DAVID A. B. MILLER

CURRICULUM VITAE

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Date of Birth: February 19, 1954, Hamilton, U.K.

Citizenship: United States
United Kingdom

High School Education: Perth Academy, Perth, U.K.

University Education: St. Andrews University 1972-76
B. Sc. with Honours (1st Class)
Posts of Responsibility: President of University Musical Society
Other Distinctions: Class Medalist in Physics, 1973, 1974, 1975, and 1976

Heriot-Watt University (1976-79), Ph.D. in Physics
Thesis Title "Nonlinear Optical Effects in InSb with a cw CO Laser" (May 1979)
Other Distinctions: Carnegie Trust Research Scholar 1976-79

Employment: January 1997-Present, W. M. Keck Foundation Professor of Electrical Engineering, and Professor by courtesy, Applied Physics, Stanford University, Stanford, CA

September 2000-2019, Co-Director, Stanford Photonics Research Center

September 1997-2009, Director, Solid State and Photonics Laboratory, Stanford University, Stanford, CA

September 1997-2006, Director, E. L. Ginzton Laboratory, Stanford University, Stanford, CA

August 1996-December 1996, Professor of Electrical Engineering, Stanford University, Stanford, CA

May 1992-August 1996, Head, Advanced Photonics Research Department, AT&T Bell Laboratories, Holmdel, N.J., USA

September 1987-May 1992, Head, Photonics Switching Device Research Department, AT&T Bell Laboratories, Holmdel, NJ USA

June 1981-September 1987, Member of Technical Staff, AT&T Bell Laboratories, Holmdel, NJ, USA

June 1980-June 1981, Lecturer, Department of Physics, Heriot-Watt University, Edinburgh, U.K.

June 1979-June 1980, Research Associate, Department of Physics, Heriot-Watt University, Edinburgh, U.K.

Distinctions:

Academy memberships and Fellowships

Member, National Academy of Engineering (2010)

Member, National Academy of Sciences (2008)

Fellow of the Electromagnetics Academy (2014)

Corresponding Fellow, Royal Society of Edinburgh (2002)

Fellow of the Royal Society of London (1995)

Fellow, Institute of Electrical and Electronics Engineers (1995)

Life Fellow (2020)

Fellow of the Optical Society of America (1988)

Fellow of the American Physical Society (1988)

Honors

Carnegie Millennium Professorship (2013)

Honorary Doctor of Engineering, Heriot-Watt University, Edinburgh (2003)

Doctor Honoris Causa, Vrije Universiteit, Brussel (1997)

Prizes and Awards

Best paper award, *Photonics Research*, 2013

IEEE Third Millennium Medal (2000)

1991 Prize of the International Commission for Optics

R. W. Wood Prize of the Optical Society of America, 1988
(with D. S. Chemla)

Adolph Lomb Medal of the Optical Society of America (1986)

IEEE Lasers and Electro-Optics Society Traveling Lecturer, 1986-87

Other distinctions

2014 Hermann Anton Haus Lecture, MIT

1993 Walter Schottky Lecturer, Aachen

Listed by ISI as one of the 254 Highly Cited Authors in Engineering and one of the 315 Highly Cited Authors in Physics. (There are only 9 people worldwide who appear on both of these lists.) (2009)

H-index (January 2020) – 102 (Google Scholar), 79 (Web of Knowledge)

Appointments and Posts:

Professional Societies

President, IEEE Lasers and Electro-Optics Society (1995)

Elected Member, Board of Directors, Optical Society of America, 2000-2003

Vice President, International Commission for Optics, 1999-2002

Member, U.S. Advisory Committee for the International Commission for Optics (Jan 1, 2001 through Dec 31, 2002).

President, IEEE Lasers and Electro-Optics Society, 1995

Vice President, Finance and Administration, IEEE Lasers and Electro Optics Society, 1991-1992

Secretary-Treasurer, IEEE Lasers and Electro-Optics Society, 1990-1991

Chair, IEEE Lasers and Electro-Optics Society Technical Subcommittee on Optical Switching and Processing, 1990-1991

Elected Member of the Board of Governors, IEEE Lasers and Electro Optics Society, 1989-91.

Member of various other professional society committees

Scientific Journals

Editorial Board, "Semiconductor Science and Technology," 1987-1990.

Editorial Board, "Optical and Quantum Electronics," 1988-2017

Editorial Board, Applied Physics Reviews, 1991-1997

Other Committees and Councils

Member of the Defense Sciences Research Council (DARPA) 1991-2005

Scientific Publications: Over 280 publications in scientific journals

Patents: 76 U.S. Patents granted

Invited Talks: Over 250 invited talks presented at national and international meetings

Short Courses: 47 short courses on quantum well devices, optical switching, and optical interconnects given at major meetings and schools

Online Courses: Open online classes on *Quantum Mechanics for Scientists and Engineers* have been taught since 2013, attracting more than 50,000 student registrations

Books and Book Chapters: *Quantum Mechanics for Scientists and Engineers* (Cambridge, 2008); 15 book chapters

Conference Committees: Served on over 40 conference program committees, including General Chair, Program Chair, Co-Chair, and Subcommittee Chair duties

Other Interests: Clarinet and Saxophone playing in various orchestras and ensembles

Director of AT&T Bell Laboratories Jazz Big Band from 1985-89

Founding Member, Scottish Saxophone Quartet, 1976-81

REFEREED SCIENTIFIC PUBLICATIONS

1. D. A. B. Miller and S. D. Smith, "Variable Attenuator for Gaussian Laser Beams," Applied Optics **17**, 3804-3808 (1978).
2. D. A. B. Miller, M. H. Mozolowski, A. Miller and S. D. Smith, "Nonlinear Optical Effects in InSb with a cw CO Laser," Optics Commun. **27**, 133-136 (1978).
3. D. A. B. Miller, S. D. Smith and A. Johnston, "Optical Bistability and Signal Amplification in a Semiconductor Crystal. Application of New Low-Power Nonlinear Effects in InSb," Appl. Phys. Lett. **35**, 658-660 (1979).
4. D. A. B. Miller and S. D. Smith, "Two Beam Optical Signal Amplification and Bistability in InSb," Optics Commun. **31**, 101-104 (1979).
5. D. Weaire, B. S. Wherrett, D. A. B. Miller and S. D. Smith, "Effect of Low-Power Nonlinear Refraction on Laser Beam Propagation in InSb," Optics Lett. **4**, 331-333 (1979).
6. D. A. B. Miller, R. G. Harrison, A. Johnston, C. T. Seaton and S. D. Smith, "Degenerate Four-Wave Mixing in InSb at 5K," Optics Communications **32**, 478-480 (1980).
7. D. A. B. Miller, "Time Reversal of Optical Pulses by Four-Wave Mixing," Optics Lett. **5**, 300-302 (1980).
8. D. A. B. Miller, S. D. Smith and B. S. Wherrett, "The Microscopic Mechanism of Third-Order Optical Nonlinearity in InSb," Optics Commun. **35**, 221-226 (1980).
9. D. A. B. Miller, "Refractive Fabry-Perot Bistability with Linear Absorption: Theory of Operation and Cavity Optimization," IEEE Journal of Quantum Electronics **QE-17**, 306-311 (1981).
10. D. A. B. Miller, S. D. Smith and C. T. Seaton, "Optical Bistability in Semiconductors," IEEE Journal of Quantum Electronics **QE-17**, 312-317 (1981).
11. D. A. B. Miller, C. T. Seaton, M. E. Prise and S. D. Smith, "Bandgap Resonant Nonlinear Refraction in III-V Semiconductors," Phys. Rev. Lett. **47**, 197-200 (1981).
12. D. A. B. Miller, "Saturation of Band-Tail Optical Absorption in InSb," Proc. R. Soc. Lond. **A379**, 91-101 (1982).
13. A. Miller, D. A. B. Miller, and S. D. Smith "Dynamic Nonlinear Optical Processes in Semiconductors" Adv. Phys. **30**, 697-800 (1981).
14. D. A. B. Miller, D. S. Chemla, P. W. Smith, A. C. Gossard and W. T. Tsang, "Room-Temperature Saturation Characteristics of GaAs-GaAlAs Multiple Quantum Well Structures and of Bulk GaAs," Appl. Phys. **B28**, 96-96 (1982).
15. A. Miller and D. A. B. Miller, "Dynamic Nonlinear Optics in Semiconductors," Appl. Phys. **B28**, 92-93 (1982).
16. D. A. B. Miller, D. S. Chemla, D. J. Eilenberger, P. W. Smith, A. C. Gossard, and W. T. Tsang, "Large Room-Temperature Optical Nonlinearity in GaAs/$Ga_{1-x}Al_xAs$ Multiple Quantum Well Structures," Appl. Phys. Lett. **41**, 679-681, (1982).
17. D. A. B. Miller, D. S. Chemla, D. J. Eilenberger, P. W. Smith, A. C. Gossard, and W. Wiegmann, "Degenerate Four-Wave Mixing in Room-Temperature GaAs/GaAlAs Multiple Quantum Well Structures," Appl. Phys. Lett. **42**, 925-927 (1983).
18. D. A. B. Miller, "Dynamic Nonlinear Optics in Semiconductors: Physics and Applications," Laser Focus **19 No. 7**, 61-68 (1983).
19. D. S. Chemla, T. C. Damen, D. A. B. Miller, A. C. Gossard, and W. Wiegmann, "Electroabsorption by Stark Effect on Room-Temperature Excitons in GaAs/GaAlAs Multiple Quantum Well Structures," Appl. Phys. Lett. **42**, 864-866 (1983).

20. D. A. B. Miller, D. S. Chemla, P. W. Smith, A. C. Gossard, and W. Wiegmann, "Nonlinear Optics with a Diode Laser Light Source," Optics Lett. **8**, 477-479 (1983).

21. T. H. Wood, C. A. Burrus, D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard and W. Wiegmann, "High-Speed Optical Modulation with GaAs/GaAlAs Quantum Wells in a p-i-n Diode Structure," Appl. Phys. Lett. **44**, 16-18 (1984).

22. D. A. B. Miller, A. C. Gossard and W. Wiegmann "Optical Bistability due to Increasing Absorption," Optics Lett. **9**, 162-164 (1984).

23. D. S. Chemla, D. A. B. Miller, P. W. Smith, A. C. Gossard and W. Wiegmann, "Room Temperature Excitonic Nonlinear Absorption and Refraction in GaAs/AlGaAs Multiple Quantum Well Structures," IEEE J. Quantum Electron. **QE-20**, 265-275 (1984).

24. D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard, W. Wiegmann, T. H. Wood and C. A. Burrus, "Novel Hybrid Optically Bistable Switch: The Quantum Well Self Electro-Optic Effect Device" Appl. Phys. Lett. **45**, 13-15 (1984).

25. Y. Silberberg, P. W. Smith, D. J. Eilenberger, D. A. B. Miller, A. C. Gossard and W. Wiegmann, "Passive Modelocking of a Semiconductor Diode Laser," Optics Lett. **9**, 507-509 (1984).

26. D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard, W. Wiegmann, T. H. Wood and C. A. Burrus, "Bandedge Electro-absorption in Quantum Well Structures: The Quantum Confined Stark Effect," Phys. Rev. Lett. **53**, 2173-2177 (1984).

