SIMEON I. BOGDANOV

Assistant Professor,
Department of Electrical and Computer Engineering
Nick Holonyak, Jr. Micro and Nanotechnology Laboratory
Illinois Quantum Information Science and Technology Center
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EDUCATION

Ph.D. in Electrical Engineering
Northwestern University, Evanston, IL — Sep 2008 – Apr 2014
Research area: Optoelectronics, Solid State Physics, Infrared Detection
Dissertation topic: "Planar Engineering for Dark Current Suppression in Type-II InAs/GaSb Superlattice Photodiodes"
Research advisor: Manijeh Razeghi

M.S. in Microelectronics
Royal Institute of Technology, Stockholm, Sweden — Sep 2007 - Aug 2008
Research area: Optoelectronics, Solid State Physics, Infrared Detection
Thesis title: "Fabrication, Characterization and Analysis of Type-II InAs/GaSb Superlattice Photodiodes"
Research advisor: Alex Grishin

B.S. in Physics
Ecole Polytechnique, Palaiseau, France — Sep 2004 - July 2007
Research area: Optics, Solid State Lasers, Condensed Matter Physics
Thesis title: "A Decoy-State Protocol for the Implementation of Quantum Key Distribution"
Research advisor: Anders Karlsson

PROFESSIONAL EXPERIENCE

University of Illinois at Urbana-Champaign, Urbana, IL — Jan 2020 – present
Assistant Professor of Electrical Engineering

University of Illinois at Urbana-Champaign, Urbana, IL — Sep 2019 – Dec 2019
Adjunct Assistant Professor of Electrical Engineering

Purdue University, West Lafayette, IN — Apr 2014 – Dec 2019
Postdoctoral Research Associate – Birck Nanotechnology Center
Research topic: Plasmon-assisted single-photon sources and spin-based sensors
Research advisor: Vladimir M. Shalaev

RESEARCH INTERESTS

1. Integrated quantum photonics
2. Nanophotonics, optical metamaterials and plasmonics
3. Semiconductor physics and optoelectronics

PUBLICATIONS

Journal publications (*h*-index = 18, 1085 citations as of August 2022)

Articles in preparation

1. S. Sahoo, V. Davydov, V. Agafonov, and **S.I. Bogdanov**, "Hybrid quantum nanophotonic devices with color centers in nanodiamonds", preprint available on *arXiv* at https://arxiv.org/abs/2207.12340
2. E.M. Baeva, A.I. Kolbatova, N.A. Titova, S. Saha, A. Boltasseva, **S.I. Bogdanov**, V.M. Shalaev, A.V. Semenov, A. Levchenko, G.N. Goltsman, and V.S. Khrapai, "*T*-fluctuations and dynamics of the resistive transition in thin superconducting films", preprint available on *arXiv* at https://arxiv.org/pdf/2202.06309
3. E.M. Baeva, A.I. Kolbatova, N.A. Titova, S. Saha, A. Boltasseva, **S.I. Bogdanov**, V.M. Shalaev, A.V. Semenov, A. Levchenko, G.N. Goltsman, and V.S. Khrapai, "Resistance fluctuation spectroscopy of the superconducting transition in epitaxial TiN films", preprint available on *arXiv* at https://arxiv.org/abs/2202.06310
4. Z.A. Kudyshev, D. Sychev, Z.O. Martin, **S.I. Bogdanov**, X. Xu, A.V. Kildishev, A. Boltasseva and V.M. Shalaev, "Machine learning assisted quantum super-resolution microscopy", preprint available on *arXiv* at https://arxiv.org/abs/2107.02401
5. **S.I. Bogdanov**, O.A. Makarova, A.S. Lagutchev, D. Shah, C.-C. Chiang, S. Saha, A.S. Baburin, I.A. Ryzhikov, I.A. Rodionov, A.V. Kildishev, A. Boltasseva and V.M. Shalaev, "Deterministic integration of single nitrogen-vacancy centers into nanopatch antennas", preprint available on *arXiv* at http://arxiv.org/abs/1902.05996

