	Louisville, CO	1981-1984

### HONORS AND AWARDS

Recipient	C. E. K. Mees Medal, Optical Society of America	2020
Founding University Affiliate	Microsoft Optical for the Cloud Initiative	2019
Fellow	National Academy of Inventors (NAI)	2017
Visiting Faculty Researcher	Microsoft Research (MSR) Cambridge, U.K.	2017
Education and Outreach Committee	Santa Barbara Bowl Foundation, Santa Barbara, CA	2016-2019
Board of Directors	Unite to Light (Non-Profit), Santa Barbara, CA	2016-2017
Board Member (Elected)	Researcher Seat on the Internet-2 Architecture & Operations Advisory Council	2008 - 2012
Fellow	Optical Society of America (OSA)	2006
Primary Member (PI)	NSF MFREC GENI Planning Group (a \$350M NSF National networking infrastructure).	2003-2007
Board of Directors	National LambdaRail, Inc. (NLR)	2003 - 2010
Fellow	IEEE/LEOS	2003
Presidential Early Career Award for Scientists and Engineers (PECASE)	White House/DOD	1999

Best Transactions Paper Award	IEEE Education Society	1999
Young Investigator Program (YIP)	Office of Naval Research	1997
Senior Member	IEEE	1997
Chairman	Atlanta Chapter of the LEOS/ED Society	1996-1997
National Young Investigator (NYI)	National Science Foundation	1994
Secretary	Atlanta Chapter of the LEOS Society	1994-1995
North American Representative	IEEE/COMSOC Coord. Committee for OFC	1993

## COMPANIES FOUNDED

Packet Photonics	Santa Barbara, CA	Founded 2007
Calient Networks	Santa Barbara, CA	Founded 1999

## CONSULTING

Coriant Advanced Technologies (CAT)	Santa Barbara, CA	2016 to 2017
Packet Photonics	Santa Barbara, CA	2007 to 2014
Aurion, Inc.	Santa Barbara, CA	2011 to 2012
BBN	Cambridge, MA	2008 to 2013
Luminit	Torrence, CA	2007 to 2013
Tellabs	Boston, MA	2007
Sun Microsystems	Santa Clara, CA	2004 - 2006
Calient Networks	Santa Barbara, CA	1999-2003
Gannon, Inc.	Chicago, IL	1997-1998
Siemens Corporate Research	Princeton, NJ	1993
Bernoulli/Iomega	Boulder, CO	1991-1993

## Intellectual Property and Expert Witness

Stephoe and Johnson, LLP	Chicago, IL	Expert Witness	2020 - present
Haynes and Boone	Austin, TX	Expert Witness	2019 - present
Fish and Richardson	Washington, DC	Expert Witness	2018 - 2019
Duane Morris	Washington, DC	Expert Witness	2018
Baker Botts	Houston, TX	Expert Witness	2017 - 2018
Cooley, LLP	San Francisco, CA	Expert Witness	2017 - 2018
Beche IP	San Francisco, CA	Expert Witness	2012-2013
Foley & Lardner, LLP	Miami, FL	Expert Witness	2012
Winston & Strawn, LLP	Chicago, IL	Expert and Fact Witness	2011

## PUBLICATION SUMMARY (REFEREED AND INVITED)

Total Refereed Publications, Conference Proceedings and Books: 466

Books and Book Chapters: 7

Invited Journal Publications and Articles: 19

Keynote, Plenary and Invited Presentations: 90

Postdeadline Conference Papers: 9

Journal Publications: 134

Conference Papers: 207

## PATENT SUMMARY

Total Issued U.S. Patents: 23

### ISSUED PATENTS

	US Patent No.	Issuance Date	Title
1	7,379,668	4/2/02	Optical Amplification in Photonic Switched Crossconnect Systems
2	6,643,425	11/4/03	Optical Switch Having Switch Mirror Arrays Controlled by Scanning Beams
3	6,697,547	2/24/04	Wavelength Power Equalization by Attenuation in an Optical Switch
4	6,778,739	8/17/04	Wavelength Selective Optical Switch with Aligned Input and Output Substrates
5	6,792,177	9/14/04	Optical Switch with Internal Monitoring
6	6,912,359	6/28/05	Methods for Monitoring Performance in Optical Networks
7	7,050,717	5/23/06	System and Method of All Optical Label Swapping Using Two-Stage Optical Wavelength Converters
8	7,142,744	11/28/06	Wavelength Power Equalization by Attenuation in an Optical Switch
9	7,184,189	2/27/07	Apparatus for Simultaneous OTDM Demultiplexing, Electrical Clock Recovery and Optical Clock Generation, And Optical Clock Recovery
10	7,196,833	3/27/07	Apparatus for Simultaneous OTDM Demultiplexing, Electrical Clock Recovery and Optical Clock Generation, And Optical Clock Recovery
11	7,310,363	12/18/07	Integrated Wavelength Tunable Single and Two-Stage All-Optical Wavelength Converter
12	8,644,713	2/4/14	Optical Burst Mode Clock and Data Recovery
13	9,285,540	3/15/16	Integrated Dielectric Waveguide and Semiconductor Layer and Method Therefor
14	9,370,123	6/14/16	System and Methods for Reduced Power Consumption and Heat Removal in Optical and Optoelectronic Devices and Subassemblies
15	9,385,814	7/5/16	Wavelength Tunable Arrays for Data Communications
16	9,407,426	8/2/16	Optical Network Interface, Module and Engine
17	9,413,521	8/9/16	Programmable Optical Subassemblies and Modules
18	9,438,355	9/6/16	Control Systems for Optical Devices and Subassemblies
19	9,543,737	1/10/17	Fast Calibration and Programming Optical Components
20	9,638,859	5/2/17	Optical Fiber Alignment Device
21	9,755,753	9/5/17	Tunable U-Laser Transmitter with Integrated Mach-Zehnder Modulator
22	9,817,197	11/14/17	Optically Aligned Hybrid Semiconductor Device and Method
23	10,222,565	3/5/19	Optically Aligned Hybrid Semiconductor Device and Method

## EDITING JOURNALS

Primary Guest Editor	IEEE Journal on Selected Area in Quantum Electronics (JSTQE) Special Issue on Ultra Low-Loss Optical Waveguides	2018
Associate Editor	IEEE Photonics Technology Letters (PTL)	2004-2005
Associate Editor	IEEE Photonics Technology Letters (PTL)	1997-2000
Associate Editor	SPIE Optical Networks Magazine	2001 – 2008
Guest Editor	IEEE Journal on Selected Area in Quantum Electronics (JSTQE) Special Issue on High Speed Integrated Photonics	2007
Primary Guest Editor	IEEE Journal on Selected Areas in Communications Special Issues on Optoelectronic and Optical Routers	2002
Associate Editor	IEEE Transactions on Communications	1996-1999
Primary Guest Editor	IEEE Journal of Lightwave Technology (JLT) Special Issue on Photonic Packet Switching	1998

## PROFESSIONAL ACTIVITIES

Subcommittee Chair	S2, Optical Fiber Communications OFC 2019, San Diego, CA	2021
TPC Member	Optical Fiber Communications OFC 2020, San Diego, CA	2020
Steering Committee	WOMBAT International Meeting on Interactions Between Light and Sound	2019-2020
Evaluator	IEEE Photonics Society Fellow Evaluating Committee	2020
Traveling Faculty Lecturer	Optical Society of America (OSA)	2019-present
Committee Member	Optical Society of America (OSA) Corning Women in Optical Communication Scholarship	2018-2019
Committee Member	National Academy of Inventors (NAI)	2019
Committee Member	Senior Member Advisory Committee (SMAC) National Academy of Inventors (NAI) Fellow Advisory Committee	2018
TPC Member	Optical Fiber Communications OFC 2019, San Diego, CA	2019
Workshop Organizer	OFC Workshop on “Super DACs and ADCs – To interleave or not to interleave?” OFC 2019 San Diego, CA	2019
TPC Member	Optical Fiber Communications OFC 2018, San Diego, CA	2018
Workshop Organizer	OFC Workshop on “Beyond Silicon Photonics,” OFC 2018 San Diego, CA	2018
TPC Member	Topical Meeting on Photonics in Switching: Florence, Italy	2015
TPC Member	Topical Meeting on Photonics in Switching:, San Diego, California	2014
TPC Member	25th International Conference on Indium Phosphide and Related Materials (IPRM) Kobe, Japan on May 20-23	2013
TPC Member	International Meeting on Photonics in Switching Ajaccio Corsica, France	2012
Workshop Organizer	Future solutions for Tbit/s Ethernet, 37th European Conference and Exhibition on Optical Communication (ECOC)	2011
General Program Chair	IEEE Photonics Society First Topical Meeting on Terabit Optical Ethernet	2011
Co-Chair	UCSB Institute for Energy Efficiency Data Center Roundtable	2011
TPC Member	OSA Topical Meeting on Photonics in Switching, Monterey, CA	2010
TPC Member	IEEE Photonic Society Topical Meeting on Photonics for Routing and Interconnects	2010
Session Chair	Conference on Optical Communications (OFC), San Diego, CA	2010
TPC Member	Photonics in Switching, Piza, Italy	2009
Session Chair	First Asian Himalayas International Conference on Internet AH-ICI2009	2009
TPC Member	International Topical Meeting on Photonics in Switching, Tokyo, Japan	2008
Steering committee	Opto-Electronics and Communications Conference (OECC) and the Australian Conference on Optical Fibre Technology (ACOFT)	2008 2008

