

Appendix B: SENIC 2015 Publications

Internal Journal Publications

- A. Abdelhafiz, A. Vitale, C. Joiner, E. M. Vogel, and F. M. Alamgir, "Layer-by-Layer Evolution of Structure, Strain, and Activity for the Oxygen Evolution Reaction in Graphene-Templated Pt Monolayers," *ACS Applied Materials and Interfaces*, vol 7, pp. 6180-6188, 2015.
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- P.M. Campbell, A. Tarasov, C.A. Joiner, W.J. Ready, and E.M. Vogel, "Enhanced Resonant Tunneling in Symmetric 2D Semiconductor Vertical Heterostructure Transistors." DOI: 10.1021/nn507174c; *ACS Nano*, 2015.
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Internal Conference Presentations

- A. Adibi “Ultra-compact integrated nanophotonic platforms for lab-on-a-chip sensing,” International Year of Light Workshop, Atlanta, GA, September 2015.
- S. Aravamudhan, “Student Learning in Challenge-based Ocean Engineering Project,” 122nd Annual American Society for Engineering Education (ASEE) Conference and Exposition, Seattle, WA, Indianapolis, IN, June 2015.
- J. Arya, K. Dewitt, M. Scott-Garrard, Y.W. Chiang, and M.R. Prausnitz, “Rabies vaccination in dogs using a dissolving microneedle patch,” 42nd Annual Meeting & Exposition of the Controlled Release Society, Edinburgh, UK, 2015.
- J. Arya, H. Kalluri, D. McAllister, S. Henry, W. Pewin, and M.R. Prausnitz, “Skin tolerability and insertion efficiency of dissolving microneedle patches in human subjects,” AAPS National Biotechnology Conference, San Francisco, CA, June, 2015.
- M.S. Ballard, D.L. Owen, Z.G. Mills, S.K.G. Hanasoge, P.J. Hesketh, and A. Alexeev, “Design of a rapid magnetic microfluidic mixer,” 68th Meeting of the APS Fluid Dynamics: American Physical Society Meeting, Boston, MA, Nov. 22-24th, 2015.
- M.S. Ballard, D.L. Owen, Z.G. Mills, S. Hanasoge, P.J. Hesketh, and A. Alexeev, “Low-concentration Salmonella detection using orbiting magnetic microbeads in a continuous-flow microfluidic device,” 2015 Summer Biomechanics, Bioengineering and Biotransport Conference, Snowbird Resort, UT, Jun. 17-20, 2015.
- M. Ballard, D. Owen, Z. Mills, S. Hanasoge, P.J. Hesketh, and A. Alexeev. "Salmonella detection in a microfluidic channel using orbiting magnetic beads," APS March Meeting: American Physical Society, San Antonio, TX, Nov. 2-6th (2015).
- D.S. Boyuk, L.W. Chou, and M.A. Filler, “Optically abrupt plasmonic response of Si nanowires via spatial control of carrier density,” Materials Research Society Spring Meeting, San Francisco, CA, Apr. 6-10, 2015.
- D.S. Boyuk, L.W. Chou, and M.A. Filler, “Extreme near-field coupling of plasmonic resonators embedded in Si nanowires,” Materials Research Society Fall Meeting, Boston, MA, Nov. 30-Dec. 4, 2015.
- D.B. Brown, T.L. Bougher, B.A. Cola, and S. Kumar, “Thermal boundary conductance at metal-graphene-metal interfaces using time-domain thermoreflectance method,” ASME InterPACKICNMM, San Francisco, CA, USA, Jul. 6-9, 2015.
