

# Stanford


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## Olav Solgaard

Director, Edward L. Ginzton Laboratory and Robert L. and Audrey S. Hancock  
Professor in the School of Engineering

Electrical Engineering

 Curriculum Vitae available Online

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### Bio

#### BIO

The Solgaard group focus on design and fabrication of nano-photonics and micro-optical systems. We combine photonic crystals, optical meta-materials, silicon photonics, and MEMS, to create efficient and reliable systems for communication, sensing, imaging, and optical manipulation.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Member, Bio-X
- Affiliate, Precourt Institute for Energy
- Member, Stanford Cancer Institute
- Affiliate, Stanford Woods Institute for the Environment
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- Fellow, IEEE (2017)
- Fellow, Norwegian Academy of Technological Sciences (2010)
- Fellow, Optical Society of America (2008)
- Member, The Royal Norwegian Society of Sciences and Letters (2008)

#### PROFESSIONAL EDUCATION

- PhD, Stanford (1992)

#### PATENTS

- M.J.F. Dignonnet, O. Kilic, W. Jo, O. Solgaard, B.H. Afshar. "United States Patent 10,495,508 Phase-front-modulation sensor", Leland Stanford Junior University, Dec 3, 2019
- J.R. Landry, I. Ryosuke, M.J. Mandella, O. Solgaard. "United States Patent 10,401,605 Structured illumination in inverted light sheet microscopy", Leland Stanford Junior University, Sep 3, 2019
- I. Ryosuke, O. Solgaard, S.S. Hamann. "United States Patent 10,310,246 Converter, illuminator, and light sheet fluorescence microscope", Leland Stanford Junior University, Jun 4, 2019
- S Manosalvas-Kjono, R Quan, O Solgaard, Z Su. "United States Patent 11,192,779 Method and apparatus for evaluating electrostatic or nonlinear devices n US Patent", Stanford, May 12, 0175

## Teaching

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### COURSES

#### 2023-24

- Introduction to Electromagnetics and Its Applications: EE 42, ENGR 42 (Spr)
- Introduction to Micro and Nano Electromechanical Systems: ENGR 240 (Win)
- Micro and Nano Optical Device Design: EE 334 (Aut)
- Optics and Electronics Seminar: APPPHYS 483 (Win, Spr)
- Taking the Pulse of the Planet: GEOPHYS 115 (Win)

#### 2022-23

- Introduction to Electromagnetics and Its Applications: EE 42, ENGR 42 (Spr)
- Introduction to Micro and Nano Electromechanical Systems: ENGR 240 (Win)
- Optics and Electronics Seminar: APPPHYS 483 (Win)
- Photonics Laboratory: EE 234 (Spr)

#### 2021-22

- Introduction to Electromagnetics and Its Applications: EE 42, ENGR 42 (Spr)
- Introduction to Micro and Nano Electromechanical Systems: ENGR 240 (Win)
- Optics and Electronics Seminar: APPPHYS 483 (Win, Spr)

#### 2020-21

- Introduction to Electromagnetics and Its Applications: EE 42, ENGR 42 (Spr)
- Introduction to Micro and Nano Electromechanical Systems: ENGR 240 (Aut)
- Introductory Research Seminar in Electrical Engineering: EE 301 (Aut, Win)
- Photonics Laboratory: EE 234 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Nancy Ammar, Sara Azzouz, Dominic Catanzaro, Brian Chao, Elizabeth Chen, Arynn Gallegos, Manu Gopakumar, Yakub Grzesik, Alex Hwang, Evan Laksono, Felix Mayor, Chance Ornelas-Skarin, Taewon Park, Anirudh Vijay, Colin Yule

#### Doctoral Dissertation Advisor (AC)

Annie Kroo, Anna Miller, Melanie Murillo, Carson Valdez, Clarisse Woodahl

#### Master's Program Advisor

Steven Abrego, Maxwell Fite, Rodrigo Ruz Cuen

#### Doctoral (Program)

Arynn Gallegos, Crystal Nattoo, Taewon Park, Jason Saunders, Carson Valdez, Samantha van Rijs

## Publications

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### PUBLICATIONS

- **High-efficiency vertically emitting coupler facilitated by three wave interaction gratings.** *Optics letters*  
Valdez, C. G., Pai, S., Broaddus, P., Solgaard, O.