TPC Member	ACM/IEEE 4 <sup>th</sup> Symposium on Architectures for Networking and Communications Systems (ANCS)	2008
TPC Member	OFC Workshop on All-Optical Signal Processing and Conditioning	2008
TPC Member	ONS Subcommittee, LEOS Annual Meeting	2007
TPC Member	FiWi SubCom Meeting at ICC/Globecomm, Glasgow, UK	2007
TPC Member	APOC03: Optical Transmission, Switching And Subsystems, Nov. 5-9, Wuhan, China	2007
TPC Member	IEEE/LEOS Topical Meeting on Optical Networks and Systems	2007
TPC Member	3rd ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS)	2007
Workshop Organizer	4th International Workshop on the Future Optical Network - Beyond 100Gbps Metro and New Generation Access Technologies	2007
Workshop Organizer	Workshop on the Future of Optical Networking OECC2007, Yokohama, Japan	2007
Workshop Organizer	2nd International OFC/NFOEC Workshop On Future of Optical Networking (FON), Anaheim	2007
Guest Editor	IEEE Journal on Selected Areas in Quantum Electronics (JSTQE)2006 – 2007 Special Issue on High Speed Integrated Photonics	2006 - 2007
TPC Member	OSA Nonlinear Photonics Meeting, Nonlinear Devices and Systems	2006 - 2007
Committee Member	LEOS Board of Governors Long Range Strategic Planning for Publications	2006 - 2007
Subcommittee Chair	IEEE/LEOS Semiconductor Laser Workshop	2006
Co-Organizer	International Workshop on the Future of Optical Networking	2006
TPC Member	SIGCOMM	2006
Workshop Organizer	National Science Foundation (NSF) Workshop on Optical Networking and Communications, UCSB	2005
TPC Member	European Conference on Optical Communications (ECOC)	2004 - 2005
TPC Member	LEOS Annual Meeting	2005
Executive Committee	CoRE UC Discovery	2004 - 2005
TPC Member	4 <sup>th</sup> International Workshop on Optical Burst Switching	2005
Guest Editor	IEEE Journal on Selected Areas in Quantum Electronics	2005
TPC Member	IQEC/CLEO Pacific Rim	2005
TPC Member	3 <sup>rd</sup> International Workshop on Optical Burst Switching	2004
TPC Member	IASTED International Conference on Optical Communications Systems and Networks (OCSN)	2004
Guest Editor	IEEE Journal on Selected Areas in Communications (JSAC) Special Issues on Optoelectronic and Optical Routers	2002
General Co-Chair	LEOS Topical Meeting on Advance Semiconductor Lasers and their Applications (ASLA)	2001
TPC Member	Hot Interconnects VIII	2001
General Conference Chair	OSA Topical Meeting on Photonics in Switching	2001
Associate Editor	SPIE Optical Networks Magazine	2001-2003
TPC Member	Opticom 2000	2000
General Chair	Optical Summit, Sante Fe, NM	2000
Associate Editor	IEEE Photonics Technology Letters (PTL)	2000-2004
Associate Editor	IEEE Transactions on Communications	2000
Program Committee Chair	OSA Top. Mtg. on Photonics in Switching	1999
Program Committee Chair	Optical Internetworking Conference	1999
TPC Member	Conference on Optical Fiber Communications (OFC)	1997-2000
Workshop Organizer	OFC Workshop on Optical Signal Processing for Optical Networks	2000
TPC Member	Conference on Lasers and Electrooptics (CLEO) North America	1999-2001
TPC Member	OSA Top. Mtg. on Photonics in Switching	1995,1997
TPC Member	IEEE/LEOS Topical Meeting on WDM Component Technologies	1997
TPC Member	IEEE/LEOS Topical Meeting on Optical	1994

	Networks and their Enabling Technologies	
Chair	Atlanta Chapter of the LEOS/ED Society	1995-1997
Secretary	Atlanta Chapter of the LEOS Society	1994-1995
North American Representative	IEEE/COMSOC Coord. Committee for OFC	1993
Workshop Organizer	AFOSR Workshop on Multiwavelength Comm.	1996
Workshop Organizer	NSF Workshop on Optical Comm. Systems	1994
Workshop Organizer	AFOSR Workshop on Multiwavelength Information Processing	1993
Publications Reviewer	Nature Photonics, Nature Communications, Science, Optica, Optics Express, Optics Letters, IEEE J. of Lightwave Technol., IEEE Trans. on Comm., IEEE Selec. Areas in Comm., IEEE Photon. Technol. Letters, Electron. Letters, App. Optics, Optics Letters, J. of Parallel and Distributed Processing	1993 - present
Society Memberships	IEEE, IPC, LEOS, and OSA	

## BOOKS AND BOOK CHAPTERS

- B1. "Multiwavelength Photonic Packet Switched Interconnects," D. J. Blumenthal, University of Colorado at Boulder, Advisor J. Sauer, July (1993).
- B2. "All-Optical Multi-Hop Architectures for Photonic Packet Switching," D. J. Blumenthal, *Photonic Networks: Advances in Optical Communications*, Part 3, Ch. 30, pp. 377-386, Ed. G. Prati, Springer-Verlag London Limited (1997).
- B3. "Semiconductor Optical Amplifiers," D. J. Blumenthal and N. C. Kothari, *The Communications Handbook*, Chapter 61, pp. 832-47, Ed. J. D. Gibson, CRC Press Inc. (1997).
- B4. "Experimental Demonstration of MOSAIC: a Multiwavelength Optical Subcarrier Multiplexed Controlled Network," R. Gaudino, M. Shell, M. Len, G. Desa, C. Juckett, and D. J. Blumenthal, *Trends in Optics and Photonics Series: Volume 20, Optical Networks & Their Applications*, pp. 340-1, Ed. Richard Barry (1998).
- B5. "Quantum Dot Semiconductor Optical Amplifiers," R. P. Mirin and D. J. Blumenthal, *Trends in Optics and Photonics Series: Volume 32, Advanced Semiconductor Lasers and Their Applications*, pp. 183-5, Eds. Leo Holberg and Robert Lang (2000).
- B6. *Tunable Laser Diodes and Related Optical Sources*, J. Buss, M. C. Aman, and D. J. Blumenthal, Wiley-IEEE Press, 2nd Edition, ISBN: 0471208167, January (2005).
- B7. "Low-Loss Photonic Integration: Applications in Datacenters," Demis D. John, Grant Brodnik, Sarat Gundavarapu, Renan L. Moreira, Michael Belt, Taran Huffman and Daniel J. Blumenthal, *Datacenter Connectivity Technologies: Principles and Practice*, pp. 431-480, Editor: Frank Chang, Inphi Corporation, USA. River Publishers Series in Optics and Photonics ISBN: 9788793609228 (2018)

## INVITED JOURNAL PUBLICATIONS AND ARTICLES

### 1987

- IJA1. "Photonic Switch with Optically Self-Routed Bit Switching," P. R. Prucnal, D. J. Blumenthal, and P. A. Perrier, *IEEE Communications Magazine*, special issue on Photonic Switching, **25**(5): 50-55, May (1987) (Invited).

### 1992

- IJA2. "Photonic Interconnects for Gigabit Multicomputer Communications," J. R. Sauer, D. J. Blumenthal, and A. V. Ramanan, *IEEE Lightwave Telecommunications Systems Magazine*, special issue on Gigabit Networks, **3**(3): 12-19 August 12-19 (1992) (Invited).