- D.B. Brown, T.L. Bougher, B.A. Cola, and S. Kumar, “Effect of chemisorption and physisorption on thermal boundary conductance at metal-graphene-metal interfaces using time-domain-thermoreflectance,” Tokyo Institute of Technology ACEEES Fourth International Education Forum on Environment and Energy Science, Maui, HI, USA, Dec. 6-10, 2015
- W. Cai, “Electrically controlled nonlinear optics in plasmonic metamaterials,” 7th International Conference on Information Optics and Photonics (CIOP 2015), Nanjing, China, July 12-15, 2015. [Invited]
- W. Cai, “Electrifying photonic metamaterials for tunable nonlinear optics and unconventional phase matching schemes,” The 28th Annual Conference of the IEEE Photonics Society (IPC 2015), Reston, VA, Oct. 4-8, 2015. [Invited]

- W. Cai, "Enhancement of two-photon luminescence from quantum emitters: Metamaterial-enabled chiral selectivity," Laser Science Conference (FiO/LS 2015), San Jose, CA, Oct. 18-22, 2015. [Invited]
- W. Cai, "Exploring chiral hotspots in photonic metamaterials: Chiroptical response, harmonic generation, and chiral-selective emission control, (invited)" The 6th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META 2015), New York, NY, Aug. 4-7, 2015. [Invited]
- W. Cai, "Metamaterials as a self-sufficient electrooptic platform for active nanophotonics," SPIE International Conference on Optical Instrument and Technology (OIT 2015), Beijing, China, May 17-19, 2015. [Invited]
- W. Cai, L. Kang, S. Lan, Y. Cui, and S. P. Rodrigues, "Electrical manipulation of nonlinear optical processes in metamaterials," SPIE Photonics West, San Francisco, CA, Feb. 7-12, 2015. [Invited]
- W. Cai, S. P. Rodrigues, S. Lan, Y. Cui, and L. Kang, "Linear and nonlinear optical responses in chiral metamaterials," SPIE Photonics West, San Francisco, CA, Feb. 7-12, 2015.
- P. Campbell, A. Tarasov, C. Joiner, W.J. Ready, and E.M. Vogel "Resonant tunneling characteristics of 2D versus 3D devices," SRC TECHCON, Austin, TX, Sep. 22, 2015.
- P. Campbell, A. Tarasov, M.Y. Tsai, Z. Hesabi, J. Feirer, S. Graham, W.J. Ready, and E. M. Vogel "Interfacial effects on MoS₂ device performance," TMS Annual Meeting, Orlando, FL, Mar. 15, 2015.
- M.A. Carden, M.E. Fay, Y. Sakurai, R.G. Mannino, J. Ciciliano, R. Tran, and W.A. Lam, "Commonly used clinical intravenous fluid formulations differentially affect sickle red blood cell stiffness and transit time" Annual Meeting of the American Society of Hematology, Orlando, FL, Dec. 2015. [Selected for ASH Abstract Award]
- T. Carpenter, M.W. Rashid, M. Ghovanloo, D. Cowell, S. Freear, and F.L. Degertekin, "Time-division multiplexing for cable reduction in ultrasound imaging catheters," Biomedical Circuits and Systems Conference (BioCAS), Atlanta, GA, Oct. 2015.
- C. Carron, P. Getz, S.M. Heinrich, F. Josse, O. Brand, "Cantilever-based resonant microsensors with integrated temperature modulation for transient chemical analysis," Transducers 2015, Anchorage, AK, June 2015.
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- M. Chamanzar, S. H. Shams Mousavi, Y. Luo, H. Taghinejad, M. Taghinejad, A. A. Eftekhar, and A. Adibi "Integrated hybrid plasmonic-photonic structures for enhanced light-matter interaction," Meta' 15, New York, NY, Aug. 2015.
- J. Chen, Z. Li and Z.L. Wang, "Triboelectrification enabled self-powered detection and removal of phenol in wastewater," MRS Fall Meeting & Exhibit, Boston, MA, 2015.
- J. Chen, W. Yang, and Z.L. Wang, "Generating electricity while walking with loads," MRS Spring Meeting & Exhibit, San Francisco, CA, 2015.
- J. Chen, G. Zhu and Z.L. Wang, "Personalized keystroke dynamics for self-powered human-machine interfacing," MRS Fall Meeting & Exhibit, Boston, MA, 2015.
