
CURRICULUM VITAE: Larry A. Coldren

Current Position

Distinguished Research Professor
Electrical & Computer Engineering and Materials Departments
University of California, Santa Barbara, CA 93106
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Formal Education

BS, Electrical Engineering; Bucknell University, 1968
BA, Physics; Bucknell University, 1968
MS, Electrical Engineering; Stanford University, 1969
PhD, Electrical Engineering; Stanford University, 1972

Professional Experience

2017 – Present: Distinguished Research Professor, UCSB
2009 - 2011: Interim Dean, College of Engineering, UCSB
1999 – 2017: Fred Kavli Professor of Optoelectronics and Sensors
1986 - 2017: Professor, Dept. of Materials, UCSB
1984 - 2017: Professor, Dept. of Electrical and Computer Engineering, UCSB
1998 - 2005: Chairman and Chief Scientist (part time), Agility Communications
1990 - 2017: Director, Optoelectronics Technology Center
1968 -1984: AT&T Bell Laboratories, Research Division

Honors and Awards:

2023 CSW Heinrich Welker Award
2017 OSA Nick Holonyak, Jr Award
2016 Elected to National Academy of Inventors
2016 Distinguished Engineering Alumni Award, Bucknell University
2015 IPRM Award
2014 IEEE David Sarnoff Award
2014 Plenary Speaker, Conference on Lasers and Electro-Optics (CLEO)
2011 Plenary Speaker, Asia Communications and Photonics Conference (ACP'11)
2010 Plenary Speaker, Microwave Photonics (MWP'10)
2009 Plenary Speaker, IPRM '09
2009 Aaron Kressel Award
2006 Plenary Speaker, IPRM '06
2004 Elected to the National Academy of Engineering
2004 John Tyndall Award
2004 Plenary Speaker and Honorary Chairman, CPT Symposium
2003 Original Member, ISI Highly cited Researchers Database
2002 Plenary Speaker, IEEE-LEOS Annual Meeting
2002 IEE Fellow
1999 Fred Kavli Professor of Optoelectronics and Sensors
1992 OSA Fellow
1981 IEEE Fellow

Recent Major Research Contributions:

- Over 41,000 citations to publications & Patents; H-index= 89
- Widely-tunable coherent receiver Photonic ICs & Optical-phase-locked loop analog-coherent receivers to 40 Gbs
- Development of large scale Photonic ICs on InP
- Demonstration and commercialization of widely-tunable SGDBR lasers & integrated laser-modulators
- Analysis, design, and monolithic fabrication techniques for multisection tunable diode lasers

- Vertical-Cavity Surface-Emitting Laser (VCSEL) designs with periodic gain & tapered dielectric aperturing
- VCSELs with record efficiency and speed