2024; 49 (9): 2373-2376

- **Subrelativistic Alternating Phase Focusing Dielectric Laser Accelerators.** *Physical review letters*  
Broaddus, P., Egenolf, T., Black, D. S., Murillo, M., Woodahl, C., Miao, Y., Niedermayer, U., Byer, R. L., Leedle, K. J., Solgaard, O.  
2024; 132 (8): 085001
- **Scalable low-latency optical phase sensor array** *OPTICA*  
Sun, Z., Pai, S., Valdez, C., Milanizadeh, M., Melloni, A., Morichetti, F., Miller, D. B., Solgaard, O.  
2023; 10 (9): 1165-1172
- **Experimental evaluation of digitally verifiable photonic computing for blockchain and cryptocurrency** *OPTICA*  
Pai, S., Park, T., Ball, M., Penkovsky, B., Dubrovsky, M., Abebe, N., Milanizadeh, M., Morichetti, F., Melloni, A., Fan, S., Solgaard, O.  
2023; 10 (5): 552-560
- **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
- **Integrated Amplitude and Phase Monitor for Micro-Actuators.** *Micromachines*  
Manosalvas-Kjono, S. N., Quan, R., Solgaard, O.  
2022; 13 (8)
- **Immersion graded index optics: theory, design, and prototypes.** *Microsystems & nanoengineering*  
Vaidya, N., Solgaard, O.  
2022; 8: 69
- **Acoustic Localization With an Optical Fiber Silicon Microphone System** *IEEE SENSORS JOURNAL*  
Lorenzo, S., Solgaard, O.  
2022; 22 (10): 9408-9416
- **High gradient silicon carbide immersion lens ultrafast electron sources** *JOURNAL OF APPLIED PHYSICS*  
Leedle, K. J., Niedermayer, U., Skaer, E., Urbaneck, K., Miao, Y., Broaddus, P., Solgaard, O., Byer, R. L.  
2022; 131 (13)
- **Quantum Nature of Dielectric Laser Accelerators** *PHYSICAL REVIEW X*  
Adiv, Y., Wang, K., Dahan, R., Broaddus, P., Miao, Y., Black, D., Leedle, K., Byer, R. L., Solgaard, O., England, R., Kaminer, I.  
2021; 11 (4)
- **Thermally-Compensated Optical Fiber Silicon Sensor Platform** *IEEE SENSORS JOURNAL*  
Lorenzo, S., Kroo, A., Wong, Y., Solgaard, O.  
2021; 21 (21): 24121-24128
- **Electron Pulse Compression with Optical Beat Note.** *Physical review letters*  
Zhao, Z., Leedle, K. J., Black, D. S., Solgaard, O., Byer, R. L., Fan, S.  
2021; 127 (16): 164802
- **Electron Pulse Compression with Optical Beat Note** *PHYSICAL REVIEW LETTERS*  
Zhao, Z., Leedle, K. J., Black, D. S., Solgaard, O., Byer, R. L., Fan, S.  
2021; 127 (16)
- **Resonant scanning design and control for fast spatial sampling.** *Scientific reports*  
Sun, Z., Quan, R., Solgaard, O.  
2021; 11 (1): 20011
- **Low-Energy-Spread Attosecond Bunching and Coherent Electron Acceleration in Dielectric Nanostructures** *PHYSICAL REVIEW APPLIED*  
Niedermayer, U., Black, D. S., Leedle, K. J., Miao, Y., Byer, R. L., Solgaard, O.