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- B. Chiang, Y.C. Kim, S.R. Patel, H.F. Edelhauser, and M.R. Prausnitz, "The suprachoroidal space accessed by microneedle injection," Association for Ocular Pharmacology and Therapeutics: 12th Congress on Ocular Pharmacology & Therapeutics, Charleston, SC, 2015.
- B. Chiang and M.R. Prausnitz, "Pharmacokinetics and clearance of molecules after microneedle injection into the suprachoroidal space," Association for Research in Vision and Ophthalmology Annual Meeting, Denver, CO, May 2015.
- E. Cho, J.-H. Lai, Y.-W. Ok, A. D. Upadhyaya, V. D. Upadhyaya, A. Rohatgi, M.J. Binns, J. Appel, J. Guo, H. Fang, E. Good : "Light-Induced Degradation Free and High Efficiency P-Type Indium-Doped PERC Solar Cells on Czochralski Silicon," 42nd IEEE Photovoltaic Specialists Conference, New Orleans, LA., 2015.
- S. Choi, C. Fuentes-Hernandez, C.Y. Wang, A. Wei, W. Voit, and B. Kippelen, "Top-gate organic field-effect transistors and circuits on shape-memory polymer substrates," SPIE Optics and Photonics, San Diego, CA, Aug. 9-13, (2015).
- D. Choi, G. Wang, N. Persson, N. Kleinhenz, and E. Reichmanis, "Molecular to macroscale organization of conjugated polymer assemblies," Pacific Polymer Conference, Kauai, HI, Dec. 9-13, 2015.
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- P.H. Chu, B. Fu, J.O. Park, M. Srinivasarao and E. Reichmanis, "Synergistic Effect of Regioregular and Regiorandom Poly(3-hexylthiophene) Blends for Flexible Organic Devices", American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 8-12, 2015.
- P.H. Chu, B. Fu, J.O. Park, M. Srinivasarao and E. Reichmanis, "Synergistic effect of regioregular and regiorandom poly(3-hexylthiophene) blends for flexible organic field effect transistors," Materials Research Society Fall Meeting, Boston, MA, Nov. 30-December 3, 2015.
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- S. Crawford, K. Kosaraju, and S. Aravamudhan, "Chemical Mechanical Planarization (CMP) of III-V Materials: Environmental fate, behavior and biological impact of pre- and post-CMP nanoparticle slurries", Sustainable Nanotechnology Organization Conference, Portland, OR, Nov 2015.
- K Demir, S Gandhi, T Ogawa, R Pucha, V Smet, V Sundaram, PM Raj, and R Tummala, "First demonstration of copper-plated through-package-via (TPV) reliability in ultra-thin 3D glass interposers with double-side component assembly," in Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th, pp.666-671, 26-29 May 2015.
- J.M.D. Dimandja, S. Surappa, J.J. Preissle, L.A.S. Brown, and P.J. Hesketh, "Novel sampling device for the screening of exhaled breath condensate samples by GCxGC/TOF MS," 39th International Symposium on Capillary Chromatography & 11th GCxGC Symposium, Fort Worth, TX, May 2015.
- T.D. Dolidze and J.J. Wei, "Direct wiring and two-electron exchange mechanism for glucose oxidase at GC/nanotube electrodes," the 10th European Biophysics Congress, Dresden, Germany, 2015.
- R.D. Dupuis, T. Detchprohm, X.H. Li, J. Kim, M.J. Lee, Y.S. Liu, T.T. Kao, M. M. Satter, S.C. Shen, P.D. Yoder, S. Wang, Y.O. Wei, H. Xie, A.M. Fischer, and F.A. Ponce, "Growth and properties of

III-N deep-UV lasers and avalanche photodiodes grown by MOCVD,” 6th International Symposium on the Growth of III-Nitrides, Hamamatsu, Japan, Nov. 8-12, 2015.