**1994**

- IJA3. "Photonic Packet Switches: Architectures and Experimental Implementations," D. J. Blumenthal, P. R. Prucnal, and J. R. Sauer, *Proceedings of the IEEE*, **82**(11): 1650-1667, November (1994) (Invited).

**1997**

- IJA4. "Physical Limitations to Scalability of WDM All-Optical Networks," D. J. Blumenthal, M. Shell, and M. D. Vaughn, *Optics and Photonics News*, **8**(2): 17-22 February 17-22 (1997) (Invited).

**2001**

- IJA5. "All-Optical Label Swapping Networks and Technologies," D. J. Blumenthal, B. E. Olsson, G. Rossi, T. Dimmick, L. Rau, M. L. Mašanović, O. A. Lavrova, R. Doshi, O. Jerphagnon, J. E. Bowers, V. Kaman, L. A. Coldren, and J. Barton, *Journal of Lightwave Technology* **18**(12):2058-2075 · January 2001 (Invited)
- IJA6. "Routing Packets with Light," D. J. Blumenthal, *Scientific American*, **284**(1): 79-83, January (2001) (Invited).
- IJA7. "Photonic packet switching and optical label swapping," D. J. Blumenthal, *Optical Networks Magazine*, **2**(6): 54-65, November-December (2001) (Invited).

**2002**

- IJA8. "All-Optical Label Swapping for the Future Internet," D. J. Blumenthal, *Optics and Photonics News*, **13**(3): 22-25, March (2002) (Invited).

**2003**

- IJA9. "Optical Signal Processing for Optical Packet Switching Networks," D. J. Blumenthal, J. E. Bowers, L. Rau, C. Hsu-Feng, S. Rangarajan, W. Wang, and K. N. Poulsen, *IEEE Communications Magazine*, **41**(2): 523 – 529, February (2003) (Invited).
- IJA10. "Guest Editorial High-Performance Electronic Switches/Routers for High-Speed Internet," M. Hamdi, D. J. Blumenthal, H. J. Chao, E. Leonardi, C. Qiao, and K. Y. Yun, *IEEE Journal on Selected Areas in Communications*, **21**(4): 481-5, May (2003) (Invited).
- IJA11. "Guest Editorial High-Performance Optical Switches/Routers for High-Speed Internet," M. Hamdi, H. J. Chao, D. J. Blumenthal, E. Leonardi, C. Qiao, and K. Y. Yun, *IEEE Journal on Selected Areas in Communications*, **21**(7): 1013-7, September (2003) (Invited).

**2004**

- IJA12. "Optical Performance Monitoring," D. C. Kilper, R. Bach, D. J. Blumenthal, D. Einstein, T. Landolsi, L. Ostar, M. Preiss, and A. E. Willner, *Journal of Lightwave Technology*, **22**(1): 294-304, January (2004) (Invited).

**2009**

- IJA13. "An 8x8 InP Monolithic Tunable Optical Router (MOTOR) Packet Forwarding Chip," S. C. Nicholes, M. L. Masanovic, B. Jevremovic, E. Lively, L. A. Coldren, and D. J. Blumenthal, *IEEE Journal of Lightwave Technology, Special Issue on OFC*, (2009) (Invited).

**2010**

- IJA14. "Integrated Photonics for Low Power Packet Networking," Daniel J. Blumenthal, John Barton, Neda Beheshti, John E. Bowers, Emily Burmeister, Larry A. Coldren, Matt Dummer, Garry Epps, Alexander Fang, Yashar Gangali, John Garcia, Brian Koch, Erica Lively, John Mack, Milan Masanovic, Nick McKeown, Kim Nguyen, Steve Nicholes, Hundai Park, Biljana Stamenic, Henrik Poulsen, Matt Sysak, *IEEE Journal of Selected Topics In Quantum Electronics*, VOL. 17, NO. 2, MARCH/APRIL (2011) (Invited)

**2016**

- IJA15. "Enhanced Brillouin Amplification in Silicon," Tom Baehr-Jones, Ruizhi Shi and Daniel J. Blumenthal, *Nature Photonics, "News and Views,"* Vol. 10, No. 7, June 2016, pp. 432-434 (Invited)

## 2018

- IJA16. "Integrated combs drive extreme data rates," Daniel J. Blumenthal, *News and Views, Nature Photonics*, Vol. 12, AUGUST 2018, pp. 444–450 (Invited)
- IJA17. "Silicon nitride in silicon photonics," Daniel J. Blumenthal, R. Heideman, D. Geuzebroek, A. Leinse and C. Roeloffzen, *Proceedings of the IEEE Special Issue on Silicon Photonics*, Vol. 106 No. 12 DOI: 10.1109/JPROC.2018.2861576, 2018 (Invited)

## 2020

- IJA18. "Frequency Stabilized Links for Low-Energy Coherent Fiber Interconnects in the Datacenter," Daniel J Blumenthal<sup>1</sup>, Hitesh Ballani, Ryan Behunin, John E. Bowers, Paolo Costa, Daniel Lenoski, Paul A. Morton, Scott B. Papp, Peter T. Rakich, *IEEE Journal of Lightwave Technology Special Issue on Optical Interconnects*, DOI: 10.1109/JLT.2020.2985275 (Invited)
- IJA19. "Photonic integration for UV to IR applications," D. J. Blumenthal, *APL Photonics*. 2020;5(2):020903. (Invited)

## KEYNOTE, PLENARY, INVITED AND TUTORIAL PRESENTATIONS

### 1995

- IC1. "Experimental Implementations of Multiwavelength Photonic Packet Switches," D. J. Blumenthal, *Proceedings of the IEEE Conference MILCOM '95*, San Diego, CA, 3: 1279-1283, November 5-8 (1995) (Invited).
- IC2. "Multiwavelength Photonic Packet Switch Architectures," D. J. Blumenthal, *SPIE International Symposium on Aerospace/Defense Sensing and Dual-Use Photonics*, Orlando, FL, April 17-21 (1995).

### 1996

- IC3. "All-Optical Multi-Hop Architectures for Photonic Packet Switching," D. J. Blumenthal, *International Workshop on Photonic Networks and Technologies*, Lerici, Italy, September 4-6 (1996) (Invited).
- IC4. "Scalability Issues in WDM All-Optical Networks," D. J. Blumenthal, *CLEO Europe*, Hamburg, Germany, Paper CThF1, p. 244, September 8-13 (1996) (Invited).
- IC5. "Physics and applications of semiconductor optical amplifiers," D. J. Blumenthal, *Conference Proceedings. LEOS '96 9th Annual Meeting. IEEE Lasers and Electro-Optics Society 1996 Annual Meeting*, New York, NY, Paper WB1, 2: 8 November 18-19 (1996) (Invited).

### 1997

- IC6. "Coherent Crosstalk in Photonic Switched Networks," D. J. Blumenthal, *Technical Digest of the Topical Meeting on Photonics in Switching*, Stockholm, Sweden, Paper PWA1-1, p. 18, April 1-4 (1997) (Invited).
- IC7. "The Limits of WDM Technology," D. J. Blumenthal, *Semiconductor Laser Workshop, CLEO '97*, Baltimore, MD, May (1997).

### 1998

- IC8. "1.55 $\mu$ m VCSEL Array Free-Space Links for SAB/Lasercom," D. J. Blumenthal, *Lasercom Workshop*, DARPA/ETO, Arlington, VA, May (1998).

### 1999

- IC9. "Physical Implementation of the Optical Layer," D. J. Blumenthal, *Optical Internetworking Conference (ICM)*, Washington, D. C., June 16-17 (1999) (Invited).
- IC10. "Techniques for All-Optical Label Swapping Using SOA-Based Wavelength Conversion and Subcarrier Multiplexing," D. J. Blumenthal, *OSA Topical Meeting on Photonics in Switching '99*, Santa Barbara, CA, Paper PThC4, pp. 91-93, July 21-23 (1999) (Invited).



- IC11. "The  $\lambda$ -Scheduler: A Multiwavelength Scheduling Switch," J. P. Lang, E. Varvarigos, and D. J. Blumenthal, *37<sup>th</sup> Annual Allerton Conference on Communicating, Control, and Computing*, University of Illinois, Urbana, IL, September 22-24 (1999) (Invited).
- IC12. "All-Optical Label Swapping with Wavelength Conversion for WDM-IP Networks with Subcarrier Multiplexed Addressing," D. J. Blumenthal, *37<sup>th</sup> Annual Allerton Conference on Communicating, Control, and Computing*, University of Illinois, Urbana, IL, September 22-24 (1999) (Invited).