2021; 15 (2)

- **Optical Fiber Photonic Crystal Hydrophone for Cellular Acoustic Sensing** *IEEE ACCESS*  
Lorenzo, S., Wong, Y., Solgaard, O.  
2021; 9: 42305–13
- **Optical Fiber Photonic Crystal Hydrophone for Acoustic Bio-Sensing**  
Lorenzo, S., Wong, Y., Solgaard, O., 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
- **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
- **Novel Materials-based Laser Acceleration**  
Deng, H., Leedle, K. J., Miao, Y., Black, D. S., Urbanek, K., McNeur, J., Kozak, M., Ceballos, A., Hommelhoff, P., Solgaard, O., Byer, R. L., Harris, J. S., IEEE  
IEEE.2021
- **Fast Spatial Sampling with Phase Controlled Resonant Scanner**  
Sun, Z., Quan, R., Solgaard, O., IEEE  
IEEE.2021
- **Operating modes of dual-grating dielectric laser accelerators** *PHYSICAL REVIEW ACCELERATORS AND BEAMS*  
Black, D. S., Zhao, Z., Leedle, K. J., Miao, Y., Byer, R. L., Fan, S., Solgaard, O.  
2020; 23 (11)
- **Conjugated MEMS Phased Arrays for Large Field of View Random Access Scanning** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Ashida, Y., Hamann, S., Landry, J., Solgaard, O.  
2020; 32 (20): 1291–94
- **Design of a multichannel photonic crystal dielectric laser accelerator** *PHOTONICS RESEARCH*  
Zhao, Z., Black, D. S., England, R., Hughes, T. W., Miao, Y., Solgaard, O., Byer, R. L., Fan, S.  
2020; 8 (10): 1586–98
- **Optical Fiber-Facet Multiplexed Monolithic Silicon Pressure Sensors**  
Lorenzo, S., Solgaard, O.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2020: 10598–606
- **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)
- **Self-aligned concentrating immersion-lens arrays for patterning and efficiency recovery in scaffold-reinforced perovskite solar cells** *APPLIED MATERIALS TODAY*  
Printz, A. D., Zhao, O., Hamann, S., Rolston, N., Solgaard, O., Dauskardt, R. H.  
2020; 20
- **Random Access Cylindrical Lensing and Beam Steering Using a High-Speed Linear Phased Array** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Landry, J. R., Hamann, S. S., Solgaard, O.  
2020; 32 (14): 859–62
- **SPADnet: deep RGB-SPAD sensor fusion assisted by monocular depth estimation** *OPTICS EXPRESS*  
Sun, Z., Lindell, D. B., Solgaard, O., Wetzstein, G.  
2020; 28 (10): 14948–62
- **Software-Based Phase Control, Video-Rate Imaging, and Real-Time Mosaicing With a Lissajous-Scanned Confocal Microscope** *IEEE TRANSACTIONS ON MEDICAL IMAGING*