- R.D. Dupuis, T. Detchprohm, Y.S. Liu, T.T. Kao, J. Kim, M.H. Ji, K. Mehta, S.C. Shen, P.D. Yoder, H. Xie, F. Ponce, A. Sood, and N. Dhar, “Growth and characterization of III-N ultraviolet VCSELs and avalanche photodetectors by MOCVD,” US-Korea Conference on Science, Technology, and Entrepreneurship (UKC 2015), Atlanta, GA, Jul. 29 – Aug. 1, 2015.
- R. D. Dupuis, J. Kim, M.H. Ji, Y.S. Liu, T. Detchprohm, T.T. Kao, S.C. Shen, K. Mehta, P. Yoder, H. Xie, F. Ponce, A. Sood and N. Dhar, “Growth and characterization of III-N ultraviolet lasers and avalanche photodiodes by MOCVD,” 6th International Symposium on Growth of III-Nitrides (ISGN-6), Hamamatsu, Japan, Nov. 8-13, 2015.
- R.D. Dupuis, X.H. Li, T. Detchprohm, Y.S. Liu, T.T. Kao, M. M. Satter, S.C. Shen, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, and F.A. Ponce, “Low-threshold deep UV lasers grown on sapphire substrates,” OPTO Symposium: SPIE Photonics West 2015, San Francisco, CA, Feb. 12-17, 2015.
- E.S. Esser, A.A. Romanyuk, E.V. Vassilieva, M.R. Prausnitz, R.W. Compans, and I. Skountzou, “A single dose of cutaneously delivered unadjuvanted tetanus toxoid confers complete protection in pregnant mice and their infants,” 2015 Skin Vaccination Summit, Lausanne, CHE, Sep. 2015.
- R Furuya, H Lu, F Liu, H Deng, T Ando, V Sundaram, and R Tummala, “Demonstration of 2 μ m RDL Wiring Using Dry Film Photoresists and 5 μ m RDL Via by Projection Lithography for Low-cost 2.5D Panel-based Glass and Organic Interposers,” in Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th, pp. 1488 - 1493, 26-29 May 2015.
- M.P. Gaj, C. Fuentes-Hernandez, A. Wei, W. Voit, and B. Kippelen, “Highly efficient green inverted top-emitting light-emitting diodes on shape memory polymer substrates for flexible electronic applications,” 2015 FlexTech Conference, Monterey, CA Feb. 23-26, 2015.
- S Gandhi, PM Raj, BC Chou, P Chakraborti, MS Kim, S Sitaraman, H Sharma, V Sundaram, and R Tummala, “Ultra-thin and ultra-small 3D double-side glass power modules with advanced inductors and capacitors,” in Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th, pp.230-235, 26-29 May 2015.
- K. Garde, J. Yan, P. Chinnappan, K. Kosaraju, S. Woosley and S. Aravamudhan, “Single-Cell Interfaces for Intracellular Measurements,” Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, Oct 2015.
- Y. Gomaa, C. Kolluru, M. Milewski, D. Lee, J. Zhang, R. Saklatvala, and M.R. Prausnitz, “Development of thermostable oxytocin-coated microneedle patch for treatment of postpartum hemorrhage,” 42nd Annual Meeting & Exposition of the Controlled Release Society, Edinburgh, UK, 2015.
- C. Green, P.A. Kottke, A. Fedorov, and Y.K. Joshi, “Convective boiling heat transfer in short, ultra-thin microgaps,” 9th International Conference on Boiling and Condensation Heat Transfer, Boulder, CO, Apr. 26-30, 2015.
- C. Green, P.A. Kottke, X. Han, C. Woodrum, T. Sarvey, P. Asrar, Y.K. Joshi, A. Fedorov, S. Sitaraman, and M. Bakir, “Three-dimensional stackable evaporative cooling of microelectronics,” GOMACTech – Government Microcircuit Applications and Critical Technology Conference, St. Louis, MO, Mar. 23-26, 2015.
