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PERSONAL Immigration Status: US Permanent Resident

ACADEMIC EMPLOYMENT

- 07/2018- **Ohio State University**, Columbus, OH, USA
Assistant Professor,
Electrical & Computer Engineering
- 11/2014 – 06/2018 **University of California at Santa Barbara**, CA, USA
Assistant Project Scientist, Electrical & Computer Engineering
❖ Advisor: Prof. Larry A. Coldren
❖ Research focus: InP-based photonic integrated circuits for chip-scale optical frequency synthesizers using an optical phase-locked loop, analog coherent photonic links, as well as packaged LiDAR systems
- 01/2013 – 10/2014 **University of California at Los Angeles**, CA, USA
Postdoctoral research scholar, Electrical Engineering
❖ Advisor: Prof. Kang L. Wang
❖ Research focus: Heteroepitaxial growth of GaAs on silicon by molecular beam epitaxy, van der Waals epitaxy, graphene devices, and VCSELs using graphene electrode
- 02/2012 – 12/2012 **McGill University**, Montreal, QC, Canada
Postdoctoral fellow, Electrical & Computer Engineering
❖ Advisor: Prof. Zetian Mi
❖ Research focus: Epitaxial growth and optical / electrical characterization of III-nitride single nanowire, nanoplasmonics, and quantum-dot semiconductor microtube resonators
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EDUCATION

- 05/2008 – 01/2012 **Tech. Univ. München, Walter Schottky Institut**, Munich, Germany
PhD, Electrical Engineering
❖ Thesis Advisor: Prof. Markus-C. Amann
❖ Thesis Title: Electrically-pumped GaSb-based vertical-cavity surface-emitting lasers (VCSELs)
- 04/ 2006 – 03/2008 **Ulm University**, Ulm, Germany
M.Sc., Electrical Engineering
❖ Thesis Advisor: Prof. Rainer Michalzik
❖ Thesis Title: Investigations into matrix-addressable GaAs-VCSEL arrays
- 07/2000 – 06/2005 **Bangladesh University of Engineering & Technology**, Dhaka, Bangladesh
B.Sc., Electrical & Electronics Engineering
❖ Thesis Advisor: Prof. Mohammad Ali
❖ Thesis Title: Computer interfacing of digital energy meter using data acquisition card
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RESEARCH INTERESTS

- Photonic integrated circuits
- Widely-tunable semiconductor lasers
- Photonic devices for sensing
- Group IV photonics
- Biophotonics
- Graphene-based optoelectronics

AWARDS

09/2018	Edmund Optics Education Award
11/2017	IPC 2017 Student Travel Grant Recipient
11/2014	Literaturpreis der ITG 2014 Award- im VDE, Germany
05/2014	Nominee for the UCLA Chancellor's Award for Postdoctoral Research
11/2013–12/2014	Extreme Science and Engineering Discovery Environment (XSEDE), Computational Allocation Award, Principle Investigator, 'Computational study of van der Waal epitaxial growth' Stampede, 75000 SUs
10/2011	Recipient of the IEEE Photonics Society Graduate Student Fellowship 2011 for research accomplishments and academic record
11/2010	Best Student Paper Award (2nd place) in the 23rd Annual Meeting of the IEEE Photonics Society 2010, Denver, CO, USA.
10/2007–03/2008	M.Sc. Thesis Scholarship (awarded on a competitive basis) given by Ulm University, Ulm, Germany
06/2000–06/2005	Government Technical Scholarship given by Govt. of Bangladesh to students who have excellent academic record in secondary and intermediate schools

RESEARCH GRANTS

2016-2019	National Natural Science Foundation of China (NSFC), Key Project Grant, Co-PI, "Monolithically integrated complete polarization mode control of wavelength-tunable VCSEL arrays"
2014-2016	National Science Council of Taiwan R.O.C. (NSC), Grant ID #NSC 102-2917-I-564-03, Co-PI, "Nitride-based materials with ultra-low dislocation density and fabrication of its related devices"