PhDs graduated as primary advisor: about 75

Postdoctoral Scholars Supervised: about 20

Visiting Researchers Supervised: about 10

Patents: 63 issued, considering combined cases

Patents Granted

1. "Monolithic Surface Acoustic Wave Amplifier Device and Method of Manufacture," US Patent # 3,877,982 (April 1975)
- 2./3. "Slot Waveguide with Tapered Edges," and "Acoustic Surface Waveguide with Graded Profile Cross Section," US Patent # 3,831,115 (August 1974)
4. "Elastic Waveguide Utilizing an Enclosed Core Member," US Patent # 3,922,622 (November 1975)
5. "Acoustoelectric Wave Semiconductor Signal Processing Apparatus with Storage of Weighting Factor," US Patent # 3,982,113 (September 1976)
6. "Acoustic Wave Devices," US Patent # 4,117,424 (September 1978)
7. "Micropositioners using a crystal having moveable domain walls," US Patent # 4,128,616 (December 1978)
8. "Surface Acoustic Wave Multistrip Coupler," US Patent # 4,166,987 (September 1979)
- 9./10./11. "Surface Acoustic Wave Resonator Filters with Folded Acoustic Coupling," "Temperature Stable - U - Path Filters," and "Surface Wave Resonator Cascade," US Patent # 4,327,340 (April 1982)
12. "SAW Resonator Filters with Improved Temperature Stability," US Patent # 4,325,038 (April 1982)
13. "Reactive-Ion-Etching of III-V Semiconductor Compounds," US Patent # 4,285,763 (August 1981)
14. "Reactive Sputter Etching Apparatus," US Patent # 4,309,267 (January 1982)
15. "Semiconductor Laser with Conductive Current Mask," US Patent # 4,445,218 (April 1984)
16. "Method of Preferentially Etching Optically Flat Mirror Facets in InGaAsP/InP Heterostructures," US Patent # 4,354,898 (October 1982)
17. "Ohmic Contact to p- Type Group III-V Semiconductors," US Patent # 4,471,005 (September 1984)
- 18./19. "Spectral Control Arrangement for Coupled Cavity Laser," and "Orientation of InP Substrate Wafers," US Patent # 4,439,268 (March 1984)
20. "Spectral Control Arrangement for Coupled Cavity Laser (CIP)," US Patent # 4,608,697 (August 1986)
21. "Self-Stabilized Semiconductor Lasers," US Patent # 4,622,672 (November 1986)
22. "Buried undercut mesa-like waveguide," US Patent # 4,725,112 (February 1988)
23. "Buried undercut mesa-like waveguide and method of making same," US Patent # 4,764,246 (August 1988)
24. "Low Damage-Producing, Anisotropic, Chemically Enhanced Etching Method and Apparatus," US Patent # 4,874,459 (October 1989)
25. "Multi-Section Tunable Laser with Differing Multi-Element Mirrors," US Patent # 4,896,325 (January 1990)
26. "Surface-Emitting Lasers with Periodic Gain and A Parallel Driven NIPI Structure," US Patent # 4,873,696 (October 1989)
27. "Electrical Pumping Scheme for Vertical-Cavity Surface-Emitting Lasers," US Patent # 5,343,487 (August 1994)
28. "Method of Making a Vertical Cavity Laser," US Patent # 5,877,038 (March 1999)
29. "Integrated Semiconductor Lasers and Photodetectors," US Patent # 6,148,016 (November 2000)
30. "Direct-Coupled Multimode WDM Optical Data Links with Monolithically-Integrated Multiple-Channel VCSEL and Photodetector Arrays" US Patent # 6,195,485 (February 2001)
31. "Direct-Coupled Multimode WDM Optical Data Links with Monolithically-Integrated Multiple-Channel VCSEL and Photodetector Arrays" US Patent # 6,574,398 (June 2003)
32. "Increased Lateral Oxidation Rate of Aluminum Indium Arsenide" (with Eric Hall) US Patent # 6,472,695 (October 2003)
33. "Tapered Air Apertures for Thermally Robust Vertical Cavity Laser Structures," US Patent # 6,714,572 (March 2004)
34. "Tunable Laser Cavity Sensor Chip," US Patent # 6,767,515 (July 2004)
35. "Integrated Sensor" (with C. Meinhart and T. Stultz) US Patent # 6,899,849 (May 2005)
36. "Heat Spreading Layer for Vertical-Cavity Surface-Emitting Laser" (with Shigeru Nakagawa and Erik Hall) US Patent # 6,810,064 (October 2004)
37. "Contact Scheme for Intracavity Contacted VCSEL" (with Eric Hall and Shigeru Nakagawa) US Patent # 6,714,573 (March 2004)
38. "Method of Fabricating a Distributed Bragg Reflector Having Enhanced Thermal and Electrical Properties" (with Guilhem Almuneau) US Patent # 6,631,154 (October 2003)