Published articles

6. A. Solanki, **S.I. Bogdanov**, M.M. Rahman, A. Rustagi, P. Debashis, N. Dilley, T.-T. Shen, Y.-P. Chen, J. Appenzeller, V.M. Shalaev, A. Boltasseva and P. Upadhyaya, "Electric field control of interaction between magnons and quantum spin defects", *Phys. Rev. Research*, **4**, L012025 (2022)
7. S. Sahoo, H. Azzouz and **S.I. Bogdanov** "Rapid absolute sizing of deeply subwavelength dielectric nanoparticles by confocal scanning optical microscopy", *Appl. Phys. Lett.* **118**, 241105 (2021)
8. Z. Kudyshev*, **S.I. Bogdanov***, T. Isacsson, A. Boltasseva and V.M. Shalaev, "Rapid single-photon emitter classification with neural networks", *Adv. Quant. Techn.,* 3**,** 2000067 (2020), * = equal contribution. **Highlighted in *Purdue News, Science Daily, ScienMag, Phys.org* and *Eurekalert* (AAAS)**
9. M.Y. Shalaginov, **S.I. Bogdanov**, A.S. Lagutchev, A. Boltasseva and V.M. Shalaev, "On-chip microwave-spin-plasmon interface", *ACS Photonics*, 7, 2018 (2020)

10. C.-C. Chiang, **S.I. Bogdanov**, O. Makarova, X.Xu, S. Saha, D. Shah, Z.O. Martin, D. Wang, A.S. Lagutchev, A.V. Kildishev, A. Boltasseva and V.M. Shalaev, "Chip-compatible quantum plasmonic launcher", *Adv. Opt. Mater.,* 8, 2000889 (2020)
11. **S.I. Bogdanov**, O.A. Makarova, X. Xu, Z. Martin, A.S. Lagutchev, M. Olinde, D. Shah, S.N. Chowdhury, A.R. Gabidullin, I.A. Ryzhikov, I.A. Rodionov, A.V. Kildishev, S.I. Bozhevolnyi, A. Boltasseva, V.M. Shalaev and J.B. Khurgin, "Plasmonic nanocavities coupled to strongly radiative antennas enable ultrafast quantum photonics", *Optica,* 7, 463 (2020) – **among top 10 downloads in *Optica* in May 2020**. **Highlighted in *Kommersant***
12. N. Saveskul, N.Titova, E.M. Baeva, A.V. Semenov, A.V. Lubenchenko, S. Saha, H. Reddy, **S.I. Bogdanov**, E.E. Marinero, V.M. Shalaev, A. Boltasseva V.S. Khrapai, A.I. Kardakova, and G.N. Goltsman, "Superconductivity Behavior in Epitaxial TiN Films Points to Surface Magnetic Disorder", *Phys. Rev. Applied,* 12, 054001 (2019)
13. **S.I. Bogdanov**, A. Boltasseva and V.M. Shalaev, "Overcoming quantum decoherence with plasmonics", *Science,* 364, 532 (2019)
14. **S.I. Bogdanov**, M.Y. Shalaginov, A.S. Lagutchev, C.-C. Chiang, D. Shah, A.S. Baburin, I.A. Ryzhikov, I.A. Rodionov, A. Boltasseva and V.M. Shalaev, "Ultrabright and ultrafast room-temperature anti-bunched emission from a nitrogen-vacancy center in a diamond nanocrystal", *Nano Letters,* 18, 4837 (2018) – **selected for coverage in *Optics and Photonics News* Dec. 2018 issue as "one of the most exciting peer-reviewed articles of the year in Optics", Highlighted in *Izvestiya***
15. S.K.H. Andersen, **S.I. Bogdanov**, Y. Xuan, O. Makarova, M.Y. Shalaginov, A. Boltasseva, V.M. Shalaev and S. Bozhevolnyi, "Hybrid plasmonic bullseye antennas for efficient photon collection", *ACS Photonics,* 5, 692 (2018)
16. O.A. Makarova, M.Y. Shalaginov, **S.I. Bogdanov**, U. Guler, A. Boltasseva, A.V. Kildishev and V.M. Shalaev, "Patterned multilayer metamaterial for fast and efficient photon collection from dipolar emitters", *Opt. Lett.* 42 , 3968 (2017)
17. **S.I. Bogdanov**, M.Y. Shalaginov, P. Kapitanova, J. Liu, M. Ferrera, A. Lagutchev, P. Belov, J. Irudayaraj, A. Boltasseva and V. Shalaev, "Spin contrast in Purcell-enhanced nitrogen-vacancy center ensembles in nanodiamonds", *Phys. Rev. B* 96, 035146 (2017) – **a figure from this article is featured in the review by Hopper et al. *Micromachines*, 9, 437 (2018)**
18. **S.I. Bogdanov**, M.Y. Shalaginov, A. Boltasseva and V.M. Shalaev, "Material platforms for integrated quantum photonics*" Opt. Mat. Exp.* 7, 111 (2017) – **2794 views in 6 months following publication, regularly among top 10 monthly downloads in Optics Materials Express**
19. M. Razeghi, A. Haddadi, A.M. Hoang, G. Chen, **S.I. Bogdanov**, S.R. Darvish, F. Callewaert, P.R. Bijjam and R. McClintock, "Antimonide-based type-II superlattices: a superior candidate for the third generation of infrared imaging systems" *J. of Elec. Mat.* 43(8), 2802 (2014)
20. G. Chen, A.M. Hoang, **S.I. Bogdanov**, A. Haddadi, S.R. Darvish and M. Razeghi, "Effect of sidewall surface recombination on the quantum efficiency in a Y_2O_3 gated type-II InAs/GaSb long-infrared photodetector array" *Appl. Phys. Lett.* 103, 223501 (2013).