TEACHING EXPERIENCE

08/2018	Instructor, Course #3030, Physics of Semiconductor Device, 3 hrs/week, Junior Undergraduate, Ohio State University
10/2008–02/2011	Teaching Assistant, Advanced Optoelectronics course, Responsible for 1 hr/week exercise class (M.Sc. students), Technische Universität München, Germany
05/2011–08/2011	Lab Course Instructor, Optical Data Transmission, Responsible for the supervision of 4-hour lab course (M.Sc. students), Technische Universität München, Germany
05/2011–08/2011	Teaching Assistant, Optoelectronics-I course, Responsible for 1 hour/week exercise class (undergraduate students), Technische Universität München, Germany

PROFESSIONAL ACTIVITIES

2018	Guest Editor of the Feature Issue on “Mid-Infrared Lasers for Medical Applications” in <i>Biomedical Optics Express</i> , OSA
2018	Technical Program Committee in Photonic Integration and Packaging (PIP) in IEEE Photonics Conference 2018 (annual meeting), Reston, VA, USA
2018	Technical Program Committee in “ Photonic Devices ” in OSA’s Advanced Photonics, IPR 2018, Zurich, Switzerland
2017	Session Presider in “ <i>Integrated Optical Sources</i> ” within PIP1 session during IEEE Photonics Conference 2017 in Orlando, FL, USA.
2017	Session Presider in “ <i>Novel Silicon Photonics</i> ” during OSA’s Advanced Photonics, IPR 2017 in New Orleans, LA, USA.
2017	Guest Editor of the Feature Issue on “Near- to Mid-IR (1-13 μ m) III-V Semiconductor Lasers” in <i>Applied Optics</i> , OSA
2017	Serving in reviewing panel for the Bright Ideas Competition (\$30k US) at CLEO 2017
2017	Technical Program Committee in “ Photonic Devices ” in OSA’s Advanced Photonics, IPR 2017, New Orleans, LA, USA
2017	Technical Program Committee in Photonic Integration and Packaging (PIP) in IEEE Photonics Conference 2017 (annual meeting), Orlando, FL, USA
2016-current	OSA Laser Systems Technical group : Vice Co-Chair
2015	Guest Editor of the Special Issue on “Nanostructured Optoelectronics: Materials and Devices” in <i>Journal of Nanomaterial</i> , Hindawi
2010–current	Regular reviewer of <i>Opt. Express</i> , <i>IEEE Photon. J.</i> , <i>Photon. Res.</i> , <i>Opt. Lett.</i> , <i>Photon. Technol. Lett.</i> and <i>J. Phys. D: Appl. Phys.</i>
2014–current	Reviewer in OSA Youth Education Grants and Student Chapter Grants
10/2014	OSA Young Professionals - Science Writer in <i>Frontiers in Optics/ Laser Science 2014</i> , Tucson, AZ
06/2014	OSA Young Professionals - Science Writer in <i>CLEO 2014</i> , San Jose, CA
07/2013	Official Blogger in OSA <i>Advanced Photonics Congress 2013</i> , Rio Grande, Puerto Rico

MENTORED STUDENTS

PhDs currently working as primary advisor: 2

PhDs worked as co-advisor: 6

Masters worked as co-advisor: 2

PUBLICATIONS

Authored and coauthored more than 100 papers in leading technical journals and international conferences. These papers are cited more than 612 times, which is accurate as of September 2018 (citation counts fetched from [Google Scholar](#)).

REFEREED**❖ BOOK CHAPTER**

Y. Alaskar, **S. Arafin**, and K. L. Wang, “Heteroepitaxial growth of III-V semiconductors on 2D materials”, in "Two-dimensional Materials - Synthesis, Characterization and Potential Applications", P. K. Nayak (Ed.), chapter 3, pp. 43-62, ISBN: 978-953-51-4813-5, InTech, Rijeka, Croatia, Aug. 2016.

❖ JOURNALS

SUBMITTED

A. Banerjee, R. Chen, **S. Arafin**, and S. Mitragotri. “Intestinal Iontophoresis from Mucoadhesive Patches: A Strategy for Oral Delivery” July, 2018.