27. D. A. B. Miller, D. S. Chemla, T. C. Damen, T. H. Wood, C. A. Burrus, A. C. Gossard and W. Wiegmann, "Optical-level Shifter and Self-Linearized Optical Modulator Using a Quantum-Well Self-Electro-Optic Effect Device," Optics Lett. **9**, 567-569 (1984).

28. D. A. B. Miller, "Optical Bistability and Differential Gain Resulting from Absorption Increasing with Excitation," J. Opt. Soc. Am. **B1**, 857-864 (1984).

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31. J. S. Weiner, D. S. Chemla, D. A. B. Miller, T. H. Wood, D. Sivco and A. Y. Cho, "Room-temperature Excitons in 1.6μ band-gap GaInAs/AlInAs Quantum Wells" Appl. Phys. Lett. **46**, 619-621 (1985).

32. Y. Silberberg, P. W. Smith, D. A. B. Miller, B. Tell, A. C. Gossard and W. Wiegmann, "Fast Nonlinear Optical Response from Proton-Bombarded Multiple Quantum Well Structures," Appl. Phys. Lett. **46**, 701-703 (1985).

33. D. S. Chemla and D. A. B. Miller, "Room-Temperature Excitonic Nonlinear-Optical Effects in Semiconductor Quantum-Well Structures," J. Opt. Soc. Am. **B2**,1155-1173 (1985).

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35. D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard, W. Wiegmann, T. H. Wood and C. A. Burrus, "Electric Field Dependence of Optical Absorption near the Bandgap of Quantum Well Structures," Phys. Rev. **B32**, 1043-1060 (1985).

36. D. S. Chemla, D. A. B. Miller and P. W. Smith, "Nonlinear Optical Properties of GaAs/GaAlAs Multiple Quantum Well Material: Phenomena and Applications." Opt. Eng. **24**, 556-564 (1985).

37. T. H. Wood, C. A. Burrus, J. S. Weiner, D. S. Chemla, D. A. B. Miller, T. C. Damen, D. L. Sivco and A. Y. Cho, "Long Wavelength, Room Temperature Observation of Excitons and 2 Dimensional Electron-hole States in Multiple Quantum Wells (MQWs)," Inst. Phys. Conf. Serv. **No. 74; Chapter 9**, Proc. Int. Symp. on GaAs and Related Compounds, Biarritz, 1984, 687-688.

38. T. H. Wood, C. A. Burrus, R. S. Tucker, J. S. Weiner, D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard and W. Wiegmann, "100 ps Waveguide Multiple Quantum Well (MQW) Optical Modulator with 10:1 On/Off Ratio," Electronics Lett. **21**, 693-694 (1985).

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41. J. S. Weiner, D. A. B. Miller, D. S. Chemla, T. C. Damen, C. A. Burrus, T. H. Wood, A. C. Gossard and W. Wiegmann, "Strong Polarization-Sensitive Electroabsorption in GaAs/AlGaAs Quantum Well Waveguides," Appl. Phys. Lett. **47**, 1148-1150 (1985).

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43. H. A. Haus and D. A. B. Miller, "Attenuation of Cutoff Modes and Leaky Modes of Dielectric Slab Structures," IEEE J. Quantum Electron. **QE-22**, 310-324 (1986).

44. D. A. B. Miller, D. S. Chemla, T. C. Damen, T. H. Wood, C. A. Burrus, A. C. Gossard and W. Wiegmann, "The Quantum Well Self-Electrooptic Effect Device: Optoelectronic Bistability and Oscillation, and Self Linearized Modulation," IEEE J. Quantum Electron. **QE-21**, 1462-1476 (1985).

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46. W. H. Knox, D. A. B. Miller, T. C. Damen, D. S. Chemla, C. V. Shank and A. C. Gossard, "Subpicosecond Excitonic Electroabsorption in Room-Temperature Quantum Wells," Appl. Phys. Lett. **48**, 864-866 (1986).

47. D. A. B. Miller, D. S. Chemla and S. Schmitt-Rink, "Relation Between Electroabsorption in Bulk Semiconductors and in Quantum Wells: The Quantum-Confined Franz-Keldysh Effect," Phys. Rev. **B33**, 6976-6982 (1986).

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49. J. S. Weiner, D. B. Pearson, D. A. B. Miller, D. S. Chemla, D. Sivco and A. Y. Cho, "Nonlinear Spectroscopy of InGaAs/InAlAs Multiple Quantum Well Structures," Appl. Phys. Lett. **49**, 531-533 (1986).

50. D. A. B. Miller, J. S. Weiner and D. S. Chemla, "Electric Field Dependence of Linear Optical Properties in Quantum Well Structures: Waveguide Electroabsorption and Sum Rules," IEEE J. Quantum Electron. **QE-22**, 1816-1830 (1986).

51. D. A. B. Miller, J. E. Henry, A. C. Gossard and J. H. English, "Integrated Quantum Well Self-Electro-Optic Effect Device: 2x2 Array of Optically Bistable Switches," Appl. Phys. Lett. **49**, 821-823 (1986).

52. J. S. Weiner, A. C. Gossard, J. H. English, D. A. B. Miller, D. S. Chemla and C. A. Burrus, "Low Voltage Modulator and Self-Biased Self-Electro-Optic Effect Device," Electronics Lett. **23**, 75-77 (1987).

53. D. S. Chemla, I. Bar-Joseph, C. Klingshirn, D. A. B. Miller, J. M. Kuo, and T. Y. Chang, "Optical Reading of Field-Effect Transistors by Phase-Space Absorption Quenching in a Single InGaAs Quantum Well Conducting Channel," Appl. Phys. Lett. **50**, 585-587, (1987).

54. J. S. Weiner, D. A. B. Miller, and D. S. Chemla, "Quadratic Electro-Optic Effect due to the Quantum-Confined Stark Effect in Quantum Wells," Appl. Phys. Lett. **50**, 842-844, (1987).

55. I. Bar-Joseph, C. Klingshirn, D. A. B. Miller, D. S. Chemla, U. Koren, and B. I. Miller, "Quantum-Confined Stark Effect in InGaAs/InP Quantum Wells Grown by Organometallic Vapor Phase Epitaxy," Appl. Phys. Lett. **50**, 1010-1012, (1987).

56. M. N. Islam, R. L. Hillman, D. A. B. Miller, D. S. Chemla, A. C. Gossard, and J. H. English, "Electroabsorption in GaAs/AlGaAs Coupled Quantum Well Waveguides," Appl. Phys. Lett. **50**, 1098-1100, (1987).

57. G. D. Boyd, D. A. B. Miller, D. S. Chemla, S. L. McCall, A. C. Gossard, and J. H. English, "Multiple Quantum Well Reflection Modulator" Appl. Phys. Lett. **50**, 1119-1121, (1987).

58. D. A. B. Miller, "Quantum Wells for Optical Information Processing" Opt. Eng. **26**, 368-372, (1987).

59. S. Schmitt-Rink, D. A. B. Miller, and D. S. Chemla, "Theory of the Linear and Nonlinear Optical Properties of Semiconductor Microcrystallites," Phys. Rev. **B35**, 8113-8125, (1987).

60. D. A. B. Miller, "Electric Field Dependence of Optical Absorption in Quantum Well Structures: Physics and Applications," Proc. SPIE **792**, "Quantum Well and Superlattice Physics," 176-177, (1987).

61. D. S. Chemla, D. A. B. Miller, and S. Schmitt-Rink, "Generation of Ultrashort Electrical Pulses through Screening by Virtual Populations in Biased Quantum Wells" Phys. Rev. Lett. **59**, 1018-1021, (1987).

62. I. Bar-Joseph, J. M. Kuo, C. Klingshirn, G. Livescu, D. A. B. Miller, T. Y. Chang and D. S. Chemla, "Absorption Spectroscopy of the Continuous Transition from Low to High Electron Density in a Single Modulation Doped InGaAs Quantum Well" Phys. Rev. Lett. **59**, 1357-1360, (1987).

63. U. Koren, B. I. Miller, R. S. Tucker, G. Eisenstein, I. Bar-Joseph, D. A. B. Miller, and D. S. Chemla, "High-Frequency InGaAs/InP Multiple-Quantum-Well Buried-Mesa Electroabsorption Optical Modulator," Electronics Letters **23**, 621-622, (1987).

64. I. Bar-Joseph, G. Sucha, D. A. B. Miller, D. S. Chemla, B. I. Miller and U. Koren "Self-electrooptic effect device and modulation converter with InGaAs/InP multiple quantum wells," Appl. Phys. Lett., **52**, 51-53, (1988).

65. G. Livescu, D. A. B. Miller, J. E. Henry, A. C. Gossard, and J. H. English, "Spatial light modulator and optical dynamic memory using a 6 x 6 array of self-electro-optic-effect devices," Optics Letters, **13**, 297-299, (1988).

66. A. L. Lentine, H. S. Hinton, D. A. B. Miller, J. E. Henry, J. E. Cunningham, and L. M. F. Chirovsky, "Symmetric self-electro-optic effect device: Optical set-reset latch," Appl. Phys. Lett., **52**, 1419-1421, (1988).

67. D. A. B. Miller, D. S. Chemla, and S. Schmitt-Rink, "Electroabsorption of highly confined systems: Theory of the quantum-confined Franz-Keldysh effect in semiconductor quantum wires and dots," Appl. Phys. Lett., **52**, 2154-2156, (1988).

68. C. R. Giles, T. Li, T. H. Wood, C. A. Burrus, and D. A. B. Miller, "All-optical regenerator," Electronics Lett., **4**, 848-850, (1988).

69. G. Livescu, D. A. B. Miller, and D. S. Chemla, "Electron-hole correlation singularity in optical spectra of modulation doped GaAs-AlGaAs quantum wells," Superlattices and Microstructures, **4**, 359-361, (1988).

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71. G. Livescu, D. A. B. Miller, D. S. Chemla, M. Ramaswamy, T. Y. Chang, N. Sauer, A. C. Gossard, and J. H. English, "Free carrier and many-body effects in absorption spectra of modulation-doped quantum wells," IEEE J. Quantum Electron., **24**, 1677-1689, (1988).

72. C. Weber, C. Klingshirn, D. S. Chemla, D. A. B. Miller, and J. E. Cunningham, "Gain measurement and band-gap renormalization in GaAs/Al_X Ga_{1-X}As multiple-quantum-well structures, Phys. Rev. B, **38**, 12748-12751, (1988).

73. D. A. B. Miller, "Optics for low-energy communication inside digital processors: quantum detectors, sources, and modulators as efficient impedance converters," Optics Letters, **14**, 146-148, (1989).

74. D. A. B. Miller, "Optical bistability in self-electro-optic effect devices with asymmetric quantum wells," Appl. Phys. Lett., **54**, 202-204, (1988).

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81. I. Bar-Joseph, K. W. Goossen, J. M. Kuo, R. F. Kopf, D. A. B. Miller, and D. S. Chemla, "Room-temperature electroabsorption and switching in a GaAs/AlGaAs superlattice," Appl. Phys. Lett., **55**, 340 342, (1989).

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84. A. L. Lentine, H. S. Hinton, D. A. B. Miller, J. E. Henry, J. E. Cunningham, and L. M. F. Chirovsky, "Symmetric Self-Electrooptic Effect Device: Optical Set-Reset Latch, Differential Logic Gate, and Differential Modulator/Detector," IEEE J. of Quantum Electronics, **25**, 1928-1936, (1989).

