



## David Miller

W.M. Keck Foundation Professor of Electrical Engineering and Professor, by courtesy, of Applied Physics

 Curriculum Vitae available Online

### Bio

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#### BIO

David Miller (B. Sc., St. Andrews, Ph.D., Heriot-Watt) is the W. M. Keck Professor of Electrical Engineering, and Professor by Courtesy of Applied Physics at Stanford University. Before Stanford, he was with Bell Laboratories from 1981 to 1996, as a department head from 1987. His interests include nanophotonics, quantum-well optoelectronics, and optics in information sensing, interconnects, and processing. He has published over 280 scientific papers, holds over 75 patents, has a Google h-index of over 100, is the author of the textbook *Quantum Mechanics for Scientists and Engineers* (Cambridge, 2008), and has taught open online quantum mechanics classes to over 50,000 students.

He was President of the IEEE LEOS (now Photonics Society) in 1995, and has served on Boards for various societies, companies, and university and government bodies.

He was awarded the OSA Adolph Lomb Medal and the R. W. Wood Prize, the ICO International Prize in Optics, the IEEE Third Millennium Medal, and the 2013 Carnegie Millennium Professorship. He is also a Fellow of APS, OSA, IEEE, the Electromagnetics Academy, the Royal Society of London and the Royal Society of Edinburgh, holds two Honorary Doctorates, and is a Member of the US National Academies of Sciences and of Engineering.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering

#### HONORS AND AWARDS

- Adolph Lomb Medal, OSA (1986)
- Fellow, APS (1988)
- Fellow, OSA (1988)
- R. W. Wood prize, OSA (1988)
- International Prize in Optics, International Commission for Optics (1991)
- Fellow, IEEE (1995)
- Fellow, Royal Society (1995)
- Honorary Degree, Vrije Universiteit Brussel (1997)
- Third Millennium Medal, IEEE (2000)
- Fellow, Royal Society of Edinburgh (2002)
- Honorary Degree, Heriot-Watt University (2003)
- Member, National Academy of Sciences (2008)
- Member, National Academy of Engineering (2010)

- Carnegie Millennium Professorship, Carnegie (2013)
- Fellow, Electromagnetics Academy (2014)

## BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, National Academy of Sciences (2008 - present)
- Member, National Academy of Engineering (2010 - present)

## PROFESSIONAL EDUCATION

- PhD, Heriot-Watt University (1979)

## LINKS

- My professional web page: <https://web.stanford.edu/group/dabmgrou/cgi-bin/dabm/>
- My Google Scholar page: [https://scholar.google.com/citations?hl=en&user=mF\\_qs5sAAAAJ&view\\_op=list\\_works&sortby=pubdate](https://scholar.google.com/citations?hl=en&user=mF_qs5sAAAAJ&view_op=list_works&sortby=pubdate)

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

David Miller's research interests include the use of optics in switching, interconnection, communications, computing, and sensing systems, physics and applications of quantum well optics and optoelectronics, and fundamental features and limits for optics and nanophotonics in communications and information processing.

## Teaching

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### COURSES

#### 2023-24

- Applied Quantum Mechanics II: EE 223 (Win)

#### 2022-23

- Applied Quantum Mechanics I: EE 222, MATSCI 201 (Aut)
- Applied Quantum Mechanics II: EE 223 (Win)

#### 2021-22

- Applied Quantum Mechanics I: EE 222, MATSCI 201 (Aut)
- Applied Quantum Mechanics II: EE 223 (Win)

#### 2020-21

- Applied Quantum Mechanics I: EE 222, MATSCI 201 (Aut)
- Applied Quantum Mechanics II: EE 223 (Win)
- Modern Physics for Engineers: EE 65 (Spr)
- Optics and Electronics Seminar: APPPHYS 483 (Spr)