PUBLISHED

- [1] A. Simsek, **S. Arafin**, S.-K. Kim, G. Morrison, L. Johansson, M. Mashanovitch, L. A. Coldren, and M. J. Rodwell, “Evolution of chip-scale heterodyne optical phase-locked loops towards watt-level power consumption” *IEEE J. Lightw. Technol.*, vol. 36, no. 2, pp. 258-264, Jan. 2018.
- [2] **S. Arafin**, and L. A. Coldren, “Advanced InP photonic integrated circuits for communication and sensing”, (invited review), *IEEE J. Sel. Top. Quantum Electron.*, vol. 24, no. 1, May 2017.
- [3] **S. Arafin**, A. Simsek, M. Lu, M. J. Rodwell, and L. A. Coldren, “Heterodyne locking of an integrated optical phase-locked loop with on-chip modulators”, *Opt. Lett.*, vol. 42, no. 19, Aug. 2017. [*Editor’s Pick*]
- [4] B. Guan, P. Li, **S. Arafin**, Y. Alaskar, K. L. Wang, “Investigation of single-mode vertical-cavity surface-emitting lasers with graphene-bubble dielectric DBR,” *Photonics and Nanostructures-Fundamentals and Applications*, vol. 28, pp. 56-60, Feb. 2018.
- [5] **S. Arafin**, G. Morrison, M. Mashanovitch, L. A. Johansson, and L. A. Coldren, “Compact low-power consumption single-mode coupled-cavity lasers,” *IEEE J. Sel. Top. Quantum Electron.*, vol. 23, no. 6, pp. 1-9, May. 2017.
- [6] **S. Arafin**, A. Simsek, S.-K. Kim, W. Liang, D. Eliyahu, A. Matsko, L. Johansson, L. Maleki, M. J. Rodwell, and L. A. Coldren, “Power-efficient Kerr frequency comb based tunable optical source,” *IEEE Photon. J.*, vol. 9, no. 3, pp. 1-14, Mar. 2017.
- [7] T. Eales, I. Marko, B. A. Ikyo, A. R. Adams, **S. Arafin**, S. Sprengel, M.-C. Amann and S. J. Sweeney, “Wavelength dependence of efficiency limiting mechanisms in type-I GaInAsSb/GaSb lasers emitting in the mid-infrared,” *IEEE J. Sel. Top. Quantum Electron.* vol. 23, no. 6, pp. 1-9, Mar. 2017.
- [8] **S. Arafin**, A. Simsek, S.-K. Kim, S. Dwivedi, W. Liang, D. Eliyahu, J. Klamkin, A. Matsko, L. Johansson, L. Maleki, M. J. Rodwell, and L. A. Coldren, “Towards chip-scale optical frequency synthesis based on optical heterodyne phase-locked loop,” *Opt. Express*, vol. 25, no. 2, pp. 681-695, Dec. 2016. [*Highlighted in Nat. Photon*]
- [9] A. B. Ikyo, I. P. Marko, K. Hild, A. R. Adams, **S. Arafin**, M. -C. Amann and S. J. Sweeney, “Temperature-stable mid-infrared GaInAsSb/GaSb vertical-cavity surface-emitting lasers (VCSELs),” *Nat. Sci. Rep.*, vol. 6, pp. 19595 (1-6), Jan. 2016.
- [10] W. Li, A. Mecozzi, M. Lu, M. Vasilyev, **S. Arafin**, D. Dadic, L. Johansson and L. A. Coldren, “First monolithically integrated dual-pumped phase-sensitive amplifier chip based on a saturated semiconductor optical amplifier,” *IEEE J. Quantum Electron.*, vol. 52, no. 1, pp. 1-12, Jan. 2016.
- [11] Y. Alaskar*, **S. Arafin***, Q. Lin, J. McKay, D. Wickramaratne, M. S. Goorsky, R. K. Lake, M. A. Zurbuchen, and K. L. Wang, “Theoretical and experimental study of highly textured GaAs on silicon using a graphene buffer layer”, in Proc. *18th Intl. Conf. Molecular Beam Epitaxy 2014, J. Cryst. Growth*, vol. 425, no.1, pp. 268-273, Sept. 2015. **equal contribution*.
- [12] Y. Alaskar*, **S. Arafin***, D. Wickramaratne, M. A. Zurbuchen, L. He, R. K. Lake, and K. L. Wang, “Towards van der Waals epitaxial growth of GaAs on Si using a graphene buffer layer,” *Adv. Funct. Mater.*, vol. 24, no. 42, pp. 6629-6638, Aug. 2014. **equal contribution*.
- [13] Q. Wang , B. Guan , K. Liu, X. Liu, X. Jiang, Y. Ma, **S. Arafin**, G. Shen, “Temperature dependent polarization switch of 850-nm VCSELs with different apertures,” *Opt. Laser Technol.*, vol. 63, pp. 19-23, Mar. 2014.