39. "Distributed Bragg Reflectors Incorporating SB Material for Long-Wavelength Vertical Cavity Surface Emitting Lasers" (with Erik Hall and G. Almuneau) US Patent # 6,798,817 (September 2004)
40. "Double Intracavity Contacted Long-Wavelength VCSELs and Method of Fabricating Same" (with Eric Hall & Shigeru Nakagawa) US Patent # 6,653,158 (November 2003)
41. "Controller Calibration for Small Form Factor Sampled Grating Distributed Bragg Reflector Laser," US Patent # 7,061,943 (June 2006)
42. "Sampled Grating Distributed Bragg Reflector Laser Controller," US Patent # 6,954,476 (October 2005)
43. "Mirror and Cavity Designs for Sampled Grating Distributed Bragg Reflector Lasers," US Patent # 6,590,924 (July 2003)

44. "High-Power, Manufacturable Sampled-Grating Distributed Bragg Reflector Lasers," US Patent # 6,909,734 (June 2005)
45. "Manufacturable Sampled Grating Mirrors," US Patent # 6,937,638 (August 2005)
46. "Integrated Opto-Electronic Wavelength Converter Assembly" US Patent # 6,580,739 (June 2003)
47. "Method for Converting an Optical Wavelength Using a Monolithic Wavelength Converter Assembly" US Patent # 6,349,106 (February 2002)
48. "Method for Making a Monolithic Wavelength Converter Assembly" US Patent # 6,624,000 (September 2003)
49. "Opto-Electronic Laser with Integrated Modulator" (with Gregory Fish) US Patent # 6,628,690 (September 2003)
50. "Method of Making an Opto-Electronic Laser with Integrated Modulator" (with Gregory Fish) US Patent # 6,574,259 (June 2003)
51. "Tunable Laser Source with Integrated Optical Amplifier" (with Thomas Mason & Gregory Fish) US Patent # 6,658,035 (December 2003)
52. "Method of Generating an Optical Signal with a Tunable Laser Source with Integrated Optical Amplifier" (with Thomas Mason & Gregory Fish) US Patent # 6,687,278 (February 2004)
53. "Method of Making a Tunable Laser Source with Integrated Optical Amplifier" (with Thomas Mason & Gregory Fish) US Patent # 6,654,400 (November 2003)
54. "Methods for Robust Channel Switching of Widely-Tunable SGDBR Lasers" (with Michael Larson and Torsten Wipiejewski) US Patent # 6,868,100 (February 2004)
55. "Method for Aperturing Vertical-Cavity Surface-Emitting Lasers (VCSELs)," US Patent # 6,841,407 (January 2005)
56. "Method of Modulating an Optical Wavelength with an Opto-Electronic Laser with Integrated Modulator" (with Gregory Fish) US Patent # 6,614,819 (September 2003)
57. "Double Intracavity Contacted Long-Wavelength VCSELs" (with Eric Hall & Shigeru Nakagawa) US Patent # 6,687,281 (February 2004)
58. "Tunable Laser Source with an Integrated Wavelength Monitor and Method of Operating the Same" US Patent # 6,714,566 (March 2004)
59. "Traveling Wave Optoelectronic Wavelength Converter" [Series](with Christopher Coldren) US Patent # 7,133,576 (November 2006)
60. "Traveling-Wave Optoelectronic Wavelength Converter," [parallel] (with Christopher Coldren) US Patent # 7,043,097 (May 2006)
61. "Traveling-/wave Optoelectronic Wavelength Converter," [parallel-2] (with Christopher Coldren) US Patent # 7,174,058 (February 2007)
62. "Tunable Laser Source with Integrated Wavelength Monitor," (with Thomas Mason & Gregory Fish) US Patent # 7,342,950 (March 2008)
63. "Tunable Laser Source with Integrated Optical Modulator," (with Thomas Mason & Gregory Fish) US Patent # 7,622,315 (November 2009)
64. "Manufacturable Sampled Grating Mirrors," (with Gregory Fish) US Patent # 7,643,532 (January 2010)
65. "Small Dimension High-Efficiency High-Speed Vertical-Cavity-Surface-Emitting Lasers," (with Yu-Chia Chang) US Patent # 7,916,768 (March 2011)