## Publications

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### PUBLICATIONS

- **Why optics needs thickness.** *Science (New York, N.Y.)*  
Miller, D. A.  
2023; 379 (6627): 41-45
- **Multimode Free Space Optical Link Enabled by SiP Integrated Meshes**  
Milanizadeh, M., SeyedinNavadeh, S., Benci, G., De Vita, C., Klitis, C., Sorel, M., Zanetto, F., Ferrari, G., Miller, D. B., Melloni, A., Morichetti, F., IEEE

IEEE.2021

- **Inference in artificial intelligence with deep optics and photonics.** *Nature*  
Wetzstein, G., Ozcan, A., Gigan, S., Fan, S., Englund, D., Soljacic, M., Denz, C., Miller, D. A., Psaltis, D.  
2020; 588 (7836): 39–47
- **Programmable photonic circuits.** *Nature*  
Bogaerts, W. n., Pérez, D. n., Capmany, J. n., Miller, D. A., Poon, J. n., Englund, D. n., Morichetti, F. n., Melloni, A. n.  
2020; 586 (7828): 207–16
- **Waves, modes, communications, and optics: a tutorial** *ADVANCES IN OPTICS AND PHOTONICS*  
Miller, D. B.  
2019; 11 (3): 679–825
- **Unscrambling light-automatically undoing strong mixing between modes** *LIGHT-SCIENCE & APPLICATIONS*  
Annoni, A., Guglielmi, E., Carminati, M., Ferrari, G., Sampietro, M., Miller, D. B., Melloni, A., Morichetti, F.  
2017; 6
- **Universal modal radiation laws for all thermal emitters** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Miller, D. A., Zhu, L., Fan, S.  
2017; 114 (17): 4336-4341
- **Attojoule Optoelectronics for Low-Energy Information Processing and Communications** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Miller, D. A.  
2017; 35 (3): 346-396
- **Perfect optics with imperfect components** *OPTICA*  
Miller, D. A.  
2015; 2 (8): 747-750
- **Establishing Optimal Wave Communication Channels Automatically** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Miller, D. A.  
2013; 31 (24): 3987-3994
- **Reconfigurable add-drop multiplexer for spatial modes** *OPTICS EXPRESS*  
Miller, D. A.  
2013; 21 (17): 20220-20229
- **Self-configuring universal linear optical component** *PHOTONICS RESEARCH*  
Miller, D. A.  
2013; 1 (1): 1-15
- **Self-aligning universal beam coupler** *OPTICS EXPRESS*  
Miller, D. A.  
2013; 21 (5): 6360-6370
- **How complicated must an optical component be?** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*  
Miller, D. A.  
2013; 30 (2): 238-251
- **Designing Linear Optical Components** *Optics in 2013 Special Issue, Optics and Photonics News, [http://www.opnmagazine-digital.com/opn/december\\_2013#pg40](http://www.opnmagazine-digital.com/opn/december_2013#pg40)*  
Miller, D., A. B.  
2013: 38
- **Establishing optimal wave communication channels automatically** *J. Lightwave Technol., <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6581883>*  
Miller, D., A. B.  
2013; 31: 3987 – 3994
- **Self-configuring universal linear optical component** *Photon. Res., <http://www.opticsinfobase.org/prj/abstract.cfm?URI=prj-1-1-1>*