- [14] C.-P. Chu, **S. Arafin**, G. Huang, T. Nie, K. L. Wang, Y. Wang, J. Zou, S. M. Qasim, and M. S. BenSaleh, "Selectively grown GaAs nanodisks on Si(100) by molecular beam epitaxy," in *Proc. 30th North American Conference on Molecular Beam Epitaxy (NAMBE) J. Vac. Sci. Technol. B*, vol. 32, no. 2, pp. 02C111(1-5), Feb. 2014.
- [15] L.-T. Chang, C.-Y. Wang, J. Tang, T. Nie, W. Jiang, C.-P. Chu, **S. Arafin**, L. He, M. Afsal, L.-J. Chen and K. L. Wang, "Electric-field control of ferromagnetism in Mn-doped ZnO nanowires," *Nano Lett.*, vol. 14, no. 4, pp. 1823–1829, Feb. 2014.
- [16] G. M. T. Chai, T. J. C. Hose, N. E. Fox, K. Hild, A. B. Ikyo, I. P. Marko, S. J. Sweeney, A. Bachmann, **S. Arafin**, M.-C. Amann. "Characterization of 2.3 μm GaInAsSb-based vertical-cavity surface-emitting laser structures using photomodulated reflectance," *J. Appl. Phys.*, vol. 115, no. 1, pp. 013102 (1-7), Jan. 2014.
- [17] C.-P. Chu, **S. Arafin**, T. Nie, K. Yao, X. Kou, L. He, C.-Y. Wang, S.-Y. Chen, L.-J. Chen, S. M. Qasim, M. S. BenSaleh and K. L. Wang, "Nanoscale growth of GaAs on patterned Si(111) substrates by molecular beam epitaxy," *Cryst. Growth Des.*, vol. 14, no. 2, pp. 593-598, Dec. 2013.
- [18] A. Kumar, **S. Arafin**, M.-C. Amann and R. Singh, "Temperature dependence of electrical characteristics of Pt/GaN Schottky diode fabricated by UHV e-beam evaporation," *Nanoscale Res. Lett.*, vol. 8, no. 1, pp. 481-488, Nov. 2013.
- [19] **S. Arafin**, X. Liu, and Z. Mi, "Review of recent progress on nitride nanowire lasers," (invited), *SPIE J. Nanophotonics*, vol. 7, no. 1, pp. 074599(1-27), Sept. 2013. [\[Top downloaded article\]](#)
- [20] M. H. T. Dastjerdi, M. Djavid, **S. Arafin**, X. Liu, P. Bianucci, P. J. Poole and Z. Mi, "Optically pumped rolled-up InAs/InGaAsP quantum dash lasers at room-temperature," *Semicond. Sci. Technol.* vol. 28, no. 9, pp. 094007(1-5), Aug. 2013. [\[selected as front-cover featured article\]](#)
- [21] M. Ortsiefer, C. Neumeier, J. Roskopf, **S. Arafin**, G. Boehm, A. Hangauer, J. Chen, R. Strzoda, and M.-C. Amann, "GaSb and InP-based VCSELs at 2.3 μm emission wavelength for tunable diode laser spectroscopy of carbon monoxide," (invited), in *Quantum Sensing and Nanophotonic Devices VIII*, M. Razeghi, R. Sudharsanan, and G. J. Brown, (Eds.) Proc. SPIE 7945, pp. 794509(1-7), 2011.
- [22] K. Vizbaras, **S. Arafin**, and M.-C. Amann, "Single mode and tunable GaSb-based VCSELs for wavelengths above 2 μm ," in *Vertical-Cavity Surface-Emitting Lasers XV*, J. K. Guenter, and C. Lei, (Eds.), Proc. SPIE 7952, pp. 79520D(1-7), 2011.
- [23] **S. Arafin**, A. Bachmann, K. Vizbaras, A. Hangauer, J. Gustavsson, J. Bengtsson, A. Larsson, and M.-C. Amann, "Comprehensive analysis of electrically-pumped GaSb-based VCSELs," *Opt. Express*, vol. 19, no. 18, pp. 17267-17282, Aug. 2011.
- [24] K. Vizbaras, M. Toerpe, **S. Arafin**, and M.-C. Amann, "Ultra-low resistive GaSb/InAs tunnel junctions," *Semicond. Sci. Technol.*, vol. 26, no. 7, pp. 07502(1-4), Apr. 2011.
- [25] **S. Arafin**, A. Bachmann, and M.-C. Amann, "Transverse-mode characteristics of GaSb-based VCSEL with buried tunnel junctions," *IEEE J. Sel. Top. Quantum Electron.*, vol. 17, no. 6, pp. 1576-1583, Mar. 2011.
- [26] K. Vizbaras, A. Bachmann, **S. Arafin**, K. Saller, S. Sprengel, G. Boehm, R. Meyer, and M.-C. Amann, "MBE growth of low threshold GaSb-based lasers with emission wavelengths in the range of 2.5 to 2.7 μm ," *J. Cryst. Growth*, vol. 323, no. 1, pp. 446-449, Dec. 2010.
- [27] **S. Arafin**, A. Bachmann, K. Vizbaras, J. Gustavsson, A. Larsson, and M.-C. Amann, "Large-area single-mode GaSb-based VCSELs using an inverted surface relief," in *Proc. 23rd Annual Meeting of the IEEE Photonics Society 2010*, paper MI3, pp. 61-62, Denver, CO, USA, Nov. 2010.
- [28] A. Härkönen, A. Bachmann, **S. Arafin**, K. Haring, J. Viheriälä, M. D. Guina, and M. C. Amann, "2.34 μm electrically-pumped VCSEL with buried tunnel junction," in *Semiconductor Lasers and Laser Dynamics IV*, K. P. Panayotov, M. Sciamanna, A. A. Valle, and R. Michalzik, (Eds.), Proc. SPIE 7720, pp. 772015(1-7), 2010.