PUBLICATIONS (1971 – 2014):

<u>#</u>	<u>YEAR</u>	<u>TITLE and AUTHORS</u>	<u>PUBLISHER</u>
1.	1971	“Trapping Theory for InSb Thin Films,” L.A. Coldren	<i>Applied Physics Letters</i> , 18 , pp. 319-321
2.	1971	“Monolithic Acoustic Surface Wave Amplifier,” L.A. Coldren and G.S. Kino	<i>Applied Physics Letters</i> , 18 , pp. 317-319
3.	1973	“Optimizing Loss-Compensated Long Delay Devices,” L.A. Coldren	<i>IEEE Trans. Sonics and Ultrasonics</i> , SU-20 , 17-23
4.	1973	“A CW Monolithic Acoustic Surface Wave Amplifier Incorporated in a $\Delta v/v$ Waveguide,” L.A. Coldren and G.S. Kino	<i>Applied Physics Letters</i> , 23 , pp. 117-118
5.	1973	“Noise Figure Calculations for the Raleigh Wave Amplifier,” G.S. Kino and L.A. Coldren	<i>Applied Physics Letters</i> , 22 , pp. 50-52
6.	1973	“Acoustic Surface Wave $\Delta v/v$ Waveguides on Anisotropic Substrates,” L.A. Coldren and R.V. Schmidt	<i>Applied Physics Letters</i> , 22 , pp. 482-483
7.	1974	“The InSb on Piezoelectric Rayleigh Wave Amplifier,” L.A. Coldren and G.S. Kino	<i>IEEE Trans. Elect. Dev.</i> , ED-21 , pp. 421-427
8.	1974	“Acoustic Surface Wave Slot Waveguides on Bi ₁₂ GeO ₂₀ ,” L.A. Coldren and R.V. Schmidt	<i>IEEE Trans. Sonics and Ultrasonics</i> , SU-21 , pp. 128-130
9.	1974	“Interior-Surface Acoustic Waveguiding in Capillaries,” R.L. Rosenberg, R.V. Schmidt, and L.A. Coldren	<i>Applied Physics Letters</i> , 25 , pp. 324-326
10.	1974	“An Acoustic Surface Wave Analog-to-Digital Converter,” G.L. Baldwin and L.A. Coldren	<i>Electronics Letters</i> , 10 , pp. 225-227
11.	1974	“Rayleigh Wave Guidance Using Anisotropic Topographic Structures,” L.A. Coldren	<i>Applied Physics Letters</i> , 25 , pp. 367-370
12.	1974	“The Effect of Bias Field in a Zinc Oxide on Silicon Acoustic Convolver,” L.A. Coldren	<i>Applied Physics Letters</i> , 25 , pp. 473-475
13.	1975	“Thin Film Acoustic Waveguides of Arbitrary Cross-Section,” L. A. Coldren and D.H. Smithgall	<i>IEEE Trans. Sonics and Ultrasonics</i> , SU-22 , pp. 123-130
14.	1975	“Thin Film Acoustic Surface Waveguides on Anisotropic Media,” R.V. Schmidt and L.A. Coldren	<i>IEEE Trans. Sonics and Ultrasonics</i> , SU-22 , pp. 115-122
15.	1975	“Acoustic Waveguide with a Cladded Core Geometry,” G.D. Boyd, L.A. Coldren, and R.N. Thurston	<i>Applied Physics Letters</i> , 26 , pp. 31-34