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- Miller, D., A. B.  
2013; 1: 1-15
- **Reconfigurable add-drop multiplexer for spatial modes** *Opt. Express*, <http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-17-20220>  
Miller, D., A. B.  
2013; 21: 20220-20229
  - **All linear optical devices are mode converters** *OPTICS EXPRESS*  
Miller, D. A.  
2012; 20 (21): 23985-23993
  - **Energy consumption in optical modulators for interconnects** *OPTICS EXPRESS*  
Miller, D. A.  
2012; 20 (6): A293-A308
  - **Device Requirements for Optical Interconnects to Silicon Chips** *PROCEEDINGS OF THE IEEE*  
Miller, D. A.  
2009; 97 (7): 1166-1185
  - **Experimentally realized in situ backpropagation for deep learning in photonic neural networks.** *Science (New York, N.Y.)*  
Pai, S., Sun, Z., Hughes, T. W., Park, T., Bartlett, B., Williamson, I. A., Minkov, M., Milanizadeh, M., Abebe, N., Morichetti, F., Melloni, A., Fan, S., Solgaard, et al  
2023; 380 (6643): 398-404
  - **Power monitoring in a feedforward photonic network using two output detectors** *NANOPHOTONICS*  
Pai, S., Valdez, C., Park, T., Milanizadeh, M., Morichetti, F., Melloni, A., Fan, S., Solgaard, O., Miller, D. B.  
2023
  - **Electromagnetic Information Theory in Phase-Space: A Quantum Tunnelling Approach**  
Gradoni, G., Miller, D. B., Creagh, S. C., IEEE  
IEEE.2023
  - **Automatic setting of multiple FSO orthogonal communication channels between photonic chips**  
SeyedinNavadeh, S., Milanizadeh, M., Zanetto, F., Grimaldi, V., De Vita, C., Ferrari, G., Miller, D. B., Melloni, A., Morichetti, F., IEEE  
IEEE.2023
  - **Quantitative phase contrast imaging with a nonlocal angle-selective metasurface.** *Nature communications*  
Ji, A., Song, J. H., Li, Q., Xu, F., Tsai, C. T., Tiberio, R. C., Cui, B., Lalanne, P., Kik, P. G., Miller, D. A., Brongersma, M. L.  
2022; 13 (1): 7848
  - **Multi-dimensional data transmission using inverse-designed silicon photonics and microcombs.** *Nature communications*  
Yang, K. Y., Shirpurkar, C., White, A. D., Zang, J., Chang, L., Ashtiani, F., Guidry, M. A., Lukin, D. M., Pericherla, S. V., Yang, J., Kwon, H., Lu, J., Ahn, et al  
2022; 13 (1): 7862
  - **Spatially resolving amplitude and phase of light with a reconfigurable photonic integrated circuit** *OPTICA*  
Buetow, J., Eismann, J. S., Milanizadeh, M., Morichetti, F., Melloni, A., Miller, D. B., Banzer, P.  
2022; 9 (8): 939-946
  - **Separating arbitrary free-space beams with an integrated photonic processor.** *Light, science & applications*  
Milanizadeh, M., SeyedinNavadeh, S., Zanetto, F., Grimaldi, V., De Vita, C., Klitis, C., Sorel, M., Ferrari, G., Miller, D. A., Melloni, A., Morichetti, F.  
2022; 11 (1): 197
  - **Self-configuring programmable photonics for processing, communications and sensing**  
Miller, D. B., IEEE  
IEEE.2022
  - **Photonic chips embrace piezo-optomechanics** *NATURE PHOTONICS*  
Miller, D. B.  
2021