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86. D. Y. Oberli, J. Shah, T. C. Damen, C. W. Tu, T. Y. Chang, D. A. B. Miller, J. E. Henry, R. F. Kopf, N. Sauer, and A. E. Digiovanni, "Direct measurement of resonant and nonresonant tunneling times in asymmetric coupled quantum wells" Phys. Rev. B., **40**, 3028-3031, (1989).

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10. D. A. B. Miller, "The Fundamental Limit to Optical Components," Optics and Photonics News, Optics in 2007 Special Issue, December 2007, p. 27
11. D. A. B. Miller, "Are optical transistors the next logical step?" Nature Photonics **4**, 3 - 5 (2010) doi:10.1038/nphoton.2009.240
12. L. Tang and D. A. B. Miller, "Metallic nanodevices for chip-scale optical interconnects," J. Nanophotonics **3**, 030302 (2009)
13. D. A. B. Miller, "Designing Linear Optical Components," Optics in 2013 Special Issue, Optics and Photonics News, December 2013, p. 38. http://www.opnmagazine-digital.com/opn/december_2013#pg40
14. D. A. B. Miller, "Sorting out light," Science **347**, 1423-1424 (2015) DOI: 10.1126/science.aaa6801
15. J. M. Kahn and D. A. B. Miller, "Communications expands its space," Nature Photonics 11, 5 – 8 (2017) doi:10.1038/nphoton.2016.256
16. D. A. B. Miller, "Meshing optics with applications," Nature Photonics 11, 403-404 (2017) doi:10.1038/nphoton.2017.104
17. F. Morichetti, A. Annoni, A. Melloni, and D. A.B. Miller, "Unscrambling Light Automatically on a Photonic Chip," Optics and Photonics News, December 2017, p. 34. https://www.osa-opn.org/home/articles/volume_28/december_2017/extras/unscrambling_light_automatically_on_a_photonic_chi/
18. D. A. B. Miller, "An introduction to functional analysis for science and engineering," arXiv:1904.02539

BOOKS

1. P. H. Chang, M. Geis, B. Meyerson, D. A. B. Miller, and R. Ramesh, (eds.), "Proceedings of the Second International Conference on Electronic Materials" (Materials Research Society, Pittsburgh, 1990).

2 D. A. B. Miller, *Quantum Mechanics for Scientists and Engineers* (Cambridge University Press, 2008)

BOOK CHAPTERS

1. D. S. Chemla, D. A. B. Miller and P. W. Smith, "Nonlinear Optical Properties of Multiple Quantum Well Structures for Optical Signal Processing," chapter in "Semiconductors and Semimetals," ed. R. K. Willardson and A. C. Beer, vol. 24, ed. R. Dingle (Academic, San Diego, 1987).

2. D. S. Chemla and D. A. B. Miller, "Physics and Applications of Excitons Confined in Semiconductor Quantum Wells" chapter in "Heterojunctions: Band Discontinuities and Device Applications," ed. G. Margaritondo and F. Capasso, (North-Holland, Amsterdam, 1987) 595-624.

3. D. S. Chemla, S. Schmitt-Rink and D. A. B. Miller, "Nonlinear Optical Properties Semiconductor Quantum Wells," chapter in "Nonlinear Optical Properties of Semiconductors," ed. H. Haug, (Academic Press, San Diego, 1988) 83-120.

4. D. A. B. Miller, D. S. Chemla and S. Schmitt-Rink, "Electric Field Dependence of Optical Properties of Semiconductor Quantum Wells: Physics and Applications," chapter in "Nonlinear Optical Properties of Semiconductors," ed. H. Haug, (Academic Press, San Diego, 1988) 325-359.

5. D. A. B. Miller, "Integrated Quantum Well Switching Devices," in "Optical Switching in Low Dimensional Systems," ed. H. Haug and L. Banyai, (Plenum Press, New York and London, 1988) 1-8.

6. D. A. B. Miller, "Optical Switching Devices: Some Basic Concepts," in "Optical Computing, ed. B. S. Wherrett and F. A. P. Tooley, Proceedings of the 34th Scottish Universities Summer School in Physics, Edinburgh, August 1988 (Scottish Universities Summer School in Physics, Edinburgh, 1989; Adam Hilger, Bristol, 1989) pp 55-70.

7. D. A. B. Miller, "Quantum Well Electroabsorptive Devices: Physics and Applications," in "Optical Computing, ed. B. S. Wherrett and F. A. P. Tooley, Proceedings of the 34th Scottish Universities Summer School in Physics, Edinburgh, August 1988 (Scottish Universities Summer School in Physics, Edinburgh, 1989; Adam Hilger, Bristol, 1989) pp 71-94.

8. D. A. B. Miller, "Device requirements for digital optical processing" in "Digital Optical Computing," ed. R. A. Athale, SPIE Critical Reviews of Optical Science and Technology, **CR35**,68-76, (1990).

9. G. Livescu, A. M. Fox, D. A. B. Miller, "Optical Detection of Resonant Tunneling: Measurement of Tunneling Times and Resonant Fields" in *Resonant Tunneling in Semiconductors*, ed. L. L. Chang et al. (Plenum Press, New York, 1991), 331-339.

10. D. A. B. Miller "Quantum Well Optical Switching Devices" in *Confined Electronics and Photons* , Edited by E. Burstein and C. Weisbuch, (Plenum Press, N.Y. 1995), 675-701, and in Nonlinear Optical Materials and Devices for Applications in Information Technology, Edited by A. Miller, K. R. Welford and B. Daino (Kluwer, Dordrecht, 1995), 255-284.

11. David A. B. Miller,"Dense Optical Interconnections for Silicon Electronics," in Trends in Optics: Research, Developments, and Applications, Vol. 3, 207-222, Ed: A. Consortini (Int'l Commission for Optics, Academic Press, 1996)..

12. D. A. B. Miller, "Dense Two-Dimensional Integration of Optoelectronics and Electronics for Interconnections," Invited Talk, Critical Reviews Conference of SPIE's Symp. on Photonics West, Optoelectronics '98, San Jose, CA (January 24-30, 1998). Published in Heterogeneous Integration: Systems on a Chip, Eds: Anis Husain and Mahmoud Fallahi, SPIE Critical Reviews of Optical Engineering,,

Vol. CR70, 80-109 (SPIE, Bellingham, 1998). Republished by SPIE in Proc. SPIE 10292, Heterogeneous Integration: Systems on a Chip, 1029206 (June 16, 2017); doi:10.1117/12.300615

13. D. A. B. Miller, "Optics for Digital Information Processing," in *Semiconductor Quantum Optoelectronics*, Eds. A. Miller, M. Ebrahimzadeh, and D. M. Finlayson, Proceedings of the Fiftieth Scottish Universities Summer School in Physics, St. Andrews (June 1998). (Publishers: The Scottish Universities Summer School in Physics, SUSSP Publications, and Institute of Physics Publishing, 1999), pp 433-461

14. D. A. B. Miller, "Silicon Photonics – Optics to the Chip at Last?" in *Future Trends in Microelectronics*, eds. S. Luryi, J. Xu, and A. Zaslavsky (Wiley, New Jersey, 2007) pp. 328 - 334

15. D. A. B. Miller, "Limits to Optical Components," in *Advances in Information Optics and Photonics*, eds. A. T. Friberg and R. Dändliker, International Commission for Optics Vol. VI (SPIE, Bellingham, 2008) , Chapter 8, pp. 153-170

CONFERENCE INVITED TALKS - PRESENTER

1. ”Optical Bistability and Multistability in the Semiconductor InSb,” with S. D. Smith and C. T. Seaton Optical Bistability Conference, Asheville, USA, 1980.
2. "Phase Conjugation" Topical Meeting on Phase Conjugation, London, UK 1980.
3. "Optical Bistability" Fifth General Conference of the European Physical Society, Istanbul, Turkey, 1981.
4. "Optical Bistability in Semiconductors" Fifth National Quantum Electronics Conference, Hull, UK, 1981.
5. "Bistable Optical Devices: Physical Processes and Practical Applications" Conference on Lasers and Electrooptics, Phoenix, Arizona, 1982.
6. "Resonant Room-Temperature Nonlinear Optical Processes in GaAs-GaAlAs Multiple Quantum Well Structures" with D. S. Chemla, P. W. Smith and A. C. Gossard Conference on Laser and Electrooptics, Baltimore, Maryland, 1983.
7. "Room Temperature Optical Nonlinearities in GaAs Multiple Quantum Wells" with D. S. Chemla, A. C. Gossard and P. W. Smith, Topical Meeting on Optical Bistability, Rochester, New York, 1983.
8. "Multiple Quantum Well Nonlinearities and Applications" Royal Society Meeting for Discussion on "Optical Bistability, Dynamical Nonlinearity and Photonic Logic,” London, UK, 1983.
9. "Optical Bistability" Gordon Conference on "Holography and Optical Information Processing,” Plymouth, New Hampshire, 1984.
10. "Multiple Quantum Well Nonlinearities for Optical Processing Applications" Conference on Lasers and Electro-Optics, Anaheim, California, 1984.
11. "Band Edge Electroabsorption in GaAs/AlGaAs Multiple Quantum Well Structures for Fields Parallel and Perpendicular to the Layers" with D. S. Chemla, T. C. Damen, A. C. Gossard, W. Wiegmann, T. H. Wood and C. A. Burrus, International Conference on Superlattices, Microstructures and Microdevices, Champaign, Illinois, August 1984.
12. "Optical Logic and the Self Electro-Optic Effect Device (SEED)" GLOBECOM '84, IEEE Global Telecommunications Conference, Atlanta, Georgia, November 1984.
13. "Quantum-Confined Stark Effect and Applications to Self-Electrooptic Effect Devices" Conference on Lasers and Electrooptics, Baltimore, Maryland, May 1985.
14. "Room Temperature Excitons-Physics and Applications" Gordon Conference on Nonlinear Optics and Lasers, Wolfeboro, New Hampshire, July-August 1985.
15. "Novel Optical Modulators and Bistable Devices Using the Self Electro-optic Effect in Semiconductor Quantum Wells" Second International Conference on Modulated Semiconductor Structures and Sixth Conference o the Electronic Properties of Two Dimensional Systems (plenary joint session), Kyoto, Japan, September 1985.
16. "Physics and Applications of Room-Temperature Excitonic Electroabsorption in Quantum Wells" Annual Meeting of the Optical Society of America, Washington, D. C., October 1985.
17. "Physics and Applications of Electroabsorption in Quantum Wells" Symposium on Heterostructures and New III-V Devices, American Vacuum Society, Princeton, New Jersey, March 1986.
18. "Physics and Applications of Electroabsorption in Quantum Wells" Symposium on "Digital Optics - The Logical Choice for the Future,” The Rank Prize Funds, Malvern, UK, April 1986.
19. "Recent Developments in Quantum Well Electroabsorption" NSF Workshop on Optical Nonlinearities, Fast Phenomena and Signal Processing, Tucson, Arizona, May 1986.
20. "Physics and Applications of Quantum Wells in Optics" 30th International Symposium on Electron, Ion and Photon Beams (plenary paper), Boston, Massachusetts, May 1986.