21. G. Chen, A.M. Hoang, **S.I. Bogdanov**, P.R. Bijjam, B.-M. Nguyen and M. Razeghi, "Investigation of impurity in type-II InAs/GaSb superlattices via capacitance-voltage measurement" *Appl. Phys. Lett.* 103, 033512 (2013).
22. G. Chen, E.K. Huang, A.M. Hoang, **S.I. Bogdanov,** S.R. Darvish and M. Razeghi, "Surface leakage investigation via gated type-II InAs/GaSb long-wavelength infrared photodetectors" *Appl. Phys. Lett*. 101, 213501 (2012).
23. M. Razeghi, A. Haddadi, A.M. Hoang, E.K. Huang, G. Chen, **S.I. Bogdanov**, S.R. Darvish, F. Callewaert and R. McClintock "Advances in antimonide-based Type-II superlattices for infrared detection and imaging at center for quantum devices" Infrared Physics and Technology, 59, 41 (2012).
24. B.M. Nguyen, G. Chen, A.M. Hoang, S. Abdollahi Pour, **S.I. Bogdanov,** and M. Razeghi, "Effect of contact doping on superlattice-based minority-carrier unipolar detectors" *Appl. Phys. Lett*. 99, 033501 (2011).
25. **S.I. Bogdanov,** B.M. Nguyen, A.M. Hoang and M. Razeghi, "Surface leakage current reduction in long wavelength infrared type-II InAs/GaSb superlattice photodiodes" *Appl. Phys. Lett*. 98, 183501 (2011).
26. B.M. Nguyen, **S.I. Bogdanov**, S. Abdollahi Pour, and M. Razeghi, "Minority electron unipolar photodetectors based on type II InAs/GaSb/AlSb superlattices for very long wavelength infrared detection," *Appl. Phys. Lett*. 95, 183502 (2009) – **109 citations as of November 2019**
27. S. Abdollahi Pour, B.M. Nguyen, **S.I. Bogdanov**, E.K. Huang, and M. Razeghi, "Demonstration of high performance long wavelength infrared type II InAs/GaSb superlattice photodiode grown on GaAs substrate," *Appl. Phys. Lett*. 95, 173505 (2009).
28. B.M. Nguyen, D. Hoffman, E.K. Huang, **S.I. Bogdanov**, P.Y. Delaunay, M. Razeghi and M.Z. Tidrow, "Demonstration of midinfrared type-II InAs/GaSb superlattice photodiodes grown on GaAs substrate," *Appl. Phys. Lett*. 94, 223506 (2009).