- **Coherent self-control of free-space optical beams with integrated silicon photonic meshes** *PHOTONICS RESEARCH*  
Milanizadeh, M., Toso, F., Ferrari, G., Jonuzi, T., Miller, D. B., Melloni, A., Morichetti, F.  
2021; 9 (11): 2196-2204
- **Development of Quantum Interconnects (QICs) for Next-Generation Information Technologies** *PRX QUANTUM*  
Awschalom, D., Berggren, K. K., Bernien, H., Bhave, S., Carr, L. D., Davids, P., Economou, S. E., Englund, D., Faraon, A., Fejer, M., Guha, S., Gustafsson, M., Hu, et al  
2021; 2 (1)
- **Wavelength-Division Multiplexed Optical Cryptocurrency**  
Pai, S., Abebe, N., Dubrovsky, M., Hwang, R. L., Karpov, M., Penkovsky, B., Miller, D. B., Solgaard, O., IEEE  
IEEE.2021
- **Self-Configuring Silicon-Photonic Receiver for Multimode Free Space Channels**  
SeyedinNavadeh, S., Milanizadeh, M., Benci, G., De Vita, C., Klitis, C., Sorel, M., Zanetto, F., Grimaldi, V., Ferrari, G., Miller, D. B., Melloni, A., Morichetti, F., IEEE  
IEEE.2021
- **Self-Configuring Complex Photonic Circuits**  
Miller, D. B., IEEE  
IEEE.2021
- **Getting to femtojoule optics - what physics and what technology?**  
Miller, D. B., IEEE  
IEEE.2021
- **Quantitative Phase Contrast Imaging using Guided-mode Resonator Devices**  
Ji, A., Song, J., Li, Q., Kik, P. G., Miller, D. B., Brongersma, M. L., IEEE  
IEEE.2021
- **MEMS Photonic Networks For Parallelized Matrix Multiplication Using Wavelength-Division Multiplexing**  
Pai, S., Abebe, N., Hwang, R. L., Miller, D. B., Solgaard, O., IEEE  
IEEE.2021
- **Parallel Programming of an Arbitrary Feedforward Photonic Network** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*  
Pai, S., Williamson, I. D., Hughes, T. W., Minkov, M., Solgaard, O., Fan, S., Miller, D. B.  
2020; 26 (5)
- **Adapting Mach-Zehnder Mesh Equalizers in Direct-Detection Mode-Division-Multiplexed Links** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Choutagunta, K., Roberts, I., Miller, D. B., Kahn, J. M.  
2020; 38 (4): 723–35
- **Parallel Fault-Tolerant Programming and Optimization of Photonic Neural Networks**  
Pai, S., Williamson, I. D., Minkov, M., Hughes, T. W., Solgaard, O., Fan, S., Miller, D. B., IEEE  
IEEE.2020
- **Saving Energy and Increasing Density in Information Processing Using Photonics**  
Miller, D. B., IEEE  
IEEE.2020
- **Experimental band structure spectroscopy along a synthetic dimension.** *Nature communications*  
Dutt, A., Minkov, M., Lin, Q., Yuan, L., Miller, D. A., Fan, S.  
2019; 10 (1): 3122
- **Matrix Optimization on Universal Unitary Photonic Devices** *PHYSICAL REVIEW APPLIED*  
Pai, S., Bartlett, B., Solgaard, O., Miller, D. B.  
2019; 11 (6)
- **Experimental Demonstration of Dynamical Input Isolation in Nonadiabatically Modulated Photonic Cavities** *ACS PHOTONICS*  
Dutt, A., Minkov, M., Lin, Q., Yuan, L., Miller, D. B., Fan, S.