21. "Electro-optic Effects in Multiple Quantum Well Structures" Ettore Majorana Centre for Scientific Culture, International School of Materials Science and Technology, 11th Course: Electro-optic and Photorefractive Materials, Erice, Sicily, July 1986.
22. "Optical Nonlinearities in Low-Dimensional Structures" Nato Advanced Research Workshop on Optical Properties of Narrow Gap Low Dimensional Structures, St. Andrews, UK, July 1986.
23. "Quantum Well Self-Electrooptic Effect Devices" Optical Society of America Annual Meeting, Seattle, Washington, October 1986.
24. "Ultrathin Semiconductors" 24th Annual Briefing, "New Horizons in Science," Council for the Advancement of Science Writing, Inc., College Station, Texas, November 1986.
25. "Optical Nonlinearities in Multiple Quantum Well Structures" Institute of Physics Solid State Physics Conference, Imperial College, London, December 1986.
26. "Electric Field Dependence of Optical Absorption in Quantum Wells" American Physical Society March Meeting, New York, March 1987.
27. "Photonic Switching Devices Based on Multiple Quantum Well Structures" Optical Society of America Topical Meeting on Photonic Switching, Lake Tahoe, Nevada, March 1987.
28. "Electroabsorption in Quantum Wells" SPIE Conference on Advances in Semiconductors and Semiconductor Structures, Panama City, Florida, March 1987.
29. "Non-Linear Optics and Electro-Optics of Quantum Wells" New York State Section, American Physical Society, Spring Meeting, "Thin Films and Microelectronics," Briarcliff Manor, New York, April 1987.
30. "Excitonic Electroabsorption in Quantum Wells and Bulk Semiconductors" XV International Quantum Electronics Conference (IQEC'87), Baltimore, Maryland, April 1987.
31. "Novel Quantum Well Optical Devices" Third International Conference on Superlattices, Microstructures and Microdevices, Chicago, August 1987.
32. "Novel Quantum Well Optoelectronic Devices" Eighth U. K. National Quantum Electronics Conference, St. Andrews, U. K. September 1987.
33. "Quantum Well Self Electro-optic Effect Devices" SPIE O-E LASE '88, Los Angeles, January 1988.
34. "Quantum Well Optical Devices" OPTICS-ECOOSA '88, Birmingham, U.K., March 1988.
35. "Self Electro-optic Effect Devices for Optical Processing Applications" XVI International Quantum Electronics Conference (IQEC '88), Tokyo, Japan, July 1988.
36. "Quantum Well and Microstructure Optical Devices" 15th International Symposium on Gallium Arsenide and Related Compounds, Atlanta, September 1988.
37. "Integrated Quantum Well Switching Devices" NATO Workshop on Optical Switching in Low-Dimensional Systems, Marbella, Spain, October 1988.
38. "Physics and Applications of Quantum Wells in Optics" Integrated and Guided Wave Optics, Houston, Texas, February 1989.
39. "Quantum Well Devices for Optical Computing and Switching" Topical Meetings on Optical Computing and on Photonic Switching, Salt Lake City, Utah, March 1989.
40. "Progress in Physics of Quantum Well Optical Modulators and Switches" Conference on Lasers and Electro-Optics (CLEO '89) and Conference on Quantum Electronics and Laser Science (QELS '89), Baltimore, Maryland, April 1989.
41. "Devices for Digital Optical Processing" Annual Meeting of the IEEE Lasers and Electro-optics Society (LEOS '89), Orlando, Florida, October 1989.
42. "Device Requirements for Digital Optical Processing" OE-LASE '90, Digital Optical Computing (Critical Reviews), Los Angeles, January 1990.

43. "SEED Devices and the Physics of Optical Communications" Workshop on Interconnections within High Speed Digital Systems, Santa Fe, New Mexico, May 1990.
44. "Quantum Well Devices for Digital Optics" Nonlinear Optics: Materials, Phenomena and Devices, Kauai, Hawaii, July 1990.
45. "Physics of Digital Optical Devices" DARPA Workshop on Optical Computing, La Jolla, California, July 1990.
46. "Quantum Well Self-Electro-optic Effect Devices for Information Processing" Topical Meeting on Spatial Light Modulators, Lake Tahoe, Nevada, September 1990.
47. "Quantum Wells for Optical Logic and Interconnection" SPIE OE/Boston '90, Symposium on Advances in Interconnects and Packaging, Boston, November 1990.
48. "Materials for Optical Switching and Processing" American Physical Society March Meeting, Cincinnati, March 1991.
49. "Quantum Well Devices for Digital Optical Processing" Third Annual Photonics Overview, State University of New York, Binghamton, New York, April 1991.
50. "The Evolution from SEEDs to Smart Pixels," Annual Meeting of the Optical Society of America (OSA '91), San Jose, November 1, 1991.
51. "Quantum Well Optical Switching Devices and Smart Pixels," 22nd Winter Colloquium on Quantum Electronics, Snowbird, Utah, January 1992.
52. "Quantum Well Self-Electrooptic Effect Device Arrays and Smart Pixels: Devices and System Requirements," MRS Spring Meeting, April 1992, San Francisco, California.
53. "Applications and Technology of Quantum Well Self-Electrooptic-Effect Device Arrays," OSA Topical Meeting on Spatial Light Modulators, Palm Springs, March 1993.
54. "The Future of Optics in Information Processing," Walter Schottky Lecture, Aachen, June 1993.
55. "Ultrafast Optoelectronic Phenomena with Quantum Wells" Workshop on "Novel Coherent Solid State Effects," Aachen, June 1993.
56. "Optical Information Processing Using Quantum Well Optoelectronic Devices," International Conference on Optical Information Processing, St. Petersburg, Russia, August 1993.
57. "Quantum Well Devices for Parallel Optical Processing," 16th Congress of the International Commission for Optics, Budapest, Hungary, August 1993.
58. "Can We Use the Benefits of Photons in Digital Information Processing?" ARPA DSRC Workshop on Fundamental Limits in Optoelectronic Devices, La Jolla, July 1994.
59. "Quantum well smart pixels for optical switching and processing," International Conference on Optical Computing, Edinburgh, August 1994.
60. "Ultrafast Science, Technology, and Applications," International Workshop on Femtosecond Technology, Tsukuba, Japan, February 1995.
61. "Future Directions in "Smart" Quantum Well Spatial Light Modulators and Processing Arrays," OSA Topical Meetings on Spatial Light Modulators and Optical Computing, Salt Lake City, Utah, March 1995.
62. "Modulation and Switching Devices," American Physical Society March Meeting, San Jose, March 1995.
63. "Hybrid quantum well diodes on silicon: an emerging technology for dense optical interconnections," Workshop on the Impact of Photonics on Distributed Computing and Multiprocessor Computing, Stanford, March 1995.
64. "Optics in Computing," International Workshop on "Future Information Processing Technologies," Porvoo, Finland, September 1995.

65. "Hybrid SEED - Massively Parallel Optical Interconnections for Silicon ICs," Second International Conference on Massively Parallel Processing using Optical Interconnections (MPPOI'96), San Antonio, Texas, October 1995.

66. "Advanced Optoelectronic Technology - How to Handle Bandwidth," 40th International Conference on Electron, Ion and Photon Beams and Nanofabrication, Atlanta, Georgia, May 1996 (Plenary talk).

67. "Quantum Well Optoelectronics - Physics to Applications," IQEC '96, Sydney, Australia, July 1996 (Plenary talk).

68. "Physical and Systems Motivations for Smart Pixels," IEEE LEOS Topical Meeting on Smart Pixels, Keystone, Colorado, August 1996**.**

69. "Advanced Optoelectronics: Physics Enabling Applications," Invited talk at the 50th Anniversary Celebration of Applied and Engineering Physics entitled Challenges and Opportunities for the 21st Century, Cornell University, Ithaca, NY (September 21, 1997).

70. "Photonics in Interconnects for Digital Information Processing," Invited talk at the Interuniversity Symposium entitled Photonics in the Information Society, Ghent, Belgium (February 28, 1997).

71. "Optical Bistability and Optoelectronic Computing" Invited talk at the Royal Society Symposium, Edinburgh (March 27, 1997).

72. "Quantum Well Optoelectronics: Physics to Applications," Invited talk at the Symposium on Nanostructured Materials: Clusters, Composites, and Thin Films," 213th American Chemical Society Meeting, San Francisco (April 13-17, 1997).

73. "How Large a System Can We Build Without Using Optics?" Invited talk at the Eighth Annual Workshop on Interconnections Within High-Speed Digital Systems," IEEE, Santa Fe, New Mexico (May 11-14. 1997).

74. "Highly Parallel Optical Interconnection to Silicon Integrated Systems," Invited talk at the Second NASA Device Modeling Workshop, Moffett Field, CA (August 7-8, 1997).

75. "Optical Interconnect Technologies for Si ULSI," Presented at the IEEE International Electron Devices Meeting, Washington, D. C. (December 7-10, 1997)

76. "Optics in Computing", Plenary Talk, International TopicalWorkshop on Contemporary Photonic Technologies (CPT'98), Tokyo, Japan (January 12-14, 1998)

77. "Dense Two-Dimensional Integration of Optoelectronics and Electronics for Interconnections," presented at the Critical Reviews Conference of SPIE's Symp. on Photonics West, Optoelectronics '98, San Jose, CA (January 24-30, 1998). Published in Heterogeneous Integration: Systems on a Chip: A Critical Review, Eds: M. Fallahi and A. Husain, Vol. CR70, 80-109 (SPIE, 1998).

78. "Optics - an Alternative Approach to Interconnection?", MRS Spring Meeting, San Francisco (April 1998).

79. "Optics for Interconnection at the Chip Level," DARPA/OIDA Initiative in Information Technology Workshop, Santa Fe (May 1999).

80. "Optical Interconnects," SRC/MARCO/SEMATECH Workshop in Interconnects for Systems on a Chip – Projected Performance and Technology Requirements, Stanford University (May 1999).

81. "Optical Interconnects to Silicon Integrated Circuits," (Plenary talk) U.K. Quantum Electronics Conference, Manchester, UK (September 1999)

82. "Optical Interconnects to Silicon Integrated Circuits," Third MEL-ARI OPTO Workshop, Athens, Greece (October 1999).