16. 1975 "Zinc Oxide on Silicon Memory Cells Scanned by Acoustic Surface Waves," L.A. Coldren *Applied Physics Letters*, **26**, pp. 137-139
17. 1975 "Zinc Oxide-on-Silicon Acoustically Scanned Imager with Positive Sensitivity and Storage Capabilities," L.A. Coldren *Applied Physics Letters*, **27**, pp. 6-8, (1975)
18. 1975 "Large Time-Bandwidth Guided Wave Channels on Wrap-Around Acoustic Surface Wave Delay Lines," L.A. Coldren *Wave Elec.*, **1**, pp. 177-186, (1975)
19. 1976 "Stiffness Matrix and Debye Temperature of ReO₃ from Ultrasonic Measurements," T.P. Pearsall and L.A. Coldren *Solid State Comm.*, **18**, pp. 1093-1096, (1976)
20. 1976 "Characteristics of Zinc-Oxide-On-Silicon Signal Processing and Storage Devices," L.A. Coldren *Proc. of the IEEE*, **64**, pp. 769-771
21. 1976 "Review: Acoustic Fields and Waves in Solids: Two Volumes," L.A. Coldren and B.A. Auld *IEEE Trans. Sonics and Ultrasonics*, **SU-23**, (3), pp. 184, (May 1976)
22. 1976 "Surface Wave Long Delay Lines," L.A. Coldren and H.J. Shaw *Proc. of the IEEE*, **64**, pp. 589-609
23. 1976 "Reflection-Dependent Coupling Between Grating-Cavity Resonators," R.L. Rosenberg and L.A. Coldren *Proc. 1976 Ultrasonics Symposium*, paper no. V2, pp. 281-286, (September 1976)
24. 1976 "Scattering Matrix Approach to SAW Resonators," L.A. Coldren and R.L. Rosenberg *Proc. Ultrasonics Symposium*, paper no. P3, pp. 266-271, (September 1976)
25. 1977 "Flexible Capillary Ultrasonic Delay Lines," R.L. Rosenberg and L.A. Coldren *IEEE Trans. Sonics and Ultrasonics*, **SU-24**, (1), pp. 1-6, (January 1977)
26. 1977 "Characteristics of Surface Acoustic Wave Resonators Obtained from Cavity Analysis," L.A. Coldren *IEEE Trans. Sonics and Ultrasonics*, **SU-24**, (3), pp. 212-217, (May 1977)
27. 1977 "Acoustic Cladded Fiber Delay Lines," G.D. Boyd, L.A. Coldren, and R.N. Thurston *IEEE Trans. on Sonics and Ultrasonics*, **SU-24**, (4), pp. 246-252, (July 1977)
28. 1977 "Delay Line Storage with Acoustic Fibers," L.A. Coldren *Proc. of 151st. Meeting of Electrochemical Society*
29. 1977 "Electronically Variable Delay Using Ferroelastic-Ferroelectrics," L.A. Coldren, R.A. Lemons, A.M. Glass, and W.A. Bonner *Applied Physics Letters*, **30**, pp. 506-508