## 2000

- IC13. "Wavelength Conversion and Optical Signal Processing for Packet Routing," D. J. Blumenthal, *Optical Fiber Communication Conference (OFC '00)*, Baltimore, MD, workshop on Optical Signal Processing for Optical Networks, March 5-10 (2000) (Invited).
- IC14. "All-Optical Networks," D. J. Blumenthal, *11<sup>th</sup> Annual Workshop on Interconnections Within High-Speed Digital Systems*, Santa Fe, NM, May 21-24 (2000) (Invited).
- IC15. "Wavelength Conversion and Optical Signal Processing for Packet Routing," D. J. Blumenthal, *Optical Fiber Communication Conference (OFC '00)*, workshop on Optical Signal Processing for Optical Networks, Baltimore, MD, March 5-10 (2000).

## 2002

- IC16. "Photonic Packet and All-Optical Label Switching Technologies and Techniques," D. J. Blumenthal, *Conference on Optical Communications (OFC '02)*, Anaheim, CA, Paper W03, 1: 282-4, March 19-22 (2002) (Invited).
- IC17. "Optical Packet Switching and Associated Optical Signal Processing," D. J. Blumenthal, J. E. Bowers, Y. J. Chiu, H. F. Chou, B. E. Olsson, S. Rangarajan, L. Rau, and W. Wang, *2002 Digest of the LEOS Summer Topical Meetings*, Piscataway, NJ, Paper TuG2, July 15-17 (2002) (Invited).
- IC18. "Integrated Devices for Wavelength-Agile All-Optical Networks," D. J. Blumenthal, *Technical Digest of the Integrated Photonics Research Conference (IPR '02)*, Vancouver, Canada, Paper IWB1, September 17-19 (2002) (**Plenary**).

## 2003

- IC19. "Optical signal processing using semiconductor optical amplifiers and applications to packet and burst switching," D. J. Blumenthal, *Conference on Lasers and Electro Optics (CLEO '03)*, Baltimore, MD, Session CTuQ3, June 1-6 (2003) (Invited).
- IC20. "All-Optical Packet Routers," D. J. Blumenthal, *OSA Topical Meeting on Photonics in Switching 2003*, Versailles, France, September 29-October 2 (2003) (Invited).
- IC21. "The Parallel Lambda Revolution in Optical Networks," D. J. Blumenthal, *Super Computing Conference 2003*, Phoenix, AZ, November 15-21 (2003) (Invited).
- IC22. "Data in the Optical Domain (DoD)," D. J. Blumenthal, *DARPA/MTO Workshop*, Arlington, VA, March 18 (2003).
- IC23. "Future Optical Networks," D. J. Blumenthal, *NSF Workshop on CyberInfrastructure Research for Homeland Security*, University of California, San Diego, CA, February 26 (2003).
- IC24. "Optical Networks," D. J. Blumenthal, *DOE Science Computing Conference*, Sheraton Crystal City Arlington, VA, June 19-20 (2003).

## 2004

- IC25. "Local WDM Optical Networks," D. J. Blumenthal, *Avionics, Fiber-Optics and Photonics Workshop*, Session: MIL-AERO Networks & WDM Technology, St. Louis, MO, April 21-23 (2004) (Invited).
- IC26. "Overview of the LASOR Project," D. J. Blumenthal, *Workshop on Optical packet switching and Optical Burst Switching*, Yokohama, Japan, July 12 (2004) (Invited).
- IC27. "Integrated and Ultrafast Technologies for Optical Label Switching," D. J. Blumenthal, *OECC/COIN 2004: Optoelectronics and Communications Conference and Conference on Optical Internet*, Yokohama, Japan, July 12-16 (2004) (Invited).
- IC28. "Optical Labeled Packet Switching and the LASOR Project," D. J. Blumenthal, *The 17th Annual Meeting of the IEEE Lasers and Electro-Optics Society (LEOS)*, 1, November 7-11 (2004) (Invited).

- IC29. "Optical Packet Switching," D. J. Blumenthal, *European Conference on Optical Communications (ECOC)*, Stockholm, Sweden, Paper ThU1, pp. 910-912, September 5-9 (2004) (Invited)
- IC30. "Photonic Integration in UCSB's CSWDM and DOD-N Programs," D. J. Blumenthal, *DARPA/MTO Photonics Symposium*, San Francisco, CA, November 30–December 2 (2004) (Invited).
- IC31. "Tunable Wavelength Converters to Enable High Functionality," D. J. Blumenthal and M. L. Mašanović, *IEEE LEOS Semiconductor Laser Workshop*, San Francisco, CA, May 21 (2004).

## 2005

- IC32. "All-Optical Label Swapping and Routing," D. J. Blumenthal, *OFC 2005 Workshop on All-Optical Wavelength Conversion and Signal Processing for Next Generation Networks*, OFC 2005, Anaheim, CA, March 6-11 (2005) (Invited).
- IC33. "Integration techniques for InP-based high-functionality photonic integrated circuits," M. L. Mašanović, J. S. Barton, V. Lal, M. N. Sysak, J. W. Raring, E. J. Skogen, D. J. Blumenthal, and L. A. Coldren, *Integrated Photonics Research and Applications (IPRA 2005)*, San Diego, CA, Paper IMC1, April 11-13 (2005) (Invited).
- IC34. "LASOR: Label Switched Optical Router and Photonic Integration," D. J. Blumenthal and M. Masanovic, *European Conference on Optical Communications (ECOC)*, Glasgow, Scotland, UK, September 26-30 (2005) (Invited).
- IC35. "Optical Burst Switching for Unbuffered Span-Constrained Networks," R. Rajadury and D. J. Blumenthal, *IEEE/CreateNet BroadNets 2005 Conference*, Boston, MA, October 3-7 (2005) (Invited).
- IC36. "Perspectives on the application of InP-based photonic crystal waveguides for optical signal processing," M. Davanço, A. Xing, E. L. Hu, and D. J. Blumenthal, *SPIE Optics East 2005 Section: "Active and Passive Optical Components for WDM Communications V"*, Boston, MA, October 23 (2005) (Invited).
- IC37. "Challenges for Supporting InP Photonic Development in the USA," D. J. Blumenthal, *OIDA Workshop on the Challenge for InP Photonic Development and the Optical Foundry*, Arlington, VA, November 2-3 (2005).

## 2006

- IC38. "Monolithic Widely Tunable Packet Forwarding Chip in InP for All-Optical Label Switching," V. Lal, M. Masanovic, D. Wolfson, G. Fish, and D. Blumenthal, *Integrated Photonics Research and Applications (IPRA) Topical Meeting*, Paper ITuC3, Uncasville, CT, April 24-26 (2006) (Invited).
- IC39. "Optical buffering for next-generation routers," E. F. Burmeister, D. J. Blumenthal, J. E. Bowers, *Opto-Electronics and Communications Conference*, Kaohsiung, Taiwan, July 3-7 (2006) (Invited).
- IC40. "Optical 2R and 3R Regeneration with Dynamic Wavelength Switching Using a Monolithically Integrated, Widely Tunable Photocurrent Driven Wavelength Converter," M. N. Sysak, J. W. Raring, L. A. Johansson, H. N. Poulsen, J. S. Barton, D. J. Blumenthal, and L. A. Coldren, *Proceedings of European Conference on Optical Communications (ECOC)*, Cannes, France, Paper Th3.4.1, September 24-28 (2006) (Invited).
- IC41. "Architecture and Integration Technologies for LASOR: A Label Switched Optical Router," D. J. Blumenthal, *OSA Annual Meeting*, Rochester, NY, Paper FTuP1, October 9-12 (2006) (Invited).
- IC42. J. E. Bowers, E. F. Burmeister, and D. J. Blumenthal, "Optical buffering and switching for optical packet switching," *International Conference on Photonics in Switching*, Crete, Greece, October 16-18 (2006) (Invited).
- IC43. "Integrated Photonics and Paving the Way to Future Communications Systems and Applications," D. J. Blumenthal, *U.S. Congressional Subcommittee Briefing - Back to Basics: Defense Basic Research and the Future of California*, Washington, DC, December (2006)

## 2007

- IC44. "Ultra-Fast Integrated Optical Interconnects for Short and Ultra-Short Reach Interconnects," D. J. Blumenthal, *Workshop on Ultra-Short Reach Interconnects, Optical Fiber Communications Conference (OFC '07)*, Anaheim, CA, March 26 (2007) (Invited).