- [29] **S. Arafin**, A. Bachmann, K. Vizbaras, and M.-C. Amann, "Large-aperture single-mode GaSb-based BTJ-VCSELs at 2.62 μm ," in Proc. *22nd IEEE International Semiconductor Laser Conference, ISLC 2009*, paper TuB4, pp.47-48, Kyoto, Japan, Sept. 2010.
- [30] A. Bachmann, **S. Arafin**, and K. Kashani-Shirazi, "Single-mode electrically-pumped GaSb-based VCSELs emitting continuous-wave at 2.4 and 2.6 μm ," (invited), *New J. Phys.*, vol. 11, no. 12, pp. 125014-(1-17), Dec. 2009.
- [31] **S. Arafin**, A. Bachmann, K. Kashani-Shirazi, S. Priyabadini, and M.-C. Amann, "Low-resistive sulphur-treated ohmic contacts to n-type InAsSb," *IET Optoelectron.*, vol. 3, no. 6, pp. 259-263, Dec. 2009.
- [32] **S. Arafin**, A. Bachmann, K. Kashani-Shirazi, and M.-C. Amann, "Continuous-wave electrically-pumped GaSb-based VCSELs at $\sim 2.6 \mu\text{m}$ operating up to 50°C," in Proc. *22nd Annual Meeting of the IEEE Photonics Society 2009*, paper ThBB2, pp. 837-838, Belek-Antalya, Turkey, Oct. 2009.
- [33] **S. Arafin**, A. Bachmann, K. Kashani-Shirazi, and M.-C. Amann, "Continuous-wave single-mode electrically-pumped GaSb-based VCSELs at 2.5 μm ," in Proc. *8th Pacific Rim Conference on Lasers and Electro-Optics, CLEO/Pacific Rim 2009*, paper WG4-2, pp. 1-2, Shanghai, China, Sept. 2009.
- [34] **S. Arafin**, A. Bachmann, K. Kashani-Shirazi, and M.-C. Amann, "Electrically-pumped continuous-wave vertical-cavity surface-emitting lasers at 2.6 μm ," *Appl. Phys. Lett.*, vol. 95, no. 13, pp. 131120(1-3), Oct. 2009.
- [35] A. Bachmann, **S. Arafin**, K. Kashani-Shirazi, and M.-C. Amann, "Long wavelength electrically-pumped GaSb-based buried tunnel junction VCSELs," in Proc. *14th International Conference on Narrow Gap Semiconductors and Systems NGSS 2009*, published in *Physics Procedia*, vol. 3, no. 2, pp. 1155-1159, Sendai, Japan, July 2009.
- [36] A. Bachmann, K. Kashani-Shirazi, **S. Arafin**, and M.-C. Amann, "GaSb-based VCSEL with buried tunnel junction for emission around 2.3 μm ," *IEEE J. Sel. Top. Quantum Electron.*, vol. 15, no. 3, pp. 933-940, June 2009.
- [37] K. Kashani-Shirazi, K. Vizbaras, A. Bachmann, **S. Arafin**, and M.-C. Amann, "Low-threshold strained quantum-well GaSb-based lasers emitting in the 2.5- to 2.7 μm wavelength range," *IEEE Photon. Technol. Lett.*, vol. 21, no.16, pp. 1106-1108, June 2009.
- [38] K. Kashani-Shirazi, A. Bachmann, **S. Arafin**, K. Vizbaras, and M.-C. Amann, "Ultra-low threshold GaSb-based laser diodes at 2.65 μm ," in Proc. Conference on Lasers and Electro-Optics/International Quantum Electronics Conference, CLEO /IQEC 2009, paper CTuGG5, pp. 1-2, Baltimore, MD, USA, May 2009.