30. 1977 "Effects of Anisotropy of SAW Resonator Transverse Modes," L.A. Coldren *Applied Physics Letters*, **31**, pp. 409-412
31. 1977 "Coupled Slot Waveguide SAW Resonators," L.A. Coldren *Electronics Letters*, **13**, pp. 559-561, (1977)
32. 1977 "Growth of Single-Crystal Sapphire-Clad Ruby Fibers," C.A. Burrus and L.A. Coldren *Applied Physics Letters*, **31**, pp. 383-384, (1977)
33. 1977 "Experimental Verification of Mode Shape in SAW Grating Resonator," L.A. Coldren, H.A. Haus and K.L. Wang *Electron. Letts.*, **13**, 642-644, (1977).
34. 1977 "Fast Synthesis of Finite-Loss SAW Resonator Filters," R.L. Rosenberg and L.A. Coldren *1977 Proc. Ultrasonics Symp.*, Phoenix, AZ, (October 26).
35. 1977 "Acoustic Devices Using Ferroelastic-Ferroelectric Crystals," L.A. Coldren and R.A. Lemons *1977 Proc. Ultrasonics Symp.*, Phoenix, AZ, (October 26).
36. 1977 "Monolithic Transversely Coupled SAW Resonator Filters," L.A. Coldren, R.L. Rosenberg and J.A. Rentschler *1977 Proc. Ultrasonics Symposium*, Phoenix, AZ, (October 26).
37. 1978 "Variable Frequency SAW Resonators on Ferroelectric-Ferroelastic," L.A. Coldren and R.A. Lemons *Applied Physics Letters*, **32**, 129-131, (February).
38. 1978 "Multipole SAW Resonator Filters," L.A. Coldren and R.L. Rosenberg *Proc. IEEE Circuits and Systems Symp.*, New York.
39. 1978 "Electronic Micro-Positioning with Ferroelastic-Ferroelectrics," R.A. Lemons and L.A. Coldren *Review of Scientific Instruments*, **49**, (12).
40. 1978 "Analog Read Only Memory Using Gadolinium Molybdate," R.A. Lemons, J.M. Geary, L.A. Coldren and H.G. Mattes *Applied Physics Letters*, **33**, (5), 373-375, (1978).
41. 1978 "Variable Delay Using Acoustic Bulk Wave Reflection from a Ferroelastic-Ferroelectric Domain Wall," R.A. Lemons and L.A. Coldren *Proceedings 1978 Ultrasonics Symposium*, IEEE, New York.
42. 1978 "SAW Resonator Filter Overview: Design and Performance Tradeoffs," L.A. Coldren and R.L. Rosenberg *1978 Ultrasonics Symp. Proc.*, IEEE, New York.
43. 1979 "Surface-Acoustic-Wave Resonator Filters," L.A. Coldren and R.L. Rosenberg *Proc. of the IEEE*, **67**, 147-158, (1979).
44. 1979 "Scattering Analysis and Design of SAW Resonator Filters," R.L. Rosenberg and L.A. Coldren *IEEE Trans. Sonics and Ultrasonics*, **SU-26**, (3), 205-230, (1979).
45. 1979 "Improved Temperature Stability in SAW Resonator Filters Using Multiple Coupling Paths," L.A. Coldren *Applied Physics Letters*, **35**, (9), 678-680, (1979).

46. 1979 "Acoustically coupled SAW Resonator Filters with Enhanced Out-of-Band Rejection," L.A. Coldren and R.L. Rosenberg *IEEE Trans. Sonics and Ultrasonics*, **SU-26**, (6), 394-403, (1979).
47. 1979 "Temperature Dependence of SAW Resonator Filters Using Folded Acoustic Coupling," L.A. Coldren *1979 Ultrasonics Symp. Proc.*; IEEE, New York.
48. 1979 "Crossed Resonator SAW Filter: A Temperature Stable Wider-Band Filter on Quartz," R.L. Rosenberg and L.A. Coldren *1979 Ultrasonics Symposium Proc.*; IEEE, New York.
49. 1980 "Directional Reactive Ion Etching (RIE) at Oblique Angles," G.D. Boyd, L.A. Coldren and F.G. Storz *Applied Physics Letters*, **36**, (7), 583-585, (1980).
50. 1980 "Multistate Amorphous Semiconductor Switch," L.A. Coldren, M.A. Bosch and J.A. Rentschler *Applied Physics Letters*, **36**, (8), 688-690, (1980).
51. 1980 "Reactive Ion Etching of III-V Compounds," R.E. Howard, E.L. Hu and L.A. Coldren *Topical Meeting on Int. and Guided-Wave Optics Digest*, paper no. WA-2, IEEE, New York.
52. 1980 "GaInAsP/InP Stripe Lasers with Etched Mirrors Fabricated by a Wet Chemical and Reactive Ion Etching," K. Iga, B.I. Miller and L.A. Coldren *Topical Meeting on Int. and Guided-Wave Optics Digest*, paper no. PD-3, IEEE, New York.
53. 1980 "GaInAsP/InP Stripe Geometry Lasers with a Reactive-Ion-Etched Facet," L.A. Coldren, K. Iga, B.I. Miller and J.A. Rentschler *Applied Physics Letters*, **37**, (8), 681-683, (1980).
54. 1980 "Broader-Band SAW Resonator Filters with a Single Critical Masking Step," R.L. Rosenberg and L.A. Coldren *Proceedings 1980 Ultrasonics Symposium*, G5, IEEE, New York.
55. 1981 "Reactive Ion Beam Etching of InP with Cl₂," M.A. Bosch, L.A. Coldren and E. Good *Applied Physics Letters*, **38**, 264-6, (1981).
56. 1981 "Refractive Index Data from GaInAsP Films," P. Chandra, L.A. Coldren and K. Strege *Electron. Letts.*, **17**, 6-7, (1981).
57. 1981 "Monolithic Two-Section GaInAsP/InP Active-Optical-Resonator Devices Formed with RIE Mirrors," L.A. Coldren, B.I. Miller, K. Iga and J.A. Rentschler *Applied Physics Letters*, **38**, (5), 315-317, (March 1, 1981).
58. 1981 "Directional Reactive-Ion-Etching of InP with Cl₂ Containing Gases," L.A. Coldren and J.A. Rentschler *J. Vac. Sci. Tech.*, **19**, 225-230, (1981).
59. 1981 "Crystallographic Facets Chemically Etched in GaInAsP/InP for Integrated Optics," K. Furuya, L.A. Coldren, B.I. Millter and J.A. Rentschler *Electron. Letts.*, **17**, 582-583, (1981).