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- Loewke, N. O., Qiu, Z., Mandella, M. J., Ertsey, R., Loewke, A., Gunaydin, L. A., Rosenthal, E. L., Contag, C. H., Solgaard, O.  
2020; 39 (4): 1127–37
- **Optical Fiber-Tip Monolithic Silicon Pressure Sensors** *IEEE SENSORS JOURNAL*  
Lorenzo, S., Wong, Y., Solgaard, O.  
2020; 20 (5): 2476–84
  - **Gallium Oxide for High-Power Optical Applications** *ADVANCED OPTICAL MATERIALS*  
Deng, H., Leedle, K. J., Miao, Y., Black, D. S., Urbanek, K. E., McNeur, J., Kozak, M., Ceballos, A., Hommelhoff, P., Solgaard, O., Byer, R. L., Harris, J. S.  
2020
  - **Surface treatments of dielectric laser accelerators for increased laser-induced damage threshold** *OPTICS LETTERS*  
Miao, Y., Black, D. S., Leedle, K. J., Zhao, Z., Deng, H., Ceballos, A., Byer, R. L., Harris, J. S., Solgaard, O.  
2020; 45 (2): 391–94
  - **On-chip integrated laser-driven particle accelerator.** *Science (New York, N.Y.)*  
Sapra, N. V., Yang, K. Y., Vercruysee, D. n., Leedle, K. J., Black, D. S., England, R. J., Su, L. n., Trivedi, R. n., Miao, Y. n., Solgaard, O. n., Byer, R. L., Vu#kovic#, J. n.  
2020; 367 (6473): 79–83
  - **High-speed axially swept light sheet microscopy using a linear MEMS phased array for isotropic resolution.** *Journal of biomedical optics*  
Landry, J. n., Hamann, S. n., Solgaard, O. n.  
2020; 25 (10)
  - **Observation of the Quantum Nature of Laser-Driven Particle Acceleration**  
Adiv, Y., Wang, K., Dahan, R., Broaddus, P., Miao, Y., Black, D., Leedle, K., Solgaard, O., England, J., Kaminer, I., IEEE  
IEEE.2020
  - **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
  - **Broadband Optical Fiber-Facet Silicon Pressure Sensor**  
Lorenzo, S., Wong, Y., Solgaard, O., IEEE  
IEEE.2020
  - **Design of a multi-channel photonic crystal dielectric laser accelerator**  
Zhao, Z., Black, D. S., England, R., Hughes, T. W., Miao, Y., Solgaard, O., Byer, R. L., Fan, S., IEEE  
IEEE.2020
  - **Net Acceleration and Direct Measurement of Attosecond Electron Pulses in a Silicon Dielectric Laser Accelerator.** *Physical review letters*  
Black, D. S., Niedermayer, U., Miao, Y., Zhao, Z., Solgaard, O., Byer, R. L., Leedle, K. J.  
2019; 123 (26): 264802
  - **Net Acceleration and Direct Measurement of Attosecond Electron Pulses in a Silicon Dielectric Laser Accelerator** *PHYSICAL REVIEW LETTERS*  
Black, D. S., Niedermayer, U., Miao, Y., Zhao, Z., Solgaard, O., Byer, R. L., Leedle, K. J.  
2019; 123 (26)
  - **Extended Design Space of Silicon-on-Nothing MEMS** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Wong, Y., Lorenzo, S., Miao, Y., Bregman, J., Solgaard, O.  
2019; 28 (5): 850–58
  - **Matrix Optimization on Universal Unitary Photonic Devices** *PHYSICAL REVIEW APPLIED*  
Pai, S., Bartlett, B., Solgaard, O., Miller, D. B.  
2019; 11 (6)
  - **Tunable structured illumination light sheet microscopy for background rejection and imaging depth in minimally processed tissues.** *Journal of biomedical optics*  
Landry, J. R., Itoh, R., Li, J. M., Hamann, S. S., Mandella, M., Contag, C. H., Solgaard, O.  