- IC45. “Technologies for Building Fast Reconfigurable WDM Optical Networks,” D. J. Blumenthal, *Optical Fiber Communications Conference (OFC '08) Workshop on All-Optical Signal Processing and Conditioning*, San Diego, CA, Paper OThF1, March 25-29 (2007) (Invited).
- IC46. “Functional Optical Integrated Label Recovery and Tunable Wavelength Conversion Modules,” D. J. Blumenthal, *LEOS Topical Meeting on Photonics in Switching*, San Francisco, CA, August 19-22 (2007) (Invited).
- IC47. “Progress and Planned Future Directions in Optical Processing and Communications,” D. J. Blumenthal, *DARPA/MTO Microsystems Technology Symposium*, San Jose, CA, March 5 – 7 (2007)(Invited).
- IC48. “Ultra-Low-Loss Glass based Waveguides Integrated into Active InP PIC platforms,” D. J. Blumenthal, J. Barton, M. L. Mashanovitch and D. John, *DARPA Workshop on Ultra Low Loss Waveguides (ULLW)*, Arlington, VA, June (2007).

## 2008

- IC49. “All-Optical Clock Recovery with Retiming and Reshaping Using a Silicon Evanescent Mode Locked Ring Laser,” B. R. Koch, A. W. Fang, H. N. Poulsen, H. Park, D. J. Blumenthal, J. E. Bowers, R. Jones, M. J. Paniccia, and O. Cohen, *Optical Fiber Communications Conference (OFC '08)*, San Diego, CA, Invited Paper OMN1, February 24-28 (2008) (Invited).
- IC50. “Photonic Integrated Circuits for Optical Routing and Switching Applications,” M. L. Mašanović, E. F. Burmeister, A. Tauke-Pedretti, B. Koch, M. Dummer, J. Summers, J. S. Barton, L. A. Coldren, J. E. Bowers, and D. J. Blumenthal, *IPNRA*, Paper IWC5, Boston, MA, July 13 – 16 (2008) (Invited).
- IC51. “Recent progress on LASOR Optical Router and Related Integrated Technologies,” Jonathon S. Barton, Milan L. Mašanović, Matthew M. Dummer, Anna Tauke-Pedretti, Emily F. Burmeister, Brian R. Koch, Joseph A. Summers, Larry A. Coldren, John E. Bowers, Daniel J. Blumenthal, *International Topical Meeting on Photonics in Switching*, Hokkaido University, Sapporo, Japan, August 4-7 (2008) (Invited).
- IC52. “Distributed Feedback and Mode Locked Silicon Evanescent Lasers,” Alexander W. Fang, Brian R. Koch, Erica Lively, Daniel J. Blumenthal, John E. Bowers, *Extended Abstracts of the 2008 International Conference on Solid State Devices and Materials*, Tsukuba, Ibaraki, Japan, Paper E-9-1, pp. 974-975, September 24-26 (2008) (Invited).
- IC53. “Photonic Integration for Optical Switching Applications,” D. J. Blumenthal, *2008 Asia Optical Fiber Communication & Optoelectronic Exposition & Conference*, Shanghai, China, Paper SuF1, October 31–November 3, (2008) (Invited).
- IC54. “Technologies for Building Fast Reconfigurable WDM Optical Networks,” D. J. Blumenthal, *Optical Fiber Communications Conference (OFC '08) Workshop on All-Optical Signal Processing and Conditioning*, San Diego, CA, February (2008) (Invited).

## 2009

- IC55. “Advanced Photonic Integrated Technologies for Optical Routing and Switching,” M. L. Mašanović, E. Burmeister, M. M. Dummer, B. Koch, S. C. Nicholes, B. Jevremovic, K. Nguyen, V. Lal, J. E. Bowers, L. A. Coldren and D. J. Blumenthal, *Optoelectronic Integrated Circuits XI, Proceedings of SPIE, the International Society for Optical Engineering*, vol. 7219, 72190I, San Jose, CA, January 28 (2009) (Invited)
- IC56. “Technologies and Systems of Optical Switching,” D. J. Blumenthal and J. E. Bowers, *International Conference on Photonics in Switching*, Paper ThI1, Pisa, Italy, September 15 -19 (2009) (Invited).
- IC57. “Optical Signal Processing: The Roadmap towards High-speed Optical Packet/Burst Switching,” D. J. Blumenthal and M. Usami, *European Conference on Optical Communications (ECOC)*, Vienna, Austria, September 20 – 24 (2009) (Invited Tutorial).
- IC58. “Photonic Technologies for an Integrated Optical Node for Avionic Networks,” M. Mašanović, S. Nicholes, D. J. Blumenthal and J. S. Barton, *Avionics, Fiber-Optics and Photonics Conference*, Paper ThB2, San Antonio, TX, September 22-24 (2009) (Invited)
- IC59. “Research Directions in photonic Integration,” D. J. Blumenthal, *OIDA Photonic Integration Forum*, Santa Clara, CA, October 6 (2009).

- IC60. D. J. Blumenthal, NSF US-Japan Future Networks Collaboration Workshop, Honolulu, HI, December 5 (2009)
- 2010**
- IC61. "Terabit Optical Ethernet," D. J. Blumenthal, *OSA Topical Meeting on Photonics in Switching*, Paper PWC4, Monterey, CA, July 25-28, (2010) (Invited)
- IC62. "Integration Technologies for an 8x8 INP-Based Monolithic Tunable Optical Router with 40 Gb/s Line Rate per Port," S. C. Nicholes, M. L. Mašanović, B. Jevremović, E. Lively, L. A. Coldren and D. J. Blumenthal, *Indium Phosphide and Related Materials*, Kagawa, Japan, May 31-June 4 (2010) (Invited)
- IC63. "Terabit Optical Ethernet (TOE) and Underlying PIC Technologies," D. J. Blumenthal, J. E. Bowers and J. S. Barton, International Symposium on Ultra-high Capacity Optical Communication and Related Optical Signal Processing and Devices, Technical University of Denmark, Lyngby, Sept. 16 – 17 (2010)
- 2011**
- IC64. "Photonic integrated circuits for optical routing and switching applications," Masanovic, M.L.; Barton, J.S.; Parker, J.; Nicholes, S.; Burmeister, E.F.; Jevremovic, B.; Bowers, J.E.; Coldren, L.A.; Blumenthal, D.J., Optical Fiber Communication Conference and Exposition and the National Fiber Optic Engineers Conference (OFC/NFOEC), Los Angeles, CA (Invited)
- IC65. "8-channel InP monolithic tunable optical router for packet forwarding," Nicholes, S.C.; Masanovic, M.L.; Jevremovic, B.; Lively, E.; Coldren, L.A.; Blumenthal, D.J., Conference Optical Fiber Communication Conference and Exposition (OFC/NFOEC) and the National Fiber Optic Engineers, Los Angeles, CA (Invited)
- IC66. "Terabit Optical Ethernet for Avionics," D. J. Blumenthal, *Avionics, Fiber-Optics and Photonics Technology Conference (AVFOP)*, Paper WC1, San Diego, CA (Invited)
- IC67. "Terabit Optical Ethernet and Enabling Integration Technologies," D. J. Blumenthal, Optical Fiber Communication Conference and Exposition and the National Fiber Optic Engineers Conference (OFC/NFOEC), Paper OTuP4, Los Angeles, CA (Invited)
- 2012**
- IC68. "A Comparison of Approaches for Ultra-Low-Loss Waveguides," Jared Bauters, Martijn R. Heck, Demis D. John, Jonathon S. Barton, Christiaan M. Bruinink, Arne Leinse, Rene Heideman, Daniel J. Blumenthal, John Bowers, Conference on Optical Fiber and Communications (OFC/NFOEC), Paper OTuI.3, Los Angeles, CA (Invited)
- 2013**
- IC69. "Ultra-Low Loss Waveguide Technology for On-Chip Digital Optical Synthesis," Exploratory DARPA/MTO workshop on Direct On-Chip Digital Optical Synthesis/Denver, Colorado, December (2013)
- 2014**
- IC70. "Deploying 400G In Volume," Fifth Annual OIF Technology Summit at OFC/ Los Angeles, CA, March (2014)
- IC71. "Realization of Low SWAP+C Environmentally Robust Integrated Waveguide Optical Gyros and PNT Systems," DARPA Micro-PNT Fall 2014 PI Meeting/San Antonio, TX, November (2014)
- 2016**
- IC72. "Ultra-Low Loss SiN Waveguide Platform for Integrated Passive and Active Components for Next Generation Photonic Integrated Circuits," D. J. Blumenthal, *2016 Summer Topical Meeting Series, 11 - 13 July 2016, paper WA2.4* (Invited)
- IC73. "Chip-Scale Optical Gyros Based on Integrated Ultra Low Loss Waveguide Coils and Silicon Photonic Front Ends," D. J. Blumenthal, *2016 IEEE Photonics Conference, 29th Annual Conference of The IEEE Photonics Society, 2 - 6 October* (Invited)
- IC74. "Chip-scale optical resonator enabled synthesizer (CORES) miniature systems for optical frequency synthesis," J. E. Bowers, A. Beling, D. Blumenthal, A. Bluestone, S. M. Bowers, T. C.