60. 1982 "Etched Mirrors, Grooves and Surfaces for GaInAsP/InP Integrated Optical Devices Using Stop-Etch Crystal Planes," L.A. Coldren, K. Furuya, B.I. Miller, J.A. Rentschler, A.H. Dayem and P. Markiewich *Integrated and Guided-Wave Optics Tech. Digest*, IEEE Cat #82CH1719-4, paper no. WB-1, (1982).
61. 1982 "Combined Dry and Wet Etching Techniques to Form Planar (011) Facets in GaInAsP/InP Double Heterostructures," L.A. Coldren, K. Furuya, B.I. Miller and J.A. Rentschler *Electron. Letts.*, **18**, 235-7, (1982).
62. 1982 "Novel Deposit/Spin Waveguide Interconnection(DSWI) Technique for Semiconductor Integrated Optics," K. Furuya, B.I. Miller, L.A. Coldren and R.E. Howard *Electron. Letts.*, **18**, 204-5; Full paper: *IEEE J. Quant. Elect.*, **QE-18**, 1783-9.
63. 1982 "Etched Mirror and Groove-Coupled GaInAsP/InP Laser Devices for Integrated Optics," L.A. Coldren, K. Furuya, B.I. Miller and J.A. Rentschler *IEEE J. Quant. Elect.*, **QE-18**, 1679-88, (1982).
64. 1982 "Generation of Single-Longitudinal-Mode Subnanosecond Light Pulses by High-Speed Current Modulation of Monolithic Two-Section Semiconductor Lasers," K.J. Ebeling, L.A. Coldren, B.I. Miller and J.A. Rentschler *Electron. Letts.*, **18**, 901-2, (1982).
65. 1982 "Low-Resistance Ohmic Contacts to p-InP," C.L. Cheng, L.A. Coldren, B.I. Miller and J.A. Rentschler *Electron. Letts.*, **18**, 755-6, (1982).
66. 1983 "Orientation of (100) InGaAsP/InP Wafers by HCl," L.W. Stulz and L.A. Coldren *J. Electrochem. Soc.*, **130**, 1628-30, (1983).
67. 1983 "Single-Mode Operation of Coupled-Cavity GaInAsP/InP Semiconductor Lasers," K.J. Ebeling, L.A. Coldren, B.I. Miller and J.A. Rentschler *Applied Physics Letters*, **42**, 6-8, (1983).
68. 1983 "On the Formation of Planar-Etched Facets in GaInAsP/InP Double Heterostructures," L.A. Coldren, K. Furuya and B.I. Miller *J. Electrochem. Soc.*, **130**, 1918-26, (1983).
69. 1983 "Analysis of Multielement Semiconductor Lasers," K.J. Ebeling and L.A. Coldren *J. Appl. Phys.*, **54**, 2962-69, (1983).
70. 1983 "Single-Longitudinal-Mode Operation of Two-Section GaInAsP/InP Lasers Under Pulsed Excitation," L.A. Coldren, K.J. Ebeling, B.I. Miller and J.A. Rentschler *IEEE J. Quantum Electron.*, **QE-19**, 1057-1062, (1983).
71. 1983 "Coupled-Cavity Approach to Single-Mode Lasers at 1.3-1.6 μm ," L.A. Coldren, B.I. Miller, J.E. Bowers, K.J. Ebeling, R.A. Logan and J.A. Rentschler *IOOC-'83 Tech. Digest*, Japan; ISBN 4-930813-01-8, paper no. 29B1-2.
72. 1983 "Photoelectro-Chemical Etching of InGaAsP," J.E. Bowers, L.A. Coldren, B.I. Miller and P.A. Kohl *1983 Electronic Materials Conf. Digest*, Burlington, VT, Paper no. M7.