Conference proceedings

1. Z.A. Kudyshev, **S.I. Bogdanov**, Z.M. Olson, X. Xu, D. Sychev, A.V. Kildishev, V.M. Shalaev, and A. Boltasseva, "Advancing photonic design and measurements with artificial intelligence", *Proc. SPIE* 11795, Metamaterials, Metadevices, and Metasystems 2021, 1179506 (2 August 2021)
2. Z.A. Kudyshev, D. Sychev, Z.M. Olson, **S.I. Bogdanov**, X. Xu, A.V. Kildishev, A. Boltasseva, and V.M. Shalaev, "Machine learning assisted quantum super-resolution microscopy", CLEO, San Jose, CA (2021), *OSA Technical Digest*, JTh4C.5
3. Z. Kudyshev, **S.I. Bogdanov**, T. Isacsson, A.V. Kildishev, A. Boltasseva, and V.M. Shalaev, "Machine Learning Assisted Quantum Photonics", Quantum 2.0 (2020), *OSA Technical Digest*, QM6B.3
4. **S.I. Bogdanov**, O.A. Makarova, X. Xu, A.S. Lagutchev, D. Shah, A.R. Gabidullin, I.A. Ryzhikov, I.A. Rodionov, A.V. Kildishev, S.I. Bozhevolnyi, A. Boltasseva, V.M. Shalaev, and J.B. Khurgin, "Optical modification of cavity-antenna plasmonic nanostructures for

brighter and faster single-photon emission", Quantum 2.0 (2020), OSA Technical Digest, QM4B.5

5. **S.I. Bogdanov**, O.A. Makarova, X. Xu, A.S. Lagutchev, D. Shah, A.R. Gabidullin, I.A. Ryzhikov, I.A. Rodionov, A.V. Kildishev, S.I. Bozhevolnyi, A. Boltasseva, V.M. Shalaev and J.B. Khurgin, "Enhancing the performance of coupled cavity-antenna plasmonic nanostructures for ultrafast quantum photonics" CLEO, San Jose, CA (2020), *OSA Technical Digest*, FM4C.3
6. C.-C. Chiang, **S.I. Bogdanov**, O.A. Makarova, X. Xu, S. Saha, D. Shah, D. Wang, A.S. Lagoutchev, A.V. Kildishev, A. Boltasseva and V.M. Shalaev, "A quantum plasmonic launcher for integrated ultrafast single-photon sources", CLEO, San Jose, CA (2020), *OSA Technical Digest,* FTh4D.4
7. **S.I. Bogdanov**, O.A. Makarova, A.S. Lagutchev, D. Shah, C.-C. Chiang, A. Baburin, I.A. Ryzhikov, S. Saha, I.A. Rodionov, A. Boltasseva and V.M. Shalaev, "Spin Coherence in Single NV Centers Coupled to Controllably Assembled Nanopatch Antennas", CLEO, San Jose, CA (2019), *OSA Technical Digest,* FM1M.6
8. O.A. Makarova, **S.I. Bogdanov**, X.Xu, D. Shah, A.S. Baburin, I.A. Ryzhikov, S. Saha, I.A. Rodionov, A.V. Kildishev, A. Boltasseva and V.M. Shalaev, "Controlled Assembly of an Ultrafast Single-Photon Source", CLEO, San Jose, CA (2019), *OSA Technical Digest,* FM1M.5
9. **S.I. Bogdanov**, S. Saha, M.Y. Shalaginov, N. Kinsey, A.S. Lagutchev, A. Boltasseva and V.M. Shalaev, "Hybrid plasmon-dielectric platform for high-speed on-chip quantum nanophotonics", Nanometa 7th International Topical Meeting on Nanophotonics and Metamaterials, Seefeld, Austria (2019)
10. **S.I. Bogdanov**, M. Shalaginov, A. Lagutchev, C. Chiang, D. Shah, A. Baburin, I. Ryzhikov, I. Rodionov, A. Boltasseva, and V. Shalaev, "Ultrabright Room-Temperature Emission from Single Plasmon-Enhanced Nitrogen-Vacancy Centers in Diamond", CLEO, San Jose, CA (2018), *OSA Technical Digest*, FTu4E.6
11. **S.I. Bogdanov**, M. Shalaginov, A. Akimov, A. Lagutchev, J. Liu, D. Woods, M. Ferrera, P. Kapitanova, P. Belov, J. Irudayaraj, A. Boltasseva, and V. Shalaev, "Spin Contrast of Purcell-Enhanced Nitrogen-Vacancy Centers in Diamond", CLEO, San Jose, CA (2017), *OSA Technical Digest*, FW4H.3
12. O. A. Makarova, M. Y. Shalaginov, **S.I. Bogdanov**, U. Guler, A. Boltasseva, A. V. Kildishev, V. M. Shalaev, Patterning metamaterials for fast and efficient single-photon sources, *SPIE Proceedings*, vol. 10112, p.1011208 (2017)
13. J. Ndukaife, B. Isaacoff, M. Shalaginov, **S.I. Bogdanov**, A. Nnanna, J. Biteen, M. Segev, V. Shalaev, and A. Boltasseva, Massive Parallel Positioning of Nanodiamonds on Nanophotonic Structures, CLEO, San Jose, CA (2017), OSA Technical Digest, FTu3H.1
14. M.Y. Shalaginov, **S.I. Bogdanov**, J. Liu, A. Lagutchev, A.V. Kildishev, D. Peroulis, J.M. Irudayaraj, A. Boltasseva and V.M. Shalaev, "Effect of photonic density of states on spin-flip induced fluorescence contrast in diamond nitrogen-vacancy center ensembles" (Presentation Recording)", *SPIE Proceedings*, San Diego, CA Vol. 9544, p.95440O (2015)