2019; 24 (4): 1–6
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- **Tunable structured illumination light sheet microscopy for background rejection and imaging depth in minimally processed tissues** *JOURNAL OF BIOMEDICAL OPTICS*  
Landry, J. R., Itoh, R., Li, J. M., Hamann, S. S., Mandella, M., Contag, C. H., Solgaard, O.  
2019; 24 (4)
- **Laser-Driven Electron Lensing in Silicon Microstructures.** *Physical review letters*  
Black, D. S., Leedle, K. J., Miao, Y., Niedermayer, U., Byer, R. L., Solgaard, O.  
2019; 122 (10): 104801
- **Laser-Driven Electron Lensing in Silicon Microstructures** *PHYSICAL REVIEW LETTERS*  
Black, D. S., Leedle, K. J., Miao, Y., Niedermayer, U., Byer, R. L., Solgaard, O., ACHIP Collaboration  
2019; 122 (10)
- **MONOLITHIC SILICON-ON-NOTHING FIBER-BASED PRESSURE SENSORS**  
Lorenzo, S., Wong, Y., Solgaard, O., IEEE  
IEEE.2019: 1893–96
- **Linear Micromechanical Phased Arrays**  
Solgaard, O., Hamann, S. S., Landry, J. R., IEEE  
IEEE.2019: 174–75
- **High-speed random access optical scanning using a linear MEMS phased array** *OPTICS LETTERS*  
Hamann, S., Ceballos, A., Landry, J., Solgaard, O.  
2018; 43 (21): 5455–58
- **Design and Fabrication of Monolithic Photonic Crystal Fiber Acoustic Sensor**  
Wong, Y., Lorenzo, S., Solgaard, O.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2018: 7826–32
- **Design and Fabrication of Monolithic Photonic Crystal Fiber Acoustic Sensor.** *IEEE sensors journal*  
Wong, Y. P., Lorenzo, S., Solgaard, O.  
2018; 18 (19): 7826-7832
- **3D printed optics with nanometer scale surface roughness** *MICROSYSTEMS & NANOENGINEERING*  
Vaidya, N., Solgaard, O.  
2018; 4
- **3D printed optics with nanometer scale surface roughness.** *Microsystems & nanoengineering*  
Vaidya, N., Solgaard, O.  
2018; 4: 18
- **Elements of a dielectric laser accelerator** *OPTICA*  
McNeur, J., Kozak, M., Schoenenberger, N., Leedle, K. J., Deng, H., Ceballos, A., Hoogland, H., Ruehl, A., Hartl, I., Holzwarth, R., Solgaard, O., Harris, J. S., Byer, et al  
2018; 5 (6): 687–90
- **Large negative and positive optical Goos-Hanchen shift in photonic crystals** *OPTICS LETTERS*  
Wong, Y., Miao, Y., Skarda, J., Solgaard, O.  
2018; 43 (12): 2803–6
- **On-Chip Laser-Power Delivery System for Dielectric Laser Accelerators** *PHYSICAL REVIEW APPLIED*  
Hughes, T. W., Tan, S., Zhao, Z., Sapra, N. V., Leedle, K. J., Deng, H., Miao, Y., Black, D. S., Solgaard, O., Harris, J. S., Vuckovic, J., Byer, R. L., Fan, et al  
2018; 9 (5)
- **Phase-dependent laser acceleration of electrons with symmetrically driven silicon dual pillar gratings** *OPTICS LETTERS*  
Leedle, K. J., Black, D. S., Miao, Y., Urbanek, K. E., Ceballos, A., Deng, H., Harris, J. S., Solgaard, O., Byer, R. L.  
2018; 43 (9): 2181–84
- **Automated Cell Segmentation for Quantitative Phase Microscopy** *IEEE TRANSACTIONS ON MEDICAL IMAGING*  
Loewke, N. O., Pai, S., Cordeiro, C., Black, D., King, B. L., Contag, C. H., Chen, B., Baer, T. M., Solgaard, O.