73. 1983 "1.55 μm Multisection Ridge Lasers," J.E. Bowers, L.A. Coldren, B.R. Hemingway, B.I. Miller and R.J. Martin *Electron. Letts.*, **19**, 523-5, (1983).
74. 1984 "Analysis and Design of Coupled-Cavity Lasers I: Threshold Gain Analysis and Design Guidelines," L.A. Coldren and T.L. Koch *IEEE J. Quantum Electron*, **QE-20**, 659-670, (1984).
75. 1984 "Analysis and Design of Coupled-Cavity Lasers II: Transient Analysis," L.A. Coldren and T.L. Koch *IEEE J. Quantum Electron*, **QE-20**, 671-682, (1984).
76. 1984 "Monolithically Integrated Dynamic-Single-Mode Coupled-Cavity Lasers," L.A. Coldren and T.L. Koch *Integrated and Guided-Wave Optics Tech. Dig.*, Kissimmee, FL, paper no. TuD4, (April).
77. 1984 "Cleaved-Coupled-Cavity Lasers with Large Cavity Length Ratio," J.E. Bowers, J.E. Bjorkholm, C.A. Burrus, L.A. Coldren, B.R. Hemenway and D.P. Wilt *Applied Physics Letters*, **44**, 821-823, (May 1984).
78. 1984 "A New Fabrication Technique for Self-Aligned Recessed Short Gate InP MESFET," C.L. Cheng, L.A. Coldren, B. Lalevic, R.F. Leheny, A. Liao, B.I. Miller *IEEE Trans. Electron. Devices*, **ED-31**, 840-841, (June 1984).
79. 1984 "Chirp Reduction in Modulated Three-Terminal Coupled-Cavity Lasers," L.A. Coldren, G.D. Boyd, J.E. Bowers, and C.A. Burrus *IEEE Int'l. Laser Conf. Proc.*, Brazil, (September 1984).
80. 1984 "Vapor-Phase-Regrown Monolithic Two-Section Window Lasers Exhibiting DSM Operation at 1.55 μm ," L.A. Coldren, T.L. Koch, T.J. Bridges, E.G. Burkhardt, B.I. Miller, and J.A. Rentschler *IEEE Int'l. Laser Conf. Proc.*, Brazil, (September 1984).
81. 1984 "1.55 μm Monolithic Shallow-Groove Coupled-Cavity Vapor Phase Transported Buried Hetero-structure Lasers," T.L. Koch, L.A. Coldren, T.J. Bridges, E.G. Burkhardt, P.J. Corvini and D.P. Wilt *IEEE Int'l. Laser Conf. Proc.*, Brazil, (September 1984).
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