83. "Motivations for Optical Interconnects to Silicon Chips," Optics in Computing, Quebec City, Canada (June 2000)

84. "Optical Interconnects to Silicon Integrated Circuits," SPIE Annual Meeting, San Diego, California (August 2000)

85. "Ultrafast Technology for Optical Interconnects," OSA Annual Meeting, Providence, Rhode Island, (October 2000)

86. "Optical Interconnects to Silicon CMOS," Device Research Conference, South Bend, Indiana (June 2001)

87. "Photonic Analog to Digital Converter Using Ultrafast Photoconductors," IEEE LEOS Annual Meeting, La Jolla, California, November 11-15, 2001, Paper TuO2, pp251-252

88. "Ultrafast Optoelectronic Switching for Telecommunications," 13th International Conference on Ultrafast Phenomena, May 12-17, 2002, Vancouver, Canada, Paper TuB1, p154 (OSA, Washington, 2002)

89. "Optical Interconnects to Silicon CMOS," 2002 International Interconnect Technology Conference, San Francisco, June 3-5, 2002 (IEEE Electron Devices Society), Paper 4.5, pp95-96

90. "Clock Distribution Based On Free Space Optical Interconnects," Optical Interconnect Workshop, Semiconduductor Research Corporation, Seattle, Washington, July 12, 2002

91. "Dense Integration of Optics, Optoelectronics and Electronics," PhoPack 2002, Stanford, California, July 14-16, 2002

92. "Optical Interconnects," AVS 4th International Conference on Microelectronics and Interfaces, Santa Clara, California, March 3 - 6, 2003

93. "Integrated Photonics Inside the Computer?" Integrated Photonics Research Conference, Washington DC, June 16 – 19, 2003

94. "Optics Inside Electronic Machines?" (Plenary Talk) Optics in Computing Conference, Engelberg, Switzerland, April 19 – 21, 2004

95. "Optical Interconnects and Clock Distribution for CMOS Systems," IEEE LEOS Workshop on Interconnections within High Speed Digital Systems," Santa Fe, New Mexico, May 2 – 5, 2004

96. "Optics at the Chip Scale," 2004 FiO/LS Meeting (OSA Annual Meeting) Rochester, New York, October 10-14, 2004 (Paper FThM1)

97. "Directions in Photonics," Plenary talk, 2004 DARPA MTO Photonics Symposium, San Francisco, CA, Nov. 30, 2004

98. "New Directions in Optics for Networks," Keynote talk, NSF Workshop on "The Future of Optical Communications: Understanding the Choices," Santa Barbara, CA, Feb. 2, 2005.

99. D. A. B. Miller, A. Bhatnagar, S. Palermo, A. Emami-Neyestanak, and M. A. Horowitz, "Opportunities for Optics in Integrated Circuits Applications," ISSCC 2005, Talk 4.6, San Francisco, Feb. 7, 2005

100. "Directions in Photonics – Joining Electronics and Optics?," Scottish Universities Physics Alliance Inaugural Meeting, Heriot-Watt University, Edinburgh, UK, April 2005

101. "Limits to Photonics for Information," OSA Topical Meeting on Information Photonics, Charlotte, North Carolina, June, 2005

102. David A. B. Miller, Martina Gerken, Yang Jiao, and Shanhui Fan, "Optimized Non-Periodic Photonic Nanostructures as Wavelength and Mode Splitters," International Quantum Electronics Conference, Tokyo, Japan, July 1005

103. "Opportunities for Optics to Silicon Chips," 18th Annual Meeting of the IEEE Lasers and Electro-Optics Society, LEOS 2005, 23 – 27 October, 2005, Sydney, Australia

104. "Novel Optics and Optoelectronics for Future Electronic Chips," DARPA/MTO Electronics Symposium, San Francisco, CA, Jan. 11 – 13 2006

105. "Integration of Nanophotonics with CMOS," MITRE Nanophotonics Workshop, 14 – 15 Feb. 2006, McLean VA

106. "Optical Interconnection to Silicon Electronics," Communications Technology Roadmap 2006 Industry Consortium Spring Meeting, MIT, Cambridge, Massachusetts, May 19, 2006

107. "Silicon Photonics – Optics to the Chip at Last?" Future Trends in Microelectronics, 2006, Heraklion, Crete, June 2006

108. “Nanostructured Optics and Optoelectronics for Dense Optical Interconnects,” Invited talk at Cornell Nanophotonics Symposium “Nanophotonics – from Discovery to Systems”, Cornell University, July 7, 2006

109. “Nanostructured optics and optoelectronics for dense interconnects,” (Plenary Talk) IEEE Nano 2006, Cincinnati, Ohio, July 18, 2006

110. “Silicon Photonics – Optics to the Chip at Last?” Asia-Pacific Optical Communications Conference, Gwangju, Korea, 3 – 7 Sept. 2006

111. “Ge/SiGe and Nanophotonic Structures for Optics to the Chip, NSF Workshop on “Very Large Scale Photonic Integration,” Arlington, Virginia, March 19, 2007

112. “Recent Advances in Germanium Quantum Well Structures -- A New Modulation Mechanism for Silicon-Compatible Optics,” Tutorial Invited Talk, Optical Fibers Conference, Anaheim California, March 27, 2007.

113. “Nanostructured Optics and Optoelectronics for Dense Optical Interconnects,” Conference on Lasers and Electro-Optics, Baltimore, Maryland, May 2007

114. “Directions in Photonics,” 10th Annual Boston University Photonics Center Symposium, Boston, June 8, 2007

115. “Rationale and Devices for Optical Interconnects to Chips,” and “Nanoscience and Nanotechnology for Advanced Interconnect Devices,” Erasmus Mundus Photonics Masters Summer School, St. Andrews, UK, July 2007

116. “Germanium quantum well devices on silicon,” OSA Topical Meeting on Integrated Photonics and Nanophotonics Research and Applications, Salt Lake City, July 10, 2007, Paper ITuE1

117. “Device for optical interconnects to chips,” (Invited tutorial) OSA Annual Meeting “Frontiers in Optics” 2007, San Jose, CA, Sept. 2007, Paper FThH1

118. “Joining optics and electronics for information processing and communication,” IEEE LEOS Annual Meeting, Lake Buena Vista, Florida, October 2007, Paper WP2

119. “Moving from industry to academia – out of the frying pan into the fire?” IEEE LEOS Annual Meeting, Lake Buena Vista, Florida, October 2007

120. “Integrated transform-domain spectrometers and tunable sensors,” MRS Fall Meeting, Boston, November 2007, Paper N2.1

121. “Germanium on Silicon Modulators and Nanometallic-Enhanced Detectors for Optical Interconnects,” MRS Fall Meeting, Boston, November 2007, Paper M2.1

122. “Optically-Assisted Analog-to-Digital Conversion,” International Solid State Circuits Conference, San Francisco, February 2008

123. “Joining Electrons and Photons – Optics to the Silicon Chip?” Photonics – A Celebration, University of St. Andrews, April 2008

124. “Photonics and Information Processing,” Solvay Workshop on “Bits, Quanta and Complex Systems,” Brussels, May 2008

125. “Challenges and Opportunities for Dense Optical Interconnect Devices,” (Plenary talk) 19th Annual Workshop on Interconnections Within High Speed Digital Systems, Santa Fe, New Mexico, May 2008

126. “Germanium on Silicon Modulators and Nanometallic-Enhanced Detectors for Optical Interconnects,” International Interconnect Technology Conference, Burlinghame, CA, June 2008 (Paper 12.1)

127. “Device requirements for optical interconnects and logic,” Workshop on Optical and Electronic Signal Processing, OECC 08, Sydney, Australia, July 2008

128. “Devices for Optical Interconnects to Chips,” (Invited Tutorial) OECC 08, Sydney, Australia, July 2008

129. “Fundamental Limits to Optical Components,” ICO-21 2008 Congress, Sydney Australia, July 2008

130. “Fundamental Limits in Linear One-Dimensional Slow Light Structures,” OSA Conference on Slow and Fast Light, Boston, July 2007

131. “Optical Interconnects,” Interconnection Networks Workshop 2008 (Institute for Advanced Architectures and Algorithms), San Jose, 2008

132. “Novel Devices for Optical Interconnects to Chips,” LEOS 2008, 21st Annual Lasers and Electro Optics Society Meeting, Newport Beach, CA, November 2008, Paper MN1

133. “Ge Quantum Well Modulators on Silicon,” Symposium E15 – 23, SiGe, Ge, and Related Compounds: Materials, Processing, and DevicesPacific Rim Meeting on Electrochemical and Solid-State Science (PRIME), Electrochemical Society (ECS), Honolulu, HI, October 2008, Abstract 2469

134. “Limits to Dispersive and Slow Light Devices,” Progress in Quantum Electronics, Snowbird UT, January 2009

135. “Germanium quantum wells and nanometallic enhanced detection for interconnects,” CLEO’09, Baltimore, MD, June 2009

136. “Compact and Low-Energy Devices for Optical Interconnects to Chips,” International Nano-Optoelectronics Workshop (iNOW) 2009, Stockholm and Berlin, August, 2009

137. “Quantum Mechanics for Engineers,” IEEE Photonics Society Annual Meeting, Antalya, Turkey, October 2009

138. “Device Requirements for Dense Interconnects,” IEEE Photonics Society Annual Meeting, Antalya, Turkey, October 2009

139. “Fundamental Limit to Optical Devices,” OSA Topical Meeting on Computational Optical Sensing and Imaging,, San Jose, CA, October 2009, Paper CTuC1

140. “Nanometallic antennas, waveguides, and enhanced photodetection,” DSRC Workshop on Nanoantennas, Arlington, October 2009

141. “Devices and Device Requirements for Optical Interconnects to Silicon,” IEICE Si Photonics Symposium, University of Tokyo, Tokyo, Japan, November 18. 2009

142. “Limits and Opportunities for Optical Links and Short Distances,” Multi Terabit Optical Link Workshop, Corning, New York, December 15, 2009

143. “Photonics for Interconnects Inside Machines,” IEEE Photonics Society Winter Topical Meeting on Photonics for Routing and Interconnects, Majorca, Spain, January 13, 2010

144. “Optical Interconnects to Chips,” Danish-Californian Workshop on Photonic Technologies for Access and Interconnects, Stanford University, January 29, 2010

145. “A Career in Science, Technology and Innovation,” Open Lecture, Heriot-Watt University Research Staff Symposium, Edinburgh, UK, February 9, 2010

146. “Physical Requirements and Opportunities for Dense Optical Interconnects to Chips,” APS March Meeting, , Portland, Oregon, March 15, 2010, Paper A5 1

147. “Optical Interconnects,” (invited tutorial) Optical Fiber Communication Conference, San Diego, CA, March 2010

148. “Limits to Cloaking and Optical Devices,” SIAM Conference on Mathematical Aspects of Materials Science, Symposium on Meta Materials and Cloaking, Philadelphia, May 2010, Session MS36

149. “Device Requirements for Dense Interconnects,” IEEE Optical Networks and Devices for Data Centers Topical Meeting, Playa del Carmen, Mexico, July 20, 2010

150. “Device Requirements for Optical Interconnects to CMOS Silicon Chips,” OSA Topical Meeting on Photonics in Switching 2010, Monterey, California, July 26, 2010

151. “Fundamental Limits to Optical Components,” OSA Frontiers in Optics 2010, Rochester NY, October 28, 2010

152. “Devices for Optical Interconnects to Chips,” Next-Generation Chip-Level Optical Interconnect and Group IV Integrated Photonics Forum, National Tsing Hua University, Taiwan, December 9, 2010

153. “Requirements and Limits for Optical Interconnect Devices,” Nanometa 2011, Seefeld, Austria, Jan. 3, 2011

154 “Rationale and devices for optical interconnects to chips,” Workshop on Silicon Photonics and Applications, Peking University, Beijing, China, July 30, 2011

155. “Nanoscience and nanotechnology for advanced interconnect devices,” Workshop on Silicon Photonics and Applications, Peking University, Beijing, China, July 30, 2011

156. “Rationale and devices for optical interconnects to chips,” CIOMP – OSA International Summer Session on Lasers and Their Applications, Changchun, China, July 31 – August 5, 2011

157. “Nanoscience and nanotechnology for advanced interconnect devices,” CIOMP – OSA International Summer Session on Lasers and Their Applications, Changchun, China, July 31 – August 5, 2011