2018; 37 (4): 929–40

- **Time-multiplexed light field synthesis via factored Wigner distribution function** *OPTICS LETTERS*  
Hamann, S., Shi, L., Solgaard, O., Wetzstein, G.  
2018; 43 (3): 599–602
- **Variable Focusing and Steering Using High Speed MEMS Phased Array**  
Hamann, S., Solgaard, O., IEEE  
IEEE.2018: 232–33
- **Optophysiology of cardiomyocytes: characterizing cellular motion with quantitative phase imaging.** *Biomedical optics express*  
Cordeiro, C. n., Abilez, O. J., Goetz, G. n., Gupta, T. n., Zhuge, Y. n., Solgaard, O. n., Palanker, D. n.  
2017; 8 (10): 4652–62
- **Monolithic Photonic Crystal Fiber Acoustic Sensor**  
Wong, Y., Solgaard, O., IEEE  
IEEE.2017: 1113–15
- **MONOLITHIC SILICON-ON-NOTHING PHOTONIC CRYSTAL PRESSURE SENSOR**  
Wong, Y., Bregman, J., Solgaard, O., IEEE  
IEEE.2017: 1963–66
- **Characterizing Cardiomyocytes Motion with Quantitative Phase Imaging**  
Cordeiro, C., Abilez, O., Gupta, T., Goetz, G., Solgaard, O., Palanker, D., IEEE  
IEEE.2017
- **Light sheet fluorescence microscopy using high-speed structured and pivoting illumination** *OPTICS LETTERS*  
Itoh, R., Landry, J. R., Hamann, S. S., Solgaard, O.  
2016; 41 (21): 5015-5018
- **Haltere-Like Optoelectromechanical Gyroscope** *IEEE SENSORS JOURNAL*  
Kilic, O., Ra, H., Akkaya, O. C., Digonnet, M. J., Solgaard, O.  
2016; 16 (11): 4274-4280
- **Design and fabrication of silicon-tessellated structures for monocentric imagers.** *Microsystems & nanoengineering*  
Wu, T., Hamann, S. S., Ceballos, A. C., Chang, C. E., Solgaard, O., Howe, R. T.  
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- **Fast Stiffness Mapping of Cells Using High-Bandwidth Atomic Force Microscopy.** *ACS nano*  
Wang, A., Vijayraghavan, K., Solgaard, O., Butte, M. J.  
2016; 10 (1): 257-264
- **Photonic-Crystal-Based Fiber Hydrophone With Sub-100  $\mu$  Pa/root Hz Pressure Resolution** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Jan, C., Jo, W., Digonnet, M. J., Solgaard, O.  
2016; 28 (2): 123-126
- **Metal-insulator-metal waveguides for particle trapping and separation** *LAB ON A CHIP*  
Khan, S. A., Chang, C., Zaidi, Z., Shin, W., Shi, Y., Bowden, A. K., Solgaard, O.  
2016; 16 (12): 2302-2308
- **Dynamic and social behaviors of human pluripotent stem cells** *SCIENTIFIC REPORTS*  
Phadnis, S. M., Loewke, N. O., Dimov, I. K., Pai, S., Amwake, C. E., Solgaard, O., Baer, T. M., Chen, B., Pera, R. A.  
2015; 5
- **Dielectric laser acceleration of sub-100 keV electrons with silicon dual-pillar grating structures** *OPTICS LETTERS*  
Leedle, K. J., Ceballos, A., Deng, H., Solgaard, O., Pease, R. F., Byer, R. L., Harris, J. S.  
2015; 40 (18): 4344-4347
- **Single-Crystal Silicon Photonic-Crystal Fiber-Tip Pressure Sensors** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Wu, X., Jan, C., Solgaard, O.