2019; 6 (1): 162–69

- **Experimental Band Structure Spectroscopy along the Synthetic Dimension**  
Dutt, A., Minkov, M., Lin, Q., Yuan, L., Miller, D. B., Fan, S., IEEE  
IEEE.2019
- **Ten-million years of activity within the Eastern California Shear Zone from U–Pb dating of fault-zone opal** *Earth and Planetary Science Letters*  
Nuriel, P., Miller, D. M., Schmitt, K. M., Coble, M. A., Maher, K.  
2019; 521: 37-45
- **Unscrambling light-automatically undoing strong mixing between modes.** *Light, science & applications*  
Annoni, A., Guglielmi, E., Carminati, M., Ferrari, G., Sampietro, M., Miller, D. A., Melloni, A., Morichetti, F.  
2017; 6 (12): e17110
- **Better choices than optical angular momentum multiplexing for communications** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Miller, D. B.  
2017; 114 (46): E9755–E9756
- **Better choices than optical angular momentum multiplexing for communications.** *Proceedings of the National Academy of Sciences of the United States of America*  
Miller, D. A.  
2017; 114 (46): E9755-E9756
- **Arbitrary and self-configuring photonic circuits for sensing and processing**  
Miller, D. B., IEEE  
IEEE.2017: 51–52
- **Attojoule optoelectronics-saving even more energy with optics**  
Miller, D. B., IEEE  
IEEE.2017: 89–90
- **Applied Optics. Sorting out light.** *Science*  
Miller, D. A.  
2015; 347 (6229): 1423-1424
- **Design of large scale plasmonic nanoslit arrays for arbitrary mode conversion and demultiplexing.** *Optics express*  
Wahl, P., Tanemura, T., Vermeulen, N., Van Erps, J., Miller, D. A., Thienpont, H.  
2014; 22 (1): 646-660
- **Design of large scale plasmonic nanoslit arrays for arbitrary mode conversion and demultiplexing** *Conference on Nanophotonics V*  
Wahl, P., Tanemura, T., Vermeulen, N., Van Erps, J., Miller, D. A., Thienpont, H.  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **Surface-Normal Ge/SiGe Asymmetric Fabry-Perot Optical Modulators Fabricated on Silicon Substrates** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Audet, R. M., Edwards, E. H., Balram, K. C., Claussen, S. A., Schaevitz, R. K., Tasyurek, E., Rong, Y., Fei, E. I., Kamins, T. I., Harris, J. S., Miller, D. A.  
2013; 31 (24): 3995-4003
- **Modal Source Radiator Model for Arbitrary Two-Dimensional Arrays of Subwavelength Apertures on Metal Films** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*  
Tanemura, T., Wahl, P., Fan, S., Miller, D. A.  
2013; 19 (3)
- **Nanoscale resonant-cavity-enhanced germanium photodetectors with lithographically defined spectral response for improved performance at telecommunications wavelengths** *OPTICS EXPRESS*  
Balram, K. C., Audet, R. M., Miller, D. A.  
2013; 21 (8): 10228-10233
- **Energy-per-Bit Limits in Plasmonic Integrated Photodetectors** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*  
Wahl, P., Tanemura, T., Debaes, C., Vermeulen, N., van Erps, J., Miller, D. A., Thienpont, H.  
2013; 19 (2)

- **Light emission from strained germanium** *NATURE PHOTONICS*  
Jain, J. R., Hryciw, A., Baer, T. M., Miller, D. A., Brongersma, M. L., Howe, R. T.  
2013; 7 (3): 162-163
- **Highly Tailored Computational Electromagnetics Methods for Nanophotonic Design and Discovery** *PROCEEDINGS OF THE IEEE*  
Liu, V., Miller, D. A., Fan, S.  
2013; 101 (2): 484-493
- **Low-voltage broad-band electroabsorption from thin Ge/SiGe quantum wells epitaxially grown on silicon** *OPTICS EXPRESS*  
Edwards, E. H., Lever, L., Fei, E. T., Kamins, T. I., Ikonic, Z., Harris, J. S., Kelsall, R. W., Miller, D. A.  
2013; 21 (1): 867-876
- **B-CALM: AN OPEN-SOURCE MULTI-GPU-BASED 3D-FDTD WITH MULTI-POLE DISPERSION FOR PLASMONICS** *PROGRESS IN ELECTROMAGNETICS RESEARCH-PIER*  
Wahl, P., Ly-Gagnon, D., Bebaes, C., Van Erps, J., Vermeulen, N., Miller, D. A., Thienpont, H.  
2013; 138: 467-478
- **Attojoule optoelectronics - why and how** *IEEE-Photonics-Society Summer Topical Meeting*  
Miller, D. A.  
IEEE.2013: 28-29
- **Ge/SiGe Quantum Well Asymmetric Fabry-Perot Modulators on Silicon Substrates** *IEEE-Photonics-Society Summer Topical Meeting*  
Audet, R. M., Edwards, E. H., Balram, K., Rong, Y., Harris, J. S., Miller, D. A.  
IEEE.2013: 248-249
- **Separating arbitrary overlapping spatial modes losslessly and without calculations** *IEEE-Photonics-Society Summer Topical Meeting*  
Miller, D. A.  
IEEE.2013: 101-102
- **Nanoscale Integrated Planar Multispectral Image Sensors**  
Balram, K., C., Miller, D., A. B.  
2013
- **Separating arbitrary overlapping spatial modes losslessly and without calculations** *IEEE Photonics Society Summer Topical Meetings, Space Division Multiplexing for Optical Communications*  
Miller, D., A. B.  
2013
- **Nanoscale resonant-cavity-enhanced germanium photodetectors with lithographically defined spectral response for improved performance at telecommunications wavelengths** *2nd IEEE-Photonics-Society Optical Interconnects Conference*  
Balram, K. C., Audet, R. M., Miller, D. A.  
IEEE.2013: 25-26
- **Energy-per-bit and noise limits in plasmonic intergrated photodetectors** *Conference on Integrated Optics - Physics and Simulations*  
Wahl, P., Tanemura, T., Debaes, C., Vermeulen, N., Van Erps, J., Miller, D. A., Thienpont, H.  
SPIE-INT SOC OPTICAL ENGINEERING.2013
- **Ge/SiGe asymmetric Fabry-Perot quantum well electroabsorption modulators** *OPTICS EXPRESS*  
Edwards, E. H., Audet, R. M., Fei, E. T., Claussen, S. A., Schaevitz, R. K., Tasyurek, E., Rong, Y., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 20 (28): 29164-29173
- **Ultra-compact photonic crystal waveguide spatial mode converter and its connection to the optical diode effect** *OPTICS EXPRESS*  
Liu, V., Miller, D. A., Fan, S.  
2012; 20 (27): 28388-28397
- **Selective area growth of germanium and germanium/silicon-germanium quantum wells in silicon waveguides for on-chip optical interconnect applications** *OPTICAL MATERIALS EXPRESS*  
Claussen, S. A., Balram, K. C., Fei, E. T., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 2 (10): 1336-1342