158. “Optical Interconnects to Chips,” MIT Microphotonics Review, Cambridge, MA, October 12, 2011

159. “Nanometallic concentration for enhanced photodetection,” IEEE Photonics conference, Arlington VA, October 13, 2011, Paper ThA1

160. “Device Challenges and Opportunities for Optical Interconnects,” (invited tutorial), OSA Frontiers in Optics conference, San Jose, CA, October 18, 2011, Paper FTuV1

161. “Joining Optics and Electronics – Why and How?” CUDOS Review, Shoal Bay, Australia, January 31, 2012

162. “Optical Interconnects – Why We Will Have To Use Them,” ISSCC, San Francisco, CA, Feb. 20, 2012, Session ES4

163. “The Heat Death of Information Processing Processing and How Optics Will Save the World,” Stanford University Photonics Retreat, April 15, 2012

164. “Optical Interconnects to Chips,” (Invited Tutorial talk), European Conference on Integrated Optics, Sitges, Spain, April 19, 2012

165. “Optics and Optoelectronics for Dense, Low Energy Interconnects,” SU2P Symposium, Heriot-Watt University, April 24, 2012

166. “Optical Interconnects to Chips,” (Invited Tutorial talk), IEEE International Interconnect Technology Conference, San Jose, June 3, 2012

167. “The Roles of Optics in Information Processing,” (Plenary talk) OSA Nonlinear Photonics and Integrated Photonics Research conferences, Colorado Springs, Colorado, June 18, 2012

168. “The Heat Death of Information Processing and Why Interconnects Are More Important Than Logic,” Future Trends in Microelectronics 2012, Corsica, June 28, 2012

169. “Optical Interconnects to Chips – Reasons and Novel Devices,” iNOW 2012, Stanford, CA August 12, 2012

170. “Optical interconnects: the challenges of silicon photonics,” CNRS Workshop on Silicon Photonics, Paris, Jan. 7, 2013.

171. “How to Design Any Linear Optical Component and How to Avoid It,” Optics and Electronics Seminar Series (AP483), Stanford University, Feb. 11, 2013

172. “Optical interconnects: opportunities and device challenges,” Heriot-Watt University Physics Department Seminar, Edinburgh, UK, April 10, 2013

173. “Information, energy, and photonics,” Scottish Universities Physics Alliance Annual Meeting, Glasgow, UK, April 19, 2013.

174. “How to Design Any Linear Optical Component and How to Avoid It,” Strathclyde University Physics Department Seminar, Glasgow, UK, April 22, 2013

175. “How to Design Any Linear Optical Component and How to Avoid It,” Heriot-Watt University Physics Department Seminar, Edinburgh, UK, April 25, 2013

176. “How to Design Any Linear Optical Component and How to Avoid It,” St. Andrews University Physics Department Seminar, St. Andrews, UK, April 26, 2013

177. “How to Design Any Linear Optical Component and How to Avoid It,” Glasgow University Electrical Engineering and Physics Departments Seminar, Glasgow, UK, May 2, 2013

178. “Why Interconnects Are More Important Than Logic,” Royal Society e-Futures Meeting, Royal Society, London, UK, May 14, 2013

178. “Attojoule Optoelectronics?” Royal Society e-Futures Kavli Meeting, Royal Society Kavli Centre, Chicheley Hall, Newport Pagnell, UK, May 16, 2013

179. “Science, technology and the Internet – keeping up with the demand for information,” Strathclyde University Faculty of Science Lecture, Glasgow, UK, May 21, 2013

180. “How to design an arbitrary linear optical device … and how to avoid it!” “Controlling the Propagation of Waves in Complex Media: From Shaping Wave Fields to Designing Smart Materials,” Institut Scientifique de Cargèse, May 27 – June 1, 2013

181. “Attojoule optoelectronics – why and how,” (Plenary talk) IEEE Photonics Society Summer Topical Meetings, Micro- and Nano-Cavity Integrated Photonics, Kona, Hawaii, July 9, 2013, Paper TuA2.1

182. “Requirements and novel devices for optical interconnects,” International Nano Optoelectronics Workshop (iNOW), Cargèse, Corsica, France, August 20, 2013

183. “How to design an arbitrary linear optical device and how to avoid it,” International Nano Optoelectronics Workshop (iNOW), Cargèse, Corsica, France, August 22, 2013

184. “Requirements and novel devices for optical interconnects,” IEEE Photonics Conference, Bellevue, Washington, Sept. 9, 2013

185. “Low-energy optoelectronics for interconnects,” (Invited tutorial) OSA Frontiers in Optics, Orlando, Florida, October 8, 2013, Paper FM3B.2

186. “How to design any linear optical device … and how to avoid it,” (Plenary presentation) CUDOS 13th Annual Workshop, 10-13 February 2014, San Remo, Victoria, Australia

187. “Designing arbitrary optical components without calculations,” 9th National Conference on Laser Technology and Optoelectronics and the International Forum on Laser and Optics Technology, Shanghai, China, March 18, 2014

188. “How to design any linear optical component … and how to avoid it,” 2014 Hermann Anton Haus Lecture, MIT, Cambridge, Massachusetts, April 30, 2014. A video of the talk is available at http://techtv.mit.edu/videos/28836-hermann-anton-haus-lecture-series-2014-prof-david-a-b-miller (After introductions, the talk itself starts at minute 12:28. Initial problems with the microphone are resolved by 14:00 minutes)

189. “Low energy optoelectronics for interconnects,” The Tenth International Nanotechnology Conference on Communications and Cooperation (INC 10), NIST, Gaithersburg, Maryland, May 15, 2014

190. “Limits and opportunities of electrical and optical interconnects,” OSA Incubator Nanophotonic Devices: Beyond Classical Limits, Washington D.C. May 15, 2014

191. “Nanophotonics and Interconnects – Status and Future Directions,” 2014 IEEE International Interconnect Technology Conference, May 21, 2014, San Jose, California

192. "Designing Arbitrary Linear Optical Components Without Calculations," in *Advanced Photonics for Communications*, OSA Technical Digest (online) (Optical Society of America, 2014), paper JM4B.1. http://www.opticsinfobase.org/abstract.cfm?URI=IPRSN-2014-JM4B.1 Talk available at http://www.osa.org/en-us/media_library/advanced_photonics_for_communications_congress/joint_sessions/

193. "Arbitrary Optical Transformations Without Calculations," in *Imaging and Applied Optics 2014*, OSA Technical Digest (online) (Optical Society of America, 2014), paper IW2C.2. http://www.opticsinfobase.org/abstract.cfm?URI=ISA-2014-IW2C.2 Talk available at http://www.osa.org/en-us/media_library/imaging_and_applied_optics_congress/imaging_systems_and_applications/

194. “Low-energy Integrated Photonics for Information Processing,” (Plenary talk), Progress in Electromagnetics Research Symposium, August 25-28, 2014, Guangzhou, China

195. "Separating and Transforming Arbitrary Orthogonal Beams Automatically – An Adaptive Universal Linear Optical Component," Progress in Electromagnetics Research Symposium, August 25-28, 2014, Guangzhou, China

196. "How to design any linear optical component and how to avoid it," Electrical Engineering Distinguished Lecture, Columbia University, New York NY, October 15, 2014

197. "Requirements and opportunities for nanophotonics in information processing," Invited Tutorial, MRS Fall Meeting, Boston, MA, Nov. 30, 2014

198. "How to design any linear optical component … and how to avoid it," Nanometa 2015, 5th International Topical Meeting on Nanophotonics and Metamaterials, Seefeld, Tirol, Austria, 5 – 8 January, 2015

199. "Self-configuring universal linear optics," APS March Meeting, San Antonio TX, 2 – 6 March, 2015

200. "Light, Energy and the Internet," Royal Society of Edinburgh and Royal Academy of Engineering Joint Lecture 2015, Royal Academy of Edinburgh, Edinburgh, UK, March 17, 2015

201. "Sorting out light – space the final frontier," Future Trends in Microelectronics, June 21 – 26, 2015, Mallorca, Spain

202. "Self-configuring arbitrary optics with silicon photonics," Universiteit Gent, June 29, 2015, Gent, Belgium

203. "Sorting out light," Centre for Quantum Photonics Workshop, July 3, 2015, Engineers House, Bristol, UK

204. "Self-aligning optics for integrated mode separation,", IEEE Photonics Society Summer Topical Meeting on On-Chip Optical Interconnects, Nassau, Bahamas, July 13-15, 2015

205. "Arbitrary self-configuring optics with silicon photonics," 12th International Conference on Group IV Photonics, Vancouver, Canada, August 25-28, 2015

206. "Arbitrary optics – novel nanophotonic and self-adapting optoelectronic systems," (Plenary talk) IEEE Photonics Conference, Reston VA, October 4–8, 2015

207. "Arbitrary self-configuring optics with silicon photonics," seminar at UC Davis, Nov. 5, 2015

208. "Arbitrary self-configuring optics with silicon photonics," seminar at Nanyang Technological University, Singapore, Nov. 11, 2015

209. "Light, Energy and the Internet," seminar at Nanyang Technological University, Singapore, Nov. 12, 2015

210. "Opportunities and New Directions for Optics in Computing," OSA Optical Computing Incubator, 9 – 11 Dec., 2015

211. "Attojoule optoelectronics," Invited tutorial, OFC'16, Anaheim CA, 22-24 March 2016, Paper W1D.1

212. "Self-configuring optics for sensing, communications and processing," Big Data Photonics Workshop, UCLA, Los Angeles, CA, 25 March, 2016

213. "Nanophotonics, energy and the internet," Australian Institute for Nanoscale Science and Technology Opening Symposium, Sydney, Australia, April 21, 2016

214. "Arbitrary self-configuring optics," Department of Physics, University of Sydney, Sydney, Australia, April 22, 2016

215. "Energy, the Internet, and Quantum Mechanics," Scottish Universities Physics Alliance/Institute of Physics public lecture, Glasgow, UK, May 25, 2016

216. "Arbitrary and self-configuring optics - New opportunities for integrated and nano photonics," Invited tutorial talk, Conference on Lasers and Electro-Optics 2016, San Jose, California, June 6, 2016, Paper FM3B.1

217. "Arbitrary self-configuring optics," Invited keynote talk, 72nd Scottish Universities Summer School in Physics, "Photonic Systems for Sensing and Metrology," Centre for Doctoral Training in Applied Photonics, St. Andrews, UK, June 25, 2016

218. "Arbitrary self-configuring optics – a new opportunity for silicon photonics," Zepler Institute International Distinguished Lectures Series, University of Southampton, Southampton, UK, July 5, 2016

219. "Silicon photonics and free space - saving energy," 21st Microoptics Conference, MOC'16, University of California at Berkeley, October 12, 2016

220. "Optics to save energy in information processing and communications," Emerging Technologies Summit, Stanford University, January 10, 2017

221. "Optics to save energy in information processing and communications," Optics and Electronics Seminar Series, Stanford University, February 13, 2017

222. "Optics to save energy in information processing and communications," IEEE Photonics Society, Santa Clara Chapter, March 7, 2017

223. "Attojoule optoelectronics, silicon photonics, free-space optics, and the 10 fJ/bit interconnect," OSA Optoelectronics Technical Group meeting, CLEO 2017, San Jose, CA, May 16, 2017