Briles, L. Chang, S. A. Diddams, G. Fish, H. Guo, T. J. Kippenberg, T. Komljenovic, E. Norberg, S. Papp, M. H. P. Pfeiffer, K. Srinivasan, L. Theogarajan, K. J. Vahala, N. Volet, *2016 IEEE International Frequency Control Symposium (IFCS)*, New Orleans, LA, USA, 2016, pp. 1-5. doi: 10.1109/FCS.2016.7546782 (Invited)

## 2017

- IC75. "Ultra-Low Loss Si<sub>3</sub>N<sub>4</sub> Waveguide Passive and Active Next Generation Photonic Integration for Optical Gyroscopes and Communications Applications," Daniel J. Blumenthal, *European Conference on Integrated Optics 2017, Eindhoven, The Netherlands*, Paper W1.3, April 03-05, 2017 (Invited)
- IC76. "Ultra-Low Loss Si<sub>3</sub>N<sub>4</sub> Planar Waveguide Platform and Applications," D. J. Blumenthal, T. Huffman, M. Belt, S. Gundavarapu, *43<sup>rd</sup> European Conference on Optical Communication*, Gothenberg, Sweden, 17-21 September 2017 (Invited)

## 2018

- IC77. "Integrated Low Linewidth Brillouin Lasers in Ultra Low Loss Si<sub>3</sub>N<sub>4</sub> Waveguide Platform," Daniel J. Blumenthal, S. Gundavarapu, *CLEO 2018, Paper FW3E.3*, San Jose California , 13-18 May 2018 (Invited)
- IC78. "Narrow Linewidth Stimulated Brillouin Scattering (SBS) Lasers," D. J. Blumenthal, S. Gundavarapu, G. M. Brodnik, D. Bose, R. O. Behunin, P. T. Rakich, K. D. Nelson, M. Puckett, J. Wu, *IEEE Photonics Conference 2018 (IPC 2018)*, Reston, VA, USA, September 30th to October 4<sup>th</sup>, 2018 (Invited)
- IC79. "Photonic Integration Beyond Silicon," *Daniel J. Blumenthal, Microwave Photonics Conference (MWP), Toulouse, France*, 22 October to 25, 2018 (Invited)

## 2019

- IC80. "Frequency Stabilized Lasers for Coherent Fiber Interconnects in the Datacenter," D. J. Blumenthal, H. Ballani, R.O. Behunin, J. E. Bowers, P. Costa, D. Lenoski, N. McKeown, P. Morton, S. B. Papp, P. T. Rakich, *2019 IEEE Optical Interconnects Conference (OI)*, Santa Fe, NM, USA, 2019, pp. 1-2, Santa Fe, NM, April 24 – 26, 2019 (Invited)
- IC81. "Photonic Integrated Ultra-Narrow Linewidth Brillouin Lasers and Application to Precision Timing and Ultrafast Optics," Special Symposium on Ultrafast Optics RR, International Conference on Materials for Advanced Technologies (ICMAT 2019), 23 – 28 June 2019 in Singapore (Invited)
- IC82. "Integrated Ultra-Narrow Linewidth Integrated Lasers and Their Applications," Daniel J. Blumenthal, *Optical Society of America's (OSA)'s Integrated Photonics Research (IPR) 2019 conference*, 29 July to 01 August 2019, Burlingame, California, Paper IM2A.1 (Invited)
- IC83. "Ultra-stable Integrated Lasers and Low-cost, Low-energy Coherent Data Center Interconnects," Daniel J. Blumenthal, *Optical Society of America's (OSA)'s NETWORKS*, 29 July to 01 August 2019, Burlingame, California, Paper NeM4D.1 (Invited)
- IC84. "Ultra-low Loss Waveguide Platforms for Integration of Quantum Circuits," Daniel J. Blumenthal, *Optical Society of America's (OSA)'s Symposium on Quantum Technologies Part 2*, 29 July to 01 August 2019, Burlingame, California, Paper QtW2E.2 (Invited)
- IC85. "Ultra-Narrow Linewidth Photonic Integrated Lasers and Their Applications," *18<sup>th</sup> SBMO/IEEE MTT-S International Microwave and Optoelectronics Conference (IMOC) 2019, Aveiro, Portugal* (Plenary)
- IC86. "Quiet Light for Low-Energy Scalable Data Center Interconnects," IEEE GlobeComm, Waikoloa, HI, December 9-13, 2019 (Keynote)

## 2020

- IC87. "Ultra-Low Loss Ta<sub>2</sub>O<sub>5</sub> Waveguides for Integrated Photonics," Daniel J. Blumenthal, *Integrated Optics XXIV conference of SPIE Photonics West 2020*, San Francisco, CA, Feb. 1-6, 2020 (Invited)
- IC88. "Photonic integrated atom cooling and ultra-low linewidth stable Brillouin laser oscillators," Daniel J. Blumenthal, *Optical, Opto-Atomic, and Entanglement-Enhanced Precision Metrology II conference of SPIE Photonics West 2020*, San Francisco, CA, Feb. 1-6, 2020 (Invited)

- IC89. "Integrated ultra-narrow linewidth stimulated Brillouin scattering (SBS) lasers and their applications," *Novel In-Plane Semiconductor Lasers XIX, SPIE Photonics West*, Paper 11301-34, San Francisco, CA, 1 - 6 February 2020, (Invited)
- IC90. "Frequency Stabilized Ultra-Narrow Linewidth Frequency Combs for Coherent Interconnects in the Data Center," Daniel J. Blumenthal, Mark W. Harrington, Scott B. Papp, IEEE SUM Topical Meetings 2020, Coherent optics for short-reach networks (CSN), Cabo San Lucas, Mexico, July 13-15, 2020 (Invited)

## POST DEADLINE PAPERS

### 1980

- PDP1. Mourou G, Blumenthal D, Stancampiano CV, Gabel CW. "Picosecond microwave pulse generation," *Eleventh International Quantum Electronics Conference, Journal of the Optical Society of America*, Post-Deadline Paper R.9, p. 1403 (1980).

### 1994

- PDP2. D. J. Blumenthal and L. Thylen, "Coherent Crosstalk Induced BER Floors in NxN Space Photonic Switches," *Proceedings of the IEEE/LEOS Topical Meeting on Optical Networks and Enabling Technologies*, Lake Tahoe, NV, Postdeadline paper PDPI, pp. 1-2, July 6-13 (1994).

### 1995

- PDP3. D. J. Blumenthal and N. Kothari, "Dense Multiwavelength Multistage Photonic Switching in Traveling Wave Semiconductor Optical Amplifiers," *OSA Spring Topical Meeting on Photonics in Switching*, Salt Lake City, UT, Postdeadline paper, March 17-21 (1995).

### 1999

- PDP4. B. E. Olsson, P. Öhler, L. Rau, G. Rossi, O. Jerphagnon, R. Doshi, D. S. Humphries, V. Kaman, J. E. Bowers, and D. J. Blumenthal, "Wavelength Routing of 40 Gbit/s Packets with 2.5 Gbit/s Header Erasure/Rewriting Using an All-Fiber Wavelength Converter," *Proceeding of the 25<sup>th</sup> European Conference on Optical Communication (ECOC '99)*, Nice, France, Postdeadline paper PD3-4, pp. 52-53, September 26-30 (1999).