- C.E. Green, P.E. Kottke, T.E. Sarvey, A.G. Federov, Y. Joshi, M.S. Bakir, “Performace and integration implications of addressing localized hotspots through two approaches: clustering of micro pin-fins and dedicated microgap coolers,” Int. Tech. Conf. and Expo. Packaging and Integration of Electronic

and Photonic Microsystems & Int. Conf. Nanochannels, Microchannels, and Minichannels (InterPACKICNMM), San Francisco CA, Jul. 2015.

- B. Hamelin, V. Tavassoli, and F. Ayazi, "Highly-symmetric silicon dioxide shallow shell resonators with angstrom-level roughness," Proc. IEEE Sensors 2015, p. 1203-1206, Busan, South Korea, Nov. 2015.
- X. Han, Y.K. Joshi, and A. Fedorov, "Flow boiling of water at reduced pressure in staggered micro-pin-fin micro heat sink," 9th International Conference on Boiling and Condensation Heat Transfer, Boulder, CO, Apr. 26-30, 2015.
- S.K.G. Hanasoge, D.L. Owen, M.S. Ballard, P.J. Hesketh, and A. Alexeev, "Magnetically actuated cilia for microfluidic manipulation," American Physical Society Meeting, Boston, MA, Nov. 22-24, 2015.
- C.E. Hansen, Y. Sakurai, L.A. Lyon, and W.A. Lam, "Platelets as "Micromachines," for sensing and actuation of targeted drug delivery for hemostatic agents," 4th TERMIS World Congress, Boston, MA, Sep. 2015. [Selected for oral presentation]
- C.E. Hansen, Y. Sakurai, L.A. Lyon, and W.A. Lam, "Platelets as "Micromachines," for sensing and actuation of targeted drug delivery for hemostatic agents," Annual Meeting of the Biomedical Engineering Society, Tampa, FL, Oct. 2015.
- M. Hermle, F. Feldmann, J. Eisenlohr, A. Richter, J. Benick, B. Lee, A. Rohatgi, P. Stradins and S. W. Glunz : "Approaching efficiencies above 25% with both sides-contacted Silicon Solar Cells," 42nd IEEE Photovoltaic Specialists Conference, New Orleans, LA., 2015.
- D. Herr, "Discovering Nature's Gifts: A Convergence of Form and Function," UNC-Pembroke, 2015.
- D. Herr, "Effective URM Educational Outreach," Rainbow Push Coalition Conference, 2015.
- M. Hodjat-Shamami, A.N. Shirazi, R. Tabrizian and F. Ayazi, "A dynamically mode-matched piezoelectrically transduced high-frequency flexural disk gyroscope," IEEE International Micro Electro Mechanical Systems Conference (MEMS 2015), Estoril, Portugal, pp. 789-792, Jan. 2015.
- A.H. Hosseinnia, A.H. Atabaki, Q. Li, H. Moradinejad, M. Sodagar, F. Ghasemi, A. Eftekhar, and A. Adibi "Crystalline silicon on silicon nitride hybrid platform for integrated photonic applications," CLEO: Science and Innovations, pp. STu2F. 7, 2015.
- C.M. Hovell, G. Barabino, L. Taite, and Y. Kim, "Engineering hybrid biomaterials for in vitro blood brain barrier model development," Annual Fall Meeting of Biomedical Engineering Society (BMES), Tampa, FL, Oct. 2015.
- H.Y. Hui and M.A. Filler, "Layer-by-layer solid-liquid-vapor (SLV) etching of semiconductor nanowires," Materials Research Society Spring Meeting, San Francisco, CA, Apr. 6-10, 2015.
- Z. Jiang, "Quantum transport in 2D systems," School for Advanced Sciences of Luchon, Luchon, FR, May 2015
- C. Joiner, P. Campbell, and E.M. Vogel, "Impact of the direct growth of MoS₂ on graphene for tunneling applications," Physics and Chemistry of Surfaces and interfaces 42nd conference, Salt Lake City, UT, Jan. 21, 2015.
- J. Joyce, W.C. Edens, M. Collins, M.H. Chen, P. Rota, M.R. Prausnitz, "Measles/rubella vaccination using microneedle patches," 2015 Skin Vaccination Summit, Lausanne, CHE, Sep. 2015.