- **Self-aligned silicon fins in metallic slits as a platform for planar wavelength-selective nanoscale resonant photodetectors** *OPTICS EXPRESS*  
Balram, K. C., Miller, D. A.  
2012; 20 (20): 22735-22742
- **B-CALM: An open-source GPU-based 3D-FDTD with multi-pole dispersion for plasmonics** *11th International Conference on Numerical Simulation of Optoelectronic Devices in Optical and Quantum Electronics (NUSOD)*  
Wahl, P., Ly-Gagnon, D., Debaes, C., Miller, D. A., Thienpont, H.  
SPRINGER.2012: 285-90
- **A micromachining-based technology for enhancing germanium light emission via tensile strain** *NATURE PHOTONICS*  
Jain, J. R., Hryciw, A., Baer, T. M., Miller, D. A., Brongersma, M. L., Howe, R. T.  
2012; 6 (6): 398-405
- **Ge/SiGe Quantum Well Waveguide Modulator Monolithically Integrated With SOI Waveguides** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Ren, S., Rong, Y., Claussen, S. A., Schaevitz, R. K., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 24 (6): 461-463
- **Investigation of Limits to the Optical Performance of Asymmetric Fabry-Perot Electroabsorption Modulators** *IEEE JOURNAL OF QUANTUM ELECTRONICS*  
Audet, R. M., Edwards, E. H., Wahl, P., Miller, D. A.  
2012; 48 (2): 198-209
- **Simple Electroabsorption Calculator for Designing 1310 nm and 1550 nm Modulators Using Germanium Quantum Wells** *IEEE JOURNAL OF QUANTUM ELECTRONICS*  
Schaevitz, R. K., Edwards, E. H., Roth, J. E., Fei, E. T., Rong, Y., Wahl, P., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 48 (2): 187-197
- **B-CALM: An Open-Source GPU-based 3D-FDTD with Multi-Pole Dispersion for Plasmonics** *Conference on Optical Modelling and Design II*  
Wahl, P., Ly-Gagnon, D., Debaes, C., Miller, D. A., Thienpont, H.  
SPIE-INT SOC OPTICAL ENGINEERING.2012
- **Routing and photodetection in subwavelength plasmonic slot waveguides** *NANOPHOTONICS*  
Ly-Gagnon, D., Balram, K. C., White, J. S., Wahl, P., Brongersma, M. L., Miller, D. A.  
2012; 1 (1): 9-16
- **Self-aligned Silicon Fins in Metallic Slits as a Platform for Planar Tunable Nanoscale Resonant Photodetectors**  
Balram, K., C., Miller, D., A. B.  
2012
- **Routing and Detection of Light on Deeply Subwavelength scale in Two-conductor Metallic Slot Waveguides**  
Balram, K., C., Ly-Gagnon, D., S., White, J., Wahl, P., Brongersma, M., Miller, D., A. B.  
2012
- **Energy use in optical modulators**  
Miller, D., A. B.  
2012
- **Routing and Photodetection in Subwavelength Plasmonic Slot Waveguides** *Nanophotonics*  
Ly-Gagnon, D., Balram, Krishna, C., White, Justin, S., Wahl, P., Brongersma, Mark, L., Miller, David, A. B.  
2012; 1: 9-16
- **Strained germanium thin film membrane on silicon substrate for optoelectronics** *OPTICS EXPRESS*  
Nam, D., Sukhdeo, D., Roy, A., Balram, K., Cheng, S., Huang, K. C., Yuan, Z., Brongersma, M., Nishi, Y., Miller, D., Saraswat, K.  
2011; 19 (27): 25866-25872
- **Tensile-strained germanium-on-insulator substrate fabrication for silicon-compatible optoelectronics** *OPTICAL MATERIALS EXPRESS*  
Jain, J. R., Ly-Gagnon, D., Balram, K. C., White, J. S., Brongersma, M. L., Miller, D. A., Howe, R. T.  
2011; 1 (6): 1121-1126
- **Indirect absorption in germanium quantum wells** *AIP ADVANCES*