224. "Arbitrary and reconfigurable optics," Caltech, May 25, 2017

225. "Attojoule optoelectronics – saving more energy with optics," (Plenary invited talk), IEEE Photonics Society Optical Interconnects Conference, Santa Fe, New Mexico, June 6, 2017

226. "Attojoule optoelectronics – saving more energy with optics," Sandia National Laboratories, Albuquerque, New Mexico, June 25, 2017

227. "Attojoule optoelectronics – saving more energy with optics," (Invited tutorial talk), IEEE Photonics Society Summer Topical Meeting on Low Energy Integrated Nanophotonics, San Juan, Puerto Rico, July 11, 2017

228. "Novel integrated and self-configuring photonic architectures for sensing, communications and processing," OSA Topical Meeting on Integrated Photonics Research, Silicon and Nano-photonics, New Orleans, Louisiana, July 27, 2017

229. "Arbitrary and reconfigurable optics," Universitat Politècnica de València, Spain, Sept. 4, 2017

230. "Novel integrated and self-configuring photonics for sensing, communications and processing," University of Bristol, UK, Sept. 7, 2017

231. "Arbitrary and Reconfigurable Optics – New Opportunities for Integrated Photonics," OSA Frontiers in Optics, Washington DC, Sept. 19, 2017

232. "Saving energy in information processing and communications with optics," ECE Department Distinguished Lecture, George Washington University, Nov. 1, 2017

232. "Arbitrary and self-configuring photonic circuits for sensing and processing," IEEE Avionics and Vehicle Fiber-Optics and Photonics Conference, New Orleans, LA, Nov. 9, 2017

233. "Self-configuring complex optics," (Keynote invited paper) SPIE Photonics West, San Francisco, CA, January 30, 2018, Paper 10540-43

234. "Optics that designs itself to do anything," Applied Physics Seminar, Harvard University, March 31, 2018

235. "Reducing energy and increasing capacity – new directions for integrated optics in handling information," International Day of Light Presentation, Politecnico di Milano, Milan, Italy, May 17, 2018

236. "Arbitrary and self-configuring photonic circuits," 9th Annual SU2P Symposium, 21st – 22nd May 2018, Technology and Innovation Centre, University of Strathclyde, Glasgow, UK

237. "Arbitrary self-configuring linear transforms - optics that designs itself to do anything," Workshop on "Optics for information processing in the 21th century," Villa Finaly, Florence, Italy, May 24, 2018

238. "Saving energy in information processing and communications using integrated photonics," ePIXfab Silicon Photonics Summer School, Ghent University, Ghent, Belgium June 11-15, 2018

239. "Universal and self-configuring linear photonic circuits," ePIXfab Silicon Photonics Summer School, Ghent University, Ghent, Belgium June 11-15, 2018

240. "Self-configuring integrated photonic networks for communications, switching and processing," OSA Advanced Photonics Congress, Zurich, Switzerland, July 2-5, 2018

241. "Saving energy and increasing density in information communications and processing using photonics," Stanford Photonics Research Center Workshop on Advanced Data Center Architectures and Technologies, Stanford University, December 4, 2018

242. "Novel Integrated and Self-Configuring Photonics for Sensing, Communications and Processing," Corning Technology Center, Sunnyvale, CA, December 6, 2018

243. "Optically-assisted architectures for information processing," IEEE IRDS Beyond CMOS Workshop: Emerging Architectures and Devices, Monterey, California, March 30, 2019

244. "Saving energy and increasing density in information processing using photonics," Stanford EE Computer Systems Colloquium, Stanford, CA, April 4, 2019

245. "Self-configuring optical circuits," 21st European Conference on Integrated Optics, Ghent, Belgium, April 24, 2019

246. "Self-configuring optical mesh networks," (Keynote talk) IWANN 2019 (International Work Conference on Artificial Neural Networks), Workshop on AI in Nanophotonics, Gran Canaria, Spain, June 6, 2019

247. "Waves, modes, communications and optics" (Keynote talk) PIERS (PhotonIcs & Electromagnetics Research Symposium, also known as Progress In Electromagnetics Research Symposium) 2019, Rome, Italy, June 17, 2019

248. "Self-configuring photonic architectures and algorithms," IEEE Photonics Society Summer Topical Meeting on Programmable Photonics, Fort Lauderdale, Florida, July 7, 2019

249. "Waves, modes, communications and optics," SPIE Optics + Photonics meeting, Metamaterials, Metadevices, and Metasystems conference, San Diego, CA, August 13, 2019, Paper 11080-50

250. "Saving energy and increasing density in information processing using photonics," Optical Fibers Conference (OFC 20), San Diego, March 12, 2020, Paper Th1E.1

251. "Photonics to save energy and increase density in information processing," OSA Advanced Photonics Congress (virtual event), July 15, 2020, Paper PsW1F.2

Note: This list of invited talks does not include all seminars at Universities, which were not generally tracked in early years.

CONFERENCE INVITED TALKS - CO-AUTHOR

1. "Giant Third-Order Nonlinearities in Semiconductors and Application in Bistability, Transphasor Action and Phase Conjugation" S. D. Smith and D. A. B. Miller, XI International Quantum Electronic Conference, Boston, Massachusetts, 1980.
2. "Optical Bistability and Transphasor Action Using Semiconductor Materials" S. D. Smith and D. A. B. Miller, XV International Conference on the Physics of Semiconductors, Kyoto, Japan, 1980.
3. "Dynamic Nonlinear Optics in Semiconductors" A. Miller and D. A. B. Miller, XII International Quantum Electronics Conference, Munich, West Germany, 1982.
4. "Optical Nonlinearities of Room Temperature Excitons in GaAs/GaAlAs Multiple Quantum Well Structures" D. S. Chemla, D. A. B. Miller, P. W. Smith and A. C. Gossard, Annual Meeting of the Optical Society of America, New Orleans, Louisiana, 1983.
5. "Nonlinear Optics in Multiple Quantum Well Materials Grown by MBE" D. S. Chemla, D. A. B. Miller and P. W. Smith, Gordon Research Conference on Nonlinear Optics and Lasers, Wolfeboro, New Hampshire, 1983.
6. "Passive Mode Locking of Semiconductor Laser Diodes" P. W. Smith, D. A. B. Miller and D. J. Eilenberger, XIII International Quantum Electronics Conference, Anaheim, California, 1984.
7. "Quantum Wells to Quantum Dots: Physics and Prospects" D. S. Chemla, D. A. B. Miller and S. Schmitt-Rink, Conference on Lasers and Electro-optics, Anaheim, April 1988.
8. A. Bhatnagar, C. Debaes, H. Thienpont, and D. A. B. Miller, "Receiverless detection schemes for optical clock distribution," Quantum Sensing and Nanophotonic Devices, 25-29 Jan. 2004, San Jose, CA, USA
9. M. Gerken and D. A. B. Miller, "Multilayer thin-film coatings for optical communication systems," OSA Topical Meeting on Optical Interference Coatings 2004, Tucson, AZ (June 27-July 02, 2004). Invited Paper ThD2. Poster ThF2.
10. Aparna Bhatnagar, and David A. B. Miller, "Optical Interconnection and Clocking for Electronic Chips", Silicon Microphotonics Invited Session (0000128), The 8th World Multiconference on Systemics, Cybernetics and Informatics, Orlando, FL, July 19th, 2004 (Invited Conference Paper and Talk)
11. J. S. Harris, Y.-H. Kuo, and D. A. B. Miller, "Ge/SiGe Quantum Confined Stark Effect Modulators on Silicon," SiGe Technology and Device Meeting, 2006, Princeton, NJ, 15 -17 May 2006, Paper 3.1
12. J. E. Roth, O. Fidaner, R. K. Schaevitz, E. H. Edwards, Y.-H. Kuo, T. I. Kamins, J. S. Harris, Jr., and D. A. B. Miller, "The Quantum Confined Stark Effect in Ge/SiGe Quantum Wells: An efficient electroabsorption mechanism for silicon-based photonics," 4th International Conference on Group IV Photonics, Tokyo, Japan, September 2007, Paper ThA1
13. S. E. Claussen, Ross Audet, Elizabeth Edwards, Shen Ren, Rebecca Schaevitz, Emel Tasyurek, Yiwen Rong, Jonathan Roth, Onur Fidaner, Yu-Hsuan Kuo, Theodore Kamins, James Harris, and David A.B. Miller, "High Performance Ge Quantum Well Modulators," Optoelectronic Interconnects and Component Integration X, Conference 7607, SPIE Photonics West, San Francisco, CA, January 25, 2010, Paper 7607-05
14. F. Morichetti, F. Toso, F. Zanetto, G. Ferrari, M. Sampietro, A. Melloni, and D. A. B. Miller "Dynamically controlling optical beams with programmable silicon photonic meshes (Conference Presentation)", Proc. SPIE 11283, Integrated Optics: Devices, Materials, and Technologies XXIV, 1128310 (10 March 2020); DOI: 10.1117/12.2550397
15. M. Milanizadeh, T. Jonuzi, P. Borga, F. Toso, G. Ferrari, M. Sampietro, D.A.B. Miller, A. Melloni, and F. Morichetti, "Control of programmable photonic integrated meshes for free-space optics applications," OSA Advanced Photonics Congress (virtual event), July 14, 2020, Paper PsM2F.1 https://www.osapublishing.org/DirectPDFAccess/0FB20565-0C3D-F9E5-5F0044C2EAF48F8A_so3409874.pdf?da=1&idso=3409874&uri=&seq=0&mobile=no