### 2004

- PDP5. H. F. Chou, J. E. Bowers, and D. J. Blumenthal, "Compact 160-Gb/s add-drop multiplexing with a 40-Gb/s base-rate," *Optical Fiber Communication Conference '04*, Los Angeles, CA, Postdeadline paper PDP28, February 22-27 (2004).
- PDP6. W. Wang, L. Rau, and D. J. Blumenthal, "All-optical label switching/swapping of 160 Gbps variable length packets and 10 Gbps labels using a WDM Raman enhanced-XPM fiber wavelength converter with unicast/multicast operation," *Optical Fiber Communication Conference (OFC)*, Postdeadline paper PDP8, February 22-27 (2004).

### 2005

- PDP7. D. Wolfson, V. Lal, M. Masanovic, H. N. Poulsen, C. Coldren, G. Epps, D. Covelo, P. Donner, and D. J. Blumenthal, "All-optical asynchronous variable-length optically labeled 40Gbps packet switch," *European Conference on Optical Communications (ECOC)*, Postdeadline paper, Glasgow, Scotland, UK, September 26-30 (2005).

### 2006

- PDP8. V. Lal, M. Mašanović, D. Wolfson, G. Fish, C. Coldren, and D. J. Blumenthal, "Monolithic Widely Tunable Optical Packet Forwarding Chip in InP for All-Optical Label Switching with 40 Gbps

Payloads and 10 Gbps Labels," *European Conference on Optical Communications (ECOC)*, Postdeadline paper, Glasgow, Scotland, UK, September 26-30 (2006).

## 2009

- PDP9. S. C. Nicholes, M. L. Mašanović., B. Jevremovic, E. Lively, L. A. Coldren, D. J. Blumenthal, "The world's first InP 8x8 monolithic tunable optical router (MOTOR) operating at 40 Gbps line rate per port," *Optical Fiber Communication Conference (OFC)*, Postdeadline paper PDPB1, San Diego, CA, March 22 – 26 (2009).

## JOURNAL PUBLICATIONS AND ARTICLES

### 1981

- J1. "Picosecond Microwave Pulse Generation," G. Mourou, C. V. Stancampiano, and D. J. Blumenthal, *Applied Physics Letters*, **38**(6): 470-2, March (1981).

### 1987

- J2. "Self-Routing Photonic Switching Demonstration with Optical Control," P. R. Prucnal, D. J. Blumenthal, and P. A. Perrier, *Optical Engineering*, **26**(5): 473-7, May (1987).  
J3. "12.5 Gbit/s Fibre-Optic Network Using All-Optical Processing," P. R. Prucnal, D. J. Blumenthal, and M. A. Santoro, *Electronics Letters*, **23**(12): 629-30, June 4, (1987).  
J4. "Performance of an 8x8 LiNbO<sub>3</sub> Switch Matrix as a Gigahertz Self-Routing Switching Node," D. J. Blumenthal, P. R. Prucnal, L. Thylen, and P. Granstrand, *Electronics Letters*, **23**(25): 1359-60, December 3 (1987).

### 1989

- J5. "Laser Fabricated GaAs Waveguiding Structures," A. E. Willner, M. N. Ruberto, D. J. Blumenthal, D. V. Podlesnik, and R. M. Osgood, Jr., *Applied Physics Letters*, **54**(19): 1839-41, May 8 (1989).

### 1992

- J6. "Demonstration of a Deflection Routing 2x2 Photonic Switch for Computer Interconnects," D. J. Blumenthal, K. Y. Chen, J. Ma, R. J. Feuerstein, and J. R. Sauer, *IEEE Photonics Technology Letters*, **4**(2): 169-73, February (1992).

### 1994

- J7. "First Demonstration of Multihop All-Optical Packet Switching," D. J. Blumenthal, R. J. Feuerstein, and J. R. Sauer, *IEEE Photonics Technology Letters*, **6**(3): 457-60, March (1994).

### 1996

- J8. "Coherent Crosstalk in Multichannel FSK/DD Lightwave Systems Due to Four-Wave Mixing in Semiconductor Optical Amplifiers," D. J. Blumenthal and N. C. Kothari, *IEEE Photonics Technology Letters*, **8**(1): 133-5, January (1996).  
J9. "BER Floors Due to Heterodyne Coherent Crosstalk in Space Photonic Switches for Wavelength Division Multiplexed Networks," D. J. Blumenthal, P. Granstrand, and L. Thylen, *IEEE Photonic Technology Letters*, **8**(2): 284-6, February (1996).  
J10. "Experimental Demonstration of an All-Optical Routing Node for Multihop Wavelength Routed Networks," D. J. Blumenthal, M. Shell, M. D. Vaughn, A. Wang, P. J. Rigole, and S. Nilsson, *IEEE Photonics Technology Letters*, **8**(10): 1391-3, October (1996).  
J11. "Influence of Gain Saturation, Gain Asymmetry, and Pump/Probe Depletion on Wavelength Conversion Efficiency of FWM in Semiconductor Optical Amplifiers," N. C. Kothari and D. J. Blumenthal, *IEEE Journal of Quantum Electronics*, **32**(10): 1810-16, October (1996).

### 1997

- J12. "All-Optical Updating of Subcarrier Encoded Packet Headers with Simultaneous Wavelength Conversion of Baseband Payload in Semiconductor Optical Amplifiers," M. D. Vaughn and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **9**(6): 827-9, June (1997).

- J13. "Fiber Optic Links Supporting Baseband Data and Subcarrier-Multiplexed Control Channels and the Impact of MMIC Photonic/Microwave Interfaces," D. J. Blumenthal, J. Laskar, R. Gaudino, S. Han, M. Shell, and M. D. Vaughn, *IEEE JLT/MTT Joint Special Issue on Microwave Photonics II, Transactions on Microwave Theory and Techniques*, **45**(8): 1443-52, August 8 (1997).
- J14. "A Novel Transmitter Architecture for Combined Baseband Data and Subcarrier-Multiplexed Control Links Using Differential Mach-Zehnder External Modulators," R. Gaudino and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **9**(10): 1397-9, October (1997).

#### 1998

- J15. "MOSAIC: A Multi-Wavelength Optical Subcarrier Multiplexed Controlled Network," R. Gaudino, M. Len, G. Desa, M. Shell, and D. J. Blumenthal, *IEEE Journal on Selected Areas in Communications, Special Issue on High Capacity Optical Networks*, **16**(7): 1270-85, September (1998).
- J16. "OPERA: An Optical Packet Experimental Routing Architecture with Label Swapping Capability," A. Carena, M. D. Vaughn, R. Gaudino, M. Shell, and D. J. Blumenthal, *IEEE Journal of Lightwave Technology*, special issue on Photonic Packet Switching Technologies, Techniques, and Systems, **16**(12): 2135-45, December (1998).

#### 1999

- J17. "An Optical Communication Design Laboratory," J. A. Buck, H. W. Owen, III, J. P. Uyemura, C. M. Verber, and D. J. Blumenthal, *IEEE Transactions on Education*, **42**(2): 138-43, May (1999).
- J18. "Remote Provisioning of a Reconfigurable WDM Multichannel Add/Drop Multiplexer," R. Gaudino and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **11**(8): 1060-2, August (1999).
- J19. "All-Optical Label Swapping with Wavelength Conversion for WDM-IP Networks with Subcarrier Multiplexed Addressing," D. J. Blumenthal, A. Carena, L. Rau, V. Curry, and S. Humphries, *IEEE Photonics Technology Letters*, **11**(11): 1497-9 November (1999).