- J. Joyce, W.C. Edens, M. Collins, P. Rota, and M.R. Prausnitz, "Measles and rubella vaccination using a microneedle patch," 42nd Annual Meeting & Exposition of the Controlled Release Society, Edinburgh, UK, 2015.

- J.D. Justice, T. Detchprohm, and R.D. Dupuis, "Study of MOCVD growth of InAs/InAsSb type-II superlattices using a LayTec EpiTT in-situ optical monitoring system," 57th Electronic Materials Conference, Columbus, OH Jun. 24-26, 2015.
- T.T. Kao, J. Kim, Y.C. Lee, M.H. Ji, A.F.M.S. Haq, T. Detchprohm, R.D. Dupuis, and S.C. Shen, "GaN/InGaN heterojunction phototransistors grown by metalorganic chemical vapor deposition," 17th Organo-Metallic Vapor Phase Epitaxy Workshop (OMVPE-17), Big Sky, MT, Aug. 2-7, 2015.
- T.T. Kao, J. Kim, Y.C. Lee, M. Ji, A. Saniul Haq, T. Detchprohm, R. D. Dupuis and S.C. Shen, "Performance evaluation of GaN/InGaN heterojunction phototransistors," 2015 Conference on Lasers and Electro-Optics (CLEO), Proceedings, p. 1-2, San Jose, CA, May 10-15, 2015.
- T.T. Kao, A. Haq, J. Kim, M.H. Ji, T. Detchprohm, R. D. Dupuis and S.C. Shen, "A study of the ambipolar carrier lifetime for homojunction p-i-n rectifiers," 11th International Conference on Nitride Semiconductors (ICNS-11), Beijing, China, Aug. 31-Sep. 3, 2015.
- A. D. Kelkar, and L. Zhang, "Nanoengineered Materials for Future Aerospace Structures," Global Conference on Polymer and Composite Materials, 2015.
- CK. Kepley, "Pharmaceutical applications of fullerene derivatives," World Fullerene on the 30th anniversary of the discovery of fullerenes, Hohhot, China, 2015.
- J. Kim, M.H. Ji, T. Detchprohm, R.D. Dupuis, A. Sood, and N. Dhar, "Growth and characterization of Al_xGa_{1-x}N ultraviolet avalanche photodiodes with avalanche gain greater than 105," 16th EWMOVPE Workshop, Lund, SWE, Jun. 7-10, 2015.
- J. Kim, M.H. Ji, T. Detchprohm, R.D. Dupuis, A. Sood, and N. Dhar, "Growth and characterization of Al_xGa_{1-x}N ultraviolet avalanche photodiodes grown by metalorganic chemical vapor deposition," Seventeenth Organo-Metallic Vapor Phase Epitaxy Workshop (OMVPE-17), Big Sky, MT, Aug. 2-7, 2015.
- J. Kim, M.H. Ji, T. Detchprohm, R.D. Dupuis, A. Sood, and N. Dhar, "Growth and characterization of Al_xGa_{1-x}N ultraviolet avalanche photodiodes grown on free-standing GaN substrates," 57th Electronic Materials Conference, Columbus, OH, Jun. 24-26, 2015.
- J. Kim, M.H. Ji, Y.S. Liu, T. Detchprohm, R. D. Dupuis, T.T. Kao, S. Haq, S.C. Shen, K. Mehta, P. D. Yoder, H. Xie, F. Ponce, A. Sood and N. Dhar, "Growth and characterization of III-N ultraviolet lasers and avalanche photodiodes on free-standing GaN substrates by MOCVD," 11th International Conference on Nitride Semiconductors (ICNS-11), Beijing, China, Aug. 31-Sep. 3, 2015.
- Y Kim, J Cho, K Kim, V Sundaram, R Tummala, and J Kim, "Signal and power integrity analysis in 2.5D integrated circuits (ICs) with glass, silicon and organic interposer," in Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th, pp.738-743, 26-29 May 2015.
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