❖ CONFERENCE TALKS

- [1] B. Isaac, B. Song, S. Pinna, **S. Arafin**, L. A. Coldren, and J. Klamkin, "Indium Phosphide Photonic Integrated Circuit transmitter with Integrated Linewidth narrowing for Laser Communications and sensing," *26th International Semiconductor Laser Conference (ISLC)*, Santa Fe, NM, USA, Sept. 2018.
- [2] **S. Arafin**, A. P. McFadden, M. Pendharkar, C. J. Palmstrøm and L. A. Coldren, "Recent progress on GaSb-based photonic integrated circuits," *14th International Conference on Mid-Infrared Optoelectronics, MIOMD- 2018*, Flagstaff, AZ, USA, Oct. 2018.
- [3] B. Isaac, B. Song, S. Pinna, **S. Arafin**, L. A. Coldren, and J. Klamkin, "Indium Phosphide Photonic Integrated Circuit transmitter with Integrated Linewidth narrowing for Laser Communications and sensing," *26th International Semiconductor Laser Conference (ISLC)*, Santa Fe, NM, USA, Sept. 2018.
- [4] **S. Arafin**, **L. Maleki**, W. Liang, V. Ilchenko, A. Savchenkov, D. Eliyahu, A. Matsko, A. Simsek, S.-K. Kim, G. Morrison, M. Mashanovitch, L. Johansson, M. J. Rodwell and L. A. Coldren, "Optical synthesis using Kerr frequency combs", *IFCS 2017*, Besançon, France, July 2017.