#### 2000

- J20. "Wavelength Routing of 40 Gbit/s Packets with 2.5 Gbit/s Header Erasure/Rewriting Using an All-Fiber Wavelength Converter," B. E. Olsson, P. Öhln, L. Rau, G. Rossi, O. Jerphagnon, R. Doshi, D. S. Humphries, D. J. Blumenthal, V. Kaman, and J. E. Bowers, *IEEE Electronic Letters*, **36**(4): 345-7, February (2000).
- J21. "Wavelength Dependence and Power Requirements of a Wavelength Converter Based on XPM in a Dispersion-shifted Optical Fiber," P. Öhln, B.E. Olsson, and D. J. Blumenthal, *IEEE Photonic Technology Letters*, **12**(5): 522-4, May (2000).
- J22. "All-optical Header Erasure and Penalty-free Rewriting in a Fiber-based High-speed Wavelength Converter," P. Öhln, B. E. Olsson, and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **12**(6): 663-5, June (2000).
- J23. "Optical Dispersion Monitoring Technique Using Double Sideband Subcarriers," T. E. Dimmick, G. Rossi, and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **12**(7): 900-2, July (2000).
- J24. "Fully Monolithic Four Channel Transmitter IC for RF/Optical Subcarrier Multiplexed Communications," S. Han, C. -H. Lee, B. Matinpour, J. Laskar, D. J. Blumenthal, *IEEE Microwave and Guided Wave Letters*, **10**(7): 282-4, July (2000).
- J25. "A simple and robust 40-Gb/s wavelength converter using fiber cross-phase modulation and optical filtering," B. E. Olsson, P. Öhln, L. Rau, and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **12**(7): 846-8, July (2000).
- J26. "Optical SCM Data Extraction Using a Fiber Loop Mirror for WDM Network Systems," G. Rossi, O. Jerphagnon, B. E. Olsson, and D. J. Blumenthal, *IEEE Photonics Technology Letters*, **12**(7): 897-9, July (2000).
- J27. "The  $\lambda$ -Scheduler: a Multiwavelength Scheduling Switch," J. P. Lang, E. Varvarigos, and D. J. Blumenthal, *IEEE Journal of Lightwave Technology*, **18**(8): 1049-62, August (2000).
- J28. "Detailed transfer matrix method-based dynamic model for multisection widely tunable GCSR lasers," O. Lavrova and D. J. Blumenthal, *IEEE Journal of Lightwave Technology*, **11**(10): 1274-83, September (2000).



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- SWEP50. "Ultra-Low Loss Waveguide Technology and Integration Platform: Challenges Overcome and New Chip-Scale Applications," MIT Seminar/Boston, MA, (2015)
- SWEP51. "Chip-Scale Optical Gyros Based on Integrated Ultra Low-Loss Waveguide Coils and Silicon Photonic Front Ends," Eighth Annual Autonomous Guidance, Navigation and Control (AGN&C) Symposium, Draper Labs, Boston, MA, Nov. 3, 2016
- SWEP52. "Data Communications and Network Opportunities with Next Generation Low Power Terabit Photonic Integration," Microsoft Network Group, Microsoft, Redmond, WA, Dec. 9, 2016
- SWEP53. "Ultra-Low Loss SiN Waveguide Platform for Integrated Passive and Active Components and Next Generation Photonic Integrated Circuits," Microsoft Optics Group, Microsoft, Redmond, WA, Dec. 9, 2016
- SWEP54. "Next Generation Ultra Low Loss Si<sub>3</sub>N<sub>4</sub> Integrated Photonics and Applications," Facebook, Palo Alto, CA, Jan. 19, 2017
- SWEP55. "Next Generation Ultra Low Loss Si<sub>3</sub>N<sub>4</sub> Integrated Photonics and Applications," Google, Palo Alto, CA, Jan. 20, 2017
- SWEP56. "Ultra-Low Loss Integration Platform for Passive and Active Components for Next Generation Photonic Integrated Circuits and Terabit Optical Interfaces and Interconnects," UC Berkeley, Berkeley, CA March 24, 2017
- SWEP57. "Ultra-Low Loss Si<sub>3</sub>N<sub>4</sub> Integration Platform for Passive and Active Components for Next Generation Photonic Integrated Circuits," University of Maryland, Engineering, College Park, MD, April 25, 2017
- SWEP58. "Ultra-Low Loss Si<sub>3</sub>N<sub>4</sub> Passive and Active Integration Platform and Next Generation Photonics (NGP)," IEEE Photonics Society, Light Science Workshop, UCSB, Santa Barbara, CA, May 10, 2017
- SWEP59. "Data Communications and Network Opportunities with Next Generation Ultra Low Loss Photonic Integration," Microsoft Research (MSR), Cambridge, UK, Aug. 3, 2017
- SWEP60. "Low Loss Si<sub>3</sub>N<sub>4</sub> Planar Integration for Passive and Active Next Generation Photonic Integrated Circuits," Northern Arizona University, Applied Physics and Materials Science, Flagstaff, AZ, Jan. 19, 2018



- SWEP61. “Transforming the DCI Interconnect with Next Generation Photonics,” Microsoft Faculty Research Summit, Redmond, WA, July 31, 2018
- SWEP62. “Frequency Stabilized Coherent Optical Low-Energy WDM DC Interconnects,” ARPA-e ENLITENED Annual Meeting, Seattle, WA, Oct. 22, 2018
- SWEP63. FRESCO: FREquency Stabilized Coherent Optical Low-Energy WDM DC Interconnects,” IEE Director’s Council Meeting, UCSB, Santa Barbara, CA, Nov. 2, 2018
- SWEP64. “Ultra-Capacity Highly Integrated Low Energy Photonics for Scaling Fiber DCIs,” Microsoft Research (MSR), Redmond, WA, Aug. 6, 2019
- SWEP65. “Quiet Light” and Integrated Ultra-Narrow Linewidth SBS Lasers,” MIT Optics and Quantum Electronics Seminar Series, MIT, Cambridge, MA, Oct. 16, 2019
- SWEP66. “Ultra-Stable Photonic Integrated Sub-Hz Fundamental Linewidth Brillouin Lasers and Their Applications,” Institute of Optics and Haim School of Engineering and Applied Sciences Colloquium, University of Rochester, Rochester, NY, April 8, 2019
- SWEP67. “Ultra-Stable Photonic Integrated Sub-Hz Fundamental Linewidth Brillouin Lasers and Their Applications,” Solid State and Optics Seminar, Department of Applied Physics, Yale University, New Haven, CT, April 10, 2019
- SWEP68. “Photonic Integrated Ultra-Narrow Linewidth Brillouin Lasers and Application to Precision Timing and Ultrafast Optics,” Honeywell Quantum Group, Louisville, CO, July 10, 2019
- SWEP69. “Low-Energy Frequency-Stabilized Coherent WDM Fiber Links,” D. J. Blumenthal, Session III: Trends and Challenges of the Fixed/Mobile Convergence Qualcomm/SRC Workshop on New Trajectories for Communication, 2020 Qualcomm, San Diego, CA, February 11-12, 2020
- SWEP70. “Device Needs for Photonics QIP,” DARPA Workshop on Photonics Quantum Information Processing (QIP), Arlington, VA Feb. 19, 2020
- SWEP71. “Visible to IR Photonic integration, low linewidth lasers and Circuits for next Generation Applications,” Army Research Labs, Washington, DC, Feb. 18, 2020

**SHORT COURSES AND CONTINUING EDUCATION**

- SC1. “Fast Reconfigurable WDM Optical Networks and Their Physical Limitations,” OFC ’99, Session SC153, San Diego, CA, February 21-26 (1999).
- SC2. “Fiber Optic Networks,” Continuing Education Institute-Europe (CEI), Davos, Switzerland, March 8-12 (1999).
- SC3. “Fiber Optic Networks,” UCSD Extension, San Diego, CA, March 23-26 (1999).
- SC4. “Fiber Optic Networks,” Continuing Education Institute (CEI) Europe, Barcelona, Spain, October 25–29 (1999).
- SC5. “Fast Reconfigurable WDM Optical Networks,” OFC ’00, Baltimore, MD (2000).
- SC6. “Fiber Optic Networks,” UCSD Extension, San Diego, CA, June 21-23 (2000).
- SC7. “Fast Reconfigurable WDM Optical Networks,” OFC ’01, Anaheim (2001).
- SC8. “Fast Reconfigurable WDM Optical Networks,” OFC ’02, Anaheim (2002).
- SC9. “Fast Reconfigurable WDM Optical Networks,” OFC ’03, Anaheim (2003).
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- SC11. “Fast Reconfigurable WDM Optical Networks,” OFC ’05, Anaheim (2005).
- SC12. “Fast Reconfigurable WDM Optical Networks,” OFC ’06, Anaheim (2006).
- SC13. “Fast Reconfigurable WDM Optical Networks,” OFC ’07, Anaheim (2007).
- SC14. “Fast Reconfigurable WDM Optical Networks,” OFC ’08, San Diego (2008).
- SC15. “Dynamic ROADMs, Switches and Integrated Technologies and Techniques for Dynamically Reconfigurable and Packet Switched Optical Networks,” OFC ’09, San Diego (2009).
- SC16. “Dynamic ROADMs, Switches and Integrated Technologies and Techniques for Dynamically Reconfigurable and Packet Switched Optical Networks,” OFC ’10, San Diego (2010).

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