15. M. Y. Shalaginov, **S.I. Bogdanov**, P. V. Kapitanova, A. S. Lagutchev, A. V. Kildishev, P.A. Belov, A. Boltasseva, V. M. Shalaev, "Merging metamaterials with quantum photonics", 9th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics, p. 283, (2015)
16. D. Hoffman, B.M. Nguyen, E.K. Huang, P.Y. Delaunay, **S.I. Bogdanov**, P. Manurkar, M. Razeghi, and V. Nathan, "The importance of band alignment in VLWIR type-II InAs/GaSb heterodiodes containing the M-structure barrier," *SPIE Proceedings*, San Jose, CA Vol. 7222 p. 722215 (2009).
17. P.Y. Delaunay, B.M. Nguyen, D. Hoffman, E.K. Huang, P. Manurkar, **S.I. Bogdanov** and M. Razeghi, "Background limited performance of long wavelength infrared focal plane arrays fabricated from M-structure InAs/GaSb superlattices," *SPIE Proceedings*, San Jose, CA Vol. 7222 p.72220W (2009).
18. B.M. Nguyen, S. Abdollahi Pour, **S.I. Bogdanov** and M. Razeghi "Minority electron unipolar photodetectors based on Type II InAs/GaSb/AlSb superlattices for very long wavelength infrared detection," *SPIE Proceedings,* San Francisco, CA Vol. 7608 p. 760825-1 (2010).
19. M. Razeghi, B.M. Nguyen, P.Y. Delaunay, E.K. Huang, S. Abdollahi Pour, P. Manurkar and **S.I. Bogdanov**, "State-of-the-art type-II antimonide-based superlattice photodiodes for infrared detection and imaging," SPIE Proceedings, San Diego, CA Vol. 7467, p. 74670T-1 (2009)
20. M. Razeghi, B.M. Nguyen, P.Y. Delaunay, S. Abdollahi Pour, E.K.W. Huang, P. Manurkar, **S.I. Bogdanov**, and G. Chen "High operating temperature MWIR photon detectors based on Type II InAs/GaSb superlattice," *SPIE Proceedings, San* Francisco, CA Vol. 7608, p. 76081Q-1 (2010)

Other scientific publications

1. M.Y. Shalaginov, R. Chandrasekar, **S.I. Bogdanov**, Z. Wang, X. Meng, O.A. Makarova, A. Lagutchev, A.V. Kildishev, A. Boltasseva and V.M. Shalaev "Hyperbolic metamaterials for single-photon sources and nanolasers", *Quantum Plasmonics*, p. 97 Springer Int. Publ. (2016)
2. **S.I. Bogdanov** and M. Razeghi, "Des atomes aux dispositifs quantiques", *La Jaune et la Rouge*, *Journal de l'Ecole Polytechnique*, 702, (2015)
3. M. Shalaginov, **S.I. Bogdanov**, V. Vorobyov, A. Lagutchev, A. Kildishev, A. Akimov, A. Boltasseva and V. Shalaev "Enhancement of Single-Photon Sources with Metamaterials", *From Atomic to Mesoscale*, World Scientific Review, p. 123 (2015)