- [5] **S. Arafin**, A. Simsek, M. Lu, M. J. Rodwell, L. A. Coldren, "Offset locking of a fully integrated optical phase-locked loop using on-chip modulators", *OSA Advanced Photonics 2017*, New Orleans, LA, USA, paper IM3A.2, July 2017.
- [6] T. Eales, I. P. Marko, B. A. Ikyo, A. R. Adams, I. Vurgaftman, **S. Arafin**, S. Sprengel, M.-C. Amann, J. R. Meyer and S. J. Sweeney, "Auger recombination in type I GaInAsSb/GaSb lasers and its variation with wavelength in the 2–3 μm range," *CLEO/Europe-EQEC 2017*, Munich, Germany, June 2017.
- [7] **S. Arafin**, A. Simsek, S.-K. Kim, S. Dwivedi, W. Liang, D. Eliyahu, J. Klamkin, A. Matsko, L. Johansson, L. Maleki, M. J. Rodwell, and L. A. Coldren, "Optical frequency synthesis by offset-locking to a microresonator comb," *CLEO 2017*, San Jose, CA, USA, paper SW10.2, May 2017.
- [8] **S. Arafin**, G. Morrison, M. Mashanovitch, L. A. Johansson, and L. A. Coldren, "Coupled-cavity lasers for a low-power integrated coherent optical receiver," *CLEO 2017*, San Jose, CA, USA, paper AM3A.5, May 2017.
- [9] A. Simsek, **S. Arafin**, S.-K. Kim, G. Morrison, L. A. Johansson, M. Mashanovitch, L. A. Coldren, and M. J. Rodwell, "A chip-scale heterodyne optical phase-locked loop with low-power consumption," *Optical Fiber Communication Conference 2017*, Los Angeles, CA, USA, paper W4G.3, Mar. 2017.
- [10] T. Eales, I. Marko, B. A. Ikyo, A. R. Adams, **S. Arafin**, S. Sprengel, M.-C. Amann and S. J. Sweeney, "Wavelength dependence of efficiency limiting mechanisms in type-I GaInAsSb/GaSb lasers emitting in the mid-infrared," *25th International Semiconductor Laser Conference (ISLC 2016)*, Kobe, Japan, paper TuB8, pp.1-2, Sept. 2016.
- [11] T. Eales, I. Marko, B. Ikyo, A. R. Adams, **S. Arafin**, S. Sprengel, and M.-C. Amann, S. J. Sweeney, "Recombination processes in type-I GaInAsSb lasers," *13th International Conference on Mid-Infrared Optoelectronics: Materials and Devices*, Beijing, China, Sept. 2016.
- [12] M. Rodwell, A. Simsek, D. Dadic, **S. Arafin**, H. Park and L. A. Coldren, "IC design for optical frequency synthesis," (invited), *2016 IEEE Photonics Conference*, Waikoloa, Hawaii, USA, Oct. 2016.
- [13] L. A. Coldren, M. Lu, J. Parker, L. Johansson, **S. Arafin**, D. Dadic, M. Rodwell, "Toward Hz-level optical frequency synthesis across the C-band," (invited), in *Advanced Photonics 2016 (IPR, NOMA, Sensors, Networks, SPCom, SOF)*, Vancouver, BC, Canada, July 2016.
- [14] L. A. Coldren, W. Li, A. Mecozzi, M. Lu, **S. Arafin**, M. Vasilyev, D. Dadic, and L. Johansson, "Single-chip dual-pumped SOA-based phase-sensitive amplifier at 1550 nm," Nonlinear-Optical Signal Processing (NOSP) within *IEEE Summer Topicals Meeting 2015*, Nassau, Bahamas, July 2015.
- [15] W. Li, M. Lu, L. Johansson, M. Mashanovitch, D. Dadic, **S. Arafin**, and L. A. Coldren, "First demonstration of an integrated photonic phase-sensitive amplifier," *Conference on Lasers and Electro-Optics 2015*, San Jose, CA, USA, May 2015.
- [16] D. Wickramaratne, Y. Alaskar, **S. Arafin**, A. G. Norman, J. Zou, Z. Zhang K. L. Wang, and R. K. Lake, "Van der Waals materials as buffer layers for quasi-vdW epitaxy of GaAs on Si," *Lawrence Epitaxy Workshop 2015*, Tempe, AZ, USA, Feb. 2015.
- [17] Y. Alaskar, **S. Arafin**, D. Wickramaratne, R. K. Lake, and K. L. Wang, "Quasi Van Der Waals Epitaxy of GaAs on Graphene/Si by molecular beam epitaxy," *18th International Conference on Molecular Beam Epitaxy 2014*, Flagstaff, AZ, USA, Sept. 2014, Poster.
- [18] G. M.T. Chai, T.J.C. Hosea, N.E. Fox, K. Hild, A. B. Ikyo, I. P. Marko, A. Bachmann, **S. Arafin**, M.-C. Amann, and S. J. Sweeney, "Photorefectance of a 2.3 μm GaInAsSb-based VCSEL structure for gas sensing applications," *2nd Annual International Conference on Optoelectronics, Photonics & Applied Physics (OPAP)*, Canning Walk, Singapore, Singapore, Feb. 2014.