- 
- Schaevitz, R. K., Ly-Gagnon, D. S., Roth, J. E., Edwards, E. H., Miller, D. A.  
2011; 1 (3)
- **Thin Dielectric Spacer for the Monolithic Integration of Bulk Germanium or Germanium Quantum Wells With Silicon-on-Insulator Waveguides** *IEEE PHOTONICS JOURNAL*  
Ren, S., Kamins, T. I., Miller, D. A.  
2011; 3 (4): 739-747
  - **Multiple-Wavelength Focusing of Surface Plasmons with a Nonperiodic Nanoslit Coupler** *NANO LETTERS*  
Tanemura, T., Balram, K. C., Ly-Gagnon, D., Wahl, P., White, J. S., Brongersma, M. L., Miller, D. A.  
2011; 11 (7): 2693-2698
  - **Selective epitaxial growth of Ge/Si<sub>0.15</sub>Ge<sub>0.85</sub> quantum wells on Si substrate using reduced pressure chemical vapor deposition** *APPLIED PHYSICS LETTERS*  
Ren, S., Rong, Y., Kamins, T. I., Harris, J. S., Miller, D. A.  
2011; 98 (15)
  - **Design methodology for compact photonic-crystal-based wavelength division multiplexers** *OPTICS LETTERS*  
Liu, V., Jiao, Y., Miller, D. A., Fan, S.  
2011; 36 (4): 591-593
  - **Thin Dielectric Spacer for the Monolithic Integration of Bulk Germanium Quantum Wells With Silicon-on-Insulator Waveguides** *IEEE Photonics Journal*  
Ren, S., Kamins, T. I., Miller, D., A. B.  
2011; 3 (4): 739-747
  - **On-Chip Optical Propagation and Photodetection in Nanometer-Scale Two-Conductor Plasmonic Waveguides**  
Ly-Gagnon, D., s., Balram, K., C., White, J., S., Wahl, P., Brongersma, M., L., Miller, D., A. B.  
2011
  - **A Ge/SiGe Quantum Well Waveguide Modulator Monolithically Integrated with SOI Waveguides**  
Ren, S., Rong, Y., Claussen, S., Schaevitz, R., Kamins, T., I., Harris, J., S., Miller, David, A.B  
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