2015; 24 (4): 968-975

- **Optical separation of heterogeneous size distributions of microparticles on silicon nitride strip waveguides** *OPTICS EXPRESS*  
Khan, S. A., Shi, Y., Chang, C., Jan, C., Fan, S., Ellerbee, A. K., Solgaard, O.  
2015; 23 (7): 8855-8866
- **Dynamic and social behaviors of human pluripotent stem cells.** *Scientific reports*  
Phadnis, S. M., Loewke, N. O., Dimov, I. K., Pai, S., Amwake, C. E., Solgaard, O., Baer, T. M., Chen, B., Reijo Pera, R. A.  
2015; 5: 14209-?
- **Design of resonant mirrors with negative group delay** *OPTICS EXPRESS*  
Gellineau, A., Wong, Y., Solgaard, O.  
2014; 22 (23): 29213-29222
- **Optical MEMS: From Micromirrors to Complex Systems** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Solgaard, O., Godil, A. A., Howe, R. T., Lee, L. P., Peter, Y., Zappe, H.  
2014; 23 (3): 517-538
- **Silicon buried gratings for dielectric laser electron accelerators** *APPLIED PHYSICS LETTERS*  
Chang, C., Solgaard, O.  
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- **Digital quadrature amplitude modulation with optimized non-rectangular constellations for 100 Gb/s transmission by a directly-modulated laser** *OPTICS EXPRESS*  
Ling, W. A., Lyubomirsky, I., Solgaard, O.  
2014; 22 (9): 10844-10857
- **Double-Layer Silicon Photonic Crystal Fiber-Tip Temperature Sensors** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Park, B., Jung, I. W., Provine, J., Gellineau, A., Landry, J., Howe, R. T., Solgaard, O.  
2014; 26 (9): 900-903
- **Monolithic silicon waveguides in bulk silicon wafers** *Conference on Next-Generation Optical Networks for Data Centers and Short-Reach Links*  
Chang, C., Solgaard, O.  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **Detection of single nano-defects in photonic crystals between crossed polarizers** *OPTICS EXPRESS*  
Grepstad, J. O., Kaspar, P., Johansen, I., Solgaard, O., Sudbo, A.  
2013; 21 (25): 31375-31389
- **Miniature fiber acoustic sensors using a photonic-crystal membrane** *OPTICAL FIBER TECHNOLOGY*  
Jo, W., Akkaya, O. C., Solgaard, O., Dignonnet, M. J.  
2013; 19 (6): 785-792
- **Engineering-reflected phase in Fabry-Perot sensors with resonant mirrors** *OPTICS LETTERS*  
Gellineau, A., Wong, Y., Solgaard, O.  
2013; 38 (23): 4992-4995
- **Fano resonances in integrated silicon Bragg reflectors for sensing applications** *OPTICS EXPRESS*  
Chang, C., Solgaard, O.  
2013; 21 (22): 27209-27218
- **Finite-size limitations on Quality Factor of guided resonance modes in 2D Photonic Crystals** *OPTICS EXPRESS*  
Grepstad, J. O., Greve, M. M., Holst, B., Johansen, I., Solgaard, O., Sudbo, A.  
2013; 21 (20): 23640-23654
- **Time-Division-Multiplexed Interferometric Sensor Arrays** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Akkaya, O. C., Dignonnet, M. J., Kino, G. S., Solgaard, O.  
2013; 31 (16): 3001-3008
- **Short-cavity multimode fiber-tip Fabry-Perot sensors** *OPTICS EXPRESS*  
Wu, X., Solgaard, O.



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- **Two-axis MEMS scanner with transfer-printed high-reflectivity, broadband monolithic silicon photonic crystal mirrors** *OPTICS EXPRESS*  
Jeong, J., Park, B., Keum, H., Kim, S., Rogers, J. A., Solgaard, O.  
2013; 21 (11): 13800-13809
- **High-Bandwidth AFM Probes for Imaging in Air and Fluid** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Vijayraghavan, K., Gellineau, A. A., Wang, A., Butte, M. J., Melosh, N. A., Solgaard, O.  
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- **Measurement of elastic properties in fluid using high bandwidth atomic force microscope probes** *APPLIED PHYSICS LETTERS*  
Vijayraghavan, K., Wang, A., Solgaard, O., Butte, M. J., Melosh, N. A.  
2013; 102 (10)
- **MONOLITHIC SILICON WAVEGUIDES IN STANDARD SILICON** *IEEE MICRO*  
Chang, C., Solgaard, O.  
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- **Modeling and Demonstration of Thermally Stable High-Sensitivity Reproducible Acoustic Sensors** *Journal of Lightwave Technology*  
Akkaya, O., C., Digonnet, M., J.F., Kino, G., S., Solgaard, O.  
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- **Fano resonances in integrated silicon Bragg reflectors for sensing applications** *Optics Express*  
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