- [19] C.-P. Chu, **S. Arafin**, G. Huang, T. Nie, Y. Wang, J. Jou, S. M. Qasim, M. S. BenSaleh and K. L. Wang, "Selectively grown GaAs nanodisks on Si(100) by molecular beam epitaxy," *30th North American Conference on Molecular Beam Epitaxy (NAMBE)*, Banff, AB, Canada, Oct. 2013.
- [20] B. H. Le, **S. Arafin**, N. H. Tran, H. P. T. Nguyen and Z. Mi, "Current-voltage characteristics of single InGaN/GaN nanowire LEDs," *10th International Conference on Nitride Semiconductors 2013*, Washington, DC, USA, Aug. 2013, Poster.
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- [1] **S. Arafin**, "Chip-scale optical frequency synthesis based on optical phase-locked loop for optical communications and LiDAR," Intel, Santa Clara, CA, USA, Oct. 2018.
- [2] **S. Arafin**, "The challenges of mid-IR LiDAR/remote sensing for the photonic chip," *OSA Integrated Photonics in the Mid-IR Incubator*, Washington DC, USA, May 2018.
- [3] **S. Arafin**, "Semiconductor materials and photonic devices - from visible to mid-infrared," Dept. of Electrical and Computer Engineering, The Ohio State University, Columbus, OH, USA, Mar. 2018.
- [4] **S. Arafin**, "Chip-scale optical frequency synthesis based on optical phase-locked loop," Dept. of Electrical and Computer Engineering, University of Virginia, Charlottesville, VA, USA, Dec. 2017. [\[link\]](#)
- [5] **S. Arafin**, A. Simsek, S.-K. Kim, W. Liang, D. Eliyahu, A. Matsko, L. Johansson, L. Maleki, M. J. Rodwell, and L. A. Coldren, "Power-efficient Kerr frequency comb based tunable optical source," *IEEE IPC 2017*, Lake Buena Vista, FL, USA, Oct. 2017.
- [6] **S. Arafin**, "Semiconductor materials and photonic devices - from visible to mid-infrared," Dept. of Electrical and Computer Engineering, University of Texas Dallas, Dallas, TX, USA, Apr. 2017.
- [7] **S. Arafin**, "Recent progress of Quasi van der Waals epitaxial growth of GaAs on silicon using graphene," [Global Nanotechnology Congress and Expo](#), Dubai, UAE, Apr. 2016.
- [8] **S. Arafin**, "Heteroepitaxy of GaAs on silicon: MBE growth and material characterization," *Department of Materials*, UC Santa Barbara, USA, Jan. 2015.
- [9] **S. Arafin**, "Electrically-pumped GaSb-based vertical-cavity surface-emitting lasers," *Department of Physics*, Technische Universität Kaiserslautern, Kaiserslautern, Germany, Oct. 2011.
- [10] **S. Arafin**, M. Müller, and M.-C. Amann, "InP-based high-speed VCSELs for optical interconnects," in *22nd IEEE International Semiconductor Laser Conference, ISLC 2010*, Workshop on Progress in light source for optical interconnection, Kyoto, Japan, Sept. 2010.
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PRESS RELEASES

2014: *Adv. Funct. Mater.* paper on **Van der Waals epitaxial growth of GaAs on graphene/silicon** received a very extensive media coverage. The results were highlighted by more than 5 international online magazine/newsletters, e.g. [Compound Semiconductor](#), [Semiconductor Today](#), [UCLA Electrical Engineering](#) etc.

2017: *Opt. Express* paper on **“Towards chip-scale optical frequency synthesis based on optical heterodyne phase-locked loop”** was highlighted in [Compound Semiconductor](#), [Nat. Photon](#) and [ECE UCSB](#)

PROFESSIONAL SOCIETY MEMBERSHIPS

2009 – present	Senior Member , Institute of Electrical and Electronics Engineers (IEEE)
2009 – present	Senior Member , IEEE Photonics Society (IPC)
2009 – present	Senior Member , Optical Society of America (OSA)
2009 – present	Member, Society of Photo-Optical Instrumentation Engineers (SPIE)
2012 – present	Member, European Physical Society (EPS)
2013 – present	Member, Die Informationstechnische Gesellschaft im VDE (ITG)