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1. G. D. Holah, J. Dempsey, D. A. B. Miller, B. S. Wherrett and Miller, "Nonlinear Refraction and Absorption in InSb," Inst. Phys. Conf. Ser. No. **43**, 505-508 (1979).
2. D. A. B. Miller, S. D. Smith and A. Johnston, "Optical Bistability and Transistor Action in a Semiconductor Crystal," Proc. 4th National Quantum Electronics Conference, Edinburgh, 1979 (ed. B. S. Wherrett) (Wiley London, 1980), 241-244.
3. S. D. Smith and D. A. B. Miller, "Optical Bistability and Transphasor Action using Semiconductor Materials," Proc. 15th Int. Conf. Physics of Semiconductors, Kyoto, 1980, J. Phys. Soc. Japan 49 **Suppl. A**, 597-604 (1980).
4. D. A. B. Miller, S. D. Smith and C. T. Seaton, "Optical Bistability and Multistability in the Semiconductor InSb" in "Optical Bistability," ed. C. M. Bowden, M. Ciftan and H. R. Robl (Plenum, 1981), 115-126.
5. D. A. B. Miller, "Optical Bistability," "Trends in Physics 1981," (Proceedings of the Fifth General Conference of the European Physical Society), 239-249 (European Physical Society 1982).
6. D. A. B. Miller, "Optical Bistability," Czechoslovak Journal of Physics **A32**, 582-596 (1982), (in Czechoslovakian; translation of "Optical Bistability" in Proceedings of the Fifth General Conference of the European Physical Society, 239-249 (1982)).
7. D. A. B. Miller, C. T. Seaton and S. D. Smith, "Optical Bistability and Transphasor Action in Semiconductors," Proc. SPIE **236**, 435-440 (1980), (Proc. Soc. Photo-Opt. Instr. Eng.).
8. D. A. B. Miller, D. S. Chemla, P. W. Smith, and A. C. Gossard, "Large Nonlinearities in Room-Temperature GaAs Structures" J. Opt. Soc. Am. **72**, 1783 (1982).
9. D. A. B. Miller, D. S. Chemla, A. C. Gossard and P. W. Smith, "Room Temperature Optical Nonlinear Absorption and Refraction in GaAs Multiple Quantum Wells" in "Optical Bistability 2" (Proceedings of the Conference on Optical Bistability, Rochester, 1983) ed. C. M. Bowden, H. M. Gibbs and S. L. McCall (Plenum, New York, 1984), 273-278.
10. W. H. Knox, R. L. Fork, M. C. Downer, D. A. B. Miller, D. S. Chemla, C. V. Shank, A. C. Gossard and W. Wiegmann, "Femtosecond Dynamics of Nonequilibrium Correlated Electron-Hole Pair Distributions in Room-Temperature GaAs Multiple Quantum Well Structures" n "Ultrafast Phenomena IV" ed. D. H. Auston and K. B. Eisenthal, Proc Fourth Int. Conf. Monterey, June 1984, (Springer-Verlag, New York 1984), 162-165.
11. D. A. B. Miller, "Multiple Quantum Well Optical Nonlinearities: Bistability from Increasing Absorption and the Self Electro-Optic Device," Phil. Trans. R. Soc. Lond. **A313**, 239-244 (1985).
12. D. A. B. Miller, "Optical Logic and the Self Electro-optic Effect Device (SEED)," GLOBECOM '84, IEEE Global Telecommunications Conference, November 26-29, 1984, Atlanta, Georgia, Conference Record, 890-892.
13. T. H. Wood, C. A. Burrus, D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard and W. Wiegmann "High-Speed Optical Modulation with GaAs/GaAlAs Quantum Wells in a p-i-n Diode Structure," Proc. IEEE Int. Electron Devices Meeting, December 1983, Washington, D.C.
14. T. H. Wood, C. A. Burrus, D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard and W. Wiegmann, "Enhanced Electro-Absorption in GaAs/GaAlAs Multiple Quantum Wells and its Application to Opto-Electronic Devices," Inst. Phys. Conf. Ser. **No. 74; Chapter 9** Proceedings of the International Symposium on GaAs and Related Compounds, Biarritz, 1984, 687-688.
15. J. S. Weiner, D. A. B. Miller, D. S. Chemla, T. C. Damen, A. C. Gossard, W. Wiegmann, T. H. Wood and C. A. Burrus, "Strong Polarization Sensitive Electroabsorption in GaAs/AlGaAs Quantum Well Waveguides," J. Opt. Soc. Am. **A2**, P44 (1985).
16. D. A. B. Miller, "Physics and Applications of Room Temperature Excitonic Electroabsorption in Quantum Wells," J. Opt. Soc. Am. **A2**, P47 (1985).

17. D. A. B. Miller, "Novel Optical Modulators and Bistable Devices Using the Self-Electro-Optic Effect in Semiconductor Quantum Wells," Surface Science **174**, 221-232 (1986).

18. D. A. B. Miller, "Electric Field Dependence of Optical Properties of Quantum Well Structures," in "Electro-optic and Photorefractive Materials," Proceedings of the International School on Material Science and Technology, Erice, Italy, July 6-17, 1986, ed. P. Gunter, (Springer-Verlag, Heidelberg).

19. I. Bar-Joseph, C. Klingshirn, D. A. B. Miller, D. S. Chemla, U. Koren, and B. I. Miller, "Quantum-Confined Stark Effect in InGaAs/InP Quantum Wells Grown by Metal-Organic Chemical Vapor Deposition" in "Picosecond Electronics and Optoelectronics II" ed. F. J. Leonberger, C. H. Lee, F. Capasso, and H. Morkoc, (Springer-Verlag, 1987) 135-138.

20. I. Bar-Joseph, D. S. Chemla, C. Klingshirn, D. A. B. Miller, J. M. Kuo, and T. Y. Chang, "Optical Reading of InGaAs Modulation Doped Field Effect Transistor" in "Picosecond Electronics and Optoelectronics II" ed. F. J. Leonberger, C. H. Lee, F. Capasso, and H. Morkoc, (Springer-Verlag, 1987) 143-146.

21. D. A. B. Miller, M. D. Feuer, T. Y. Chang, S. C. Shunk, J. E. Henry, D. J. Burrows, and D. S. Chemla, "Integrated quantum well modulator, field effect transistor, and optical detector," Paper TUE1, Conference on Lasers and Electro-optics, Anaheim April 1988.

22. C. Klingshirn, C. Weber, H.-E. Swoboda, R. Renner, F. A. Majumder, M. Kunz, M. Rinker, H. Schwab and M. Wegener, "Photo-electronic optical nonlinearities in three - and quasi two - dimensional semiconductors," Proc. SPIE "Nonlinear Optical Materials," 1017, 32-40, (1988).

23. C. Weber, C. Klingshirn, D. S. Chemla, D. A. B. Miller, J. Cunningham, and C. Ell, "Properties of the electron-hole plasma in GaAs/GaAlAs multiple quantum wells," Proceedings of the 19th International Conference on the Physics of Semiconductors, ed. W. Zawadski (Institute of Physics, Polish Academy of Sciences, 1988) **1**, 449-452, (1988).

24. S. Schmitt-Rink, D. S. Chemla, K. W. Goossen, W. H. Knox, D. A. B. Miller, "Prospects for THz quantum well optoelectronics" Proceedings of the SPIE, **1216**, 53-62, (1990).

25. D. A. B. Miller "Physics and applications of quantum wells in optics," Proc. Int. Symp. GaAs and Related Compounds, Atlanta, Georgia, 1988, Inst. Phys. Conf. Ser. **96**, 629-631, (1989).

26. D. A. B. Miller "Quantum Well Devices for Optics in Digital Systems" SPIE International Conference on Advances in Interconnection and Packaging, **1389**, 496-502, (1990).

27. A. M. Fox, D. A. B. Miller, G. Livescu, J. E. Cunningham, W. Y. Jan, "Carrier Sweep-Out from Quantum Wells in an Electric Field" OSA Proceedings on Picosecond Electronics and Optoelectronics, **9**, 210-213, (1991).

27a. K. W. Goossen, J. E. Cunningham, D. A. B. Miller, W. Y. Jan, A. L. Lentine, A. M. Fox, and N. K. Ailawadi, "Low Field Electroabsorption and Self-Biased Self-Electrooptics Effect Device Using Slightly Asymmetric Coupled Quantum Wells," Paper MB3, Topical Meeting on Quantum Optoelectronics, Salt Lake City, March 1991 (Optical Society of America, 1991)

28. U. Keller, D. A. B. Miller, G. D. Boyd, T. H. Chiu, J. F. Ferguson, M. T. Asom "Passively mode-locked Nd:YLF and Nd:YAG Lasers using a new intracavity antiresonant semiconductor Fabry-Perot" OSA Proceedings on Advanced Solid-State Lasers, **13**, 1992, Lloyd L. Chase and Albert A. Pinto (eds.) 98-100.

29. K. W. Goossen, J. A. Walker, J. E. Cunningham, W. Y. Jan, D. A. B. Miller "Monolithic Integration of GaAs/AlGaAs Multiple Quantum Well Modulators and Silicon Metal-Oxide-Semiconductor Transistors" OSA Proceedings of Photonics in Switching **16**, 94-98 (1993).

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47. "Quantum Well Devices for Optics and Optoelectronics," CLEO '10, San Jose, May 2010

OPEN ONLINE COURSES

The open online course “Quantum Mechanics for Scientists and Engineers” has been given every year from 2013 and the follow-on class “Quantum Mechanics for Scientists and Engineers 2” has been given every year since 2015. These have been hosted on Stanford Online platform, using the OpenEdX platform. These course have attracted more than 50,000 student registrations.

CONFERENCE COMMITTEES

1. Royal Society Discussion Meeting, "Optical bistability, dynamic nonlinearity and photonic logic" London, March 1984.
2. "Optical Bistability 3," Tucson, Arizona, December 1985.
3. Symposium on Nonlinear Optical Materials (**Co-Chairman**), Materials Research Society, Boston, December 1985.
4. Conference on Lasers an Electro-optics, San Francisco, June 1986.
5. Conference on Lasers and Electro-optics, Baltimore, April 1987 (**Subcommittee Chairperson**).
6. "Optical Bistability 4," Aussois, France, March 1988.
7. 4h International Conference on Superlattices, Microstructures and Microdevices, Trieste, Italy, August 1988.
8. Topical Meeting on Optical Computing, Salt Lake City, March 1989.
9. Topical Meeting on Photonic Switching, Salt Lake City, March 1989.
10. Topical Meeting on Quantum Wells for Optics and Optoelectronic (**Program Chair**), Salt Lake City, Utah, March, 1989.
11. Conference on Lasers and Electrooptics, Anaheim, May 1990.
12. International Topical Meeting on Optical Computing (OC'90) Kobe, Japan, April 1990.
13. Physics of Electro-Optic Microstructures and Microdevices, Crete, August 1990.
14. International Conference on Electronic Materials, Newark, September 1990.
15. Topical Meeting on Quantum Optoelectronics - Quantum Wells and Confined Semiconductor Structures for Optics and Electronics (**General Chair**), Salt Lake City, March 1991.
16. Conference on Lasers and Electro-optics, Baltimore, May 1991.
17. Topical Meeting on Photonic Switching, Minsk, Byelorussia, June 1992.
18. Sixth International Conference on Superlattices, Microstructures and Microdevices, Xi'an, China, August 1992.
19. Topical Meeting on Nonlinear Optics, Maui, August 1992.
20. 22nd Winter Colloquium on Quantum Electronics, Snowbird, Utah, January 1992.
21. Topical Meeting on Smart Pixels, Santa Barbara, California, August 1992 (**Co-Chair**).
22. QELS '93, Baltimore, May 1993, Program Subcommittee Chair.
23. International Conference on Solid State Devices and Materials, Chiba, Japan, August 1993.
24. CLEO '94, Anaheim, May 1994, **Program Co-Chair**.
25. Optical Computing '94, Edinburgh, August 1994.
26. Topical Meeting on Nonlinear Optics, Hawaii, July 1994.
27. Topical Meeting on Optical Computing, Salt Lake City, March 1995.
28. Optical Computing '96, Sendai, Japan, April 1996.
29. CLEO '96, Anaheim, June 1996, **General Co-Chair**.
30. Optical Computing '97, Lake Tahoe, March 1997
31. CLEO Europe '98
32. Optics in Computing '98, Brugge, June 1998, **General Chair**

33. Nonlinear Optics ’00, Kauai, August 2000
34. CLEO ’02
35. CLEO ‘03
36. CLEO Europe ‘03
37. CLEO ‘04
38. Optics in Computing ‘04
39. LEOS Summer Topical Meeting on Optical Interconnects and VLSI Photonics ‘04
40. CLEO Europe ‘05
41. Workshop on Interconnections within High Speed Digital Systems, Santa Fe ‘05
42. Information Photonics ‘05
43. IEEE Photonics Society Optical Interconnect Conference, Santa Fe, May 2012 **Program Co-Chair**
44. IEEE Photonics Society Programmable Photonics Summer Topical Meeting, Fort Lauderdale, July 2019 **Conference Co-Chair**