HONORS AND AWARDS

2018 - Best Presentation Award, OSA IONS Midwest Conference, (Purdue University, USA)
2018 - Preparing Future Faculty Scholarship (Stony Brook University, USA) - $700
2018 - Postdoc Travel Grant Award for Professional Conference (Purdue University, USA) - $500
2017 - The Graduate School Postdoc Travel Grant (Purdue University, USA) - $440
2016 - The Graduate School Postdoc Travel Grant (Purdue University, USA) - $440

2015 - Best Poster Award and Travel Fellowship, Metamaterials Science and Technology Workshop, (San Diego, USA) - $1 000
2015 - Best Poster Award, Enrico Fermi Summer School in Complex Photonics, (Varenna, Italy) - €300
2013 - Cabell Terminal Year Fellowship (Northwestern University) – full final year tuition and stipend funding
2011 - Dow Sustainability Innovation Student Challenge Award (Chicago, USA) - $10 000, received by the team consisting of C. Wilmer, T. Phan, **S.I. Bogdanov** and E. Hoxha
2011 - 3rd place, Scientists Without Borders Global Malnutrition Challenge Prize (InnoCentive, USA) - $1 000, received by the team consisting of C. Wilmer, T. Phan, **S.I. Bogdanov** and E. Hoxha
2009 - Shared 1st place Nature.com Clean Water Distribution Challenge Prize (InnoCentive, USA) - $4 000, received by the team consisting of C. Wilmer, T. Phan and **S.I. Bogdanov**
2008 - Finalist, Diversity Challenge (Academic Search, Sweden)
2004 - Scholarship for Outstanding International Students (Ecole Polytechnique Foundation, France)
2001 - Honorable Mention, National Mathematics Competition (France)
2000 - 3rd place, Olympiades Academiques de Mathematiques (France)

FUNDRAISING ACTIVITIES AND UNIVERSITY SERVICE

1. Strategic Research Initiative Grant, Phase II, Grainger College of Engineering (UIUC, 2022), with co-PIs P.K. Jain and B.K. Clark, ***$70K***.
2. NSF Convergence Accelerator - Track C: QuSTEAM: Convergent undergraduate education in Quantum Science, Technology, Engineering, Arts, and Mathematics, (UIUC, 2021), multi-PI, ***$560K***.
3. Strategic Research Initiative Grant, Grainger College of Engineering (UIUC, 2021), with co-PIs P.K. Jain and B.K. Clark, ***$70K***.
4. Serving on the Curriculum Committee at the UIUC Department of Electrical and Computer Engineering since 2020.
5. Chair of the Microelectronics and Nanotechnology Area at the UIUC Department of Electrical and Computer Engineering.
6. Member of the IQUIST Science Advisory Board
7. Extensive experience in drafting winning research and equipment grant proposals: instrumentation proposals resulting in total awarded funds of ***$0.6M***; research proposals with total awards in excess of ***$2.2M*** (Purdue University)
8. Leading member of the local organizing committee of the Purdue Quantum Center 2015 Kickoff Conference hosting 36 world leading faculty members in the area of Quantum Physics, scientific journal editors and Department of Defense program managers, as well as over 200 attendees

SELECTED MEDIA COVERAGE

1. *Eurekalert* (AAAS), "New machine learning-assisted method rapidly classifies quantum sources" (09/10/2020)
2. *Kommersant Nauka*, Разгон до сотен терагерц. Улучшены параметры самого яркого источника одиночных фотонов. ("Speedup into the terahertz range – improving the performance of the brightest single-photon sources", in Russian, 08/25/2020)
3. *Izvestia*, Science News, "На всех квантит: усовершенствована технология связи по оптоволокну" ("Enough for all: improvement in optical fiber communication technology", in Russian, 12/01/2020)
4. *Optics and Photonics News*, "Single NV centers produce 30 million photons per second at room temperature" (12/01/2018)
5. *Purdue News*, "Toward unhackable communication: single particles of light could bring about the quantum internet", (10/16/2018), reposted by phys.org and nanowerk.com
6. *The New York Academy of Sciences*, "Innovating on a shoestring" (04/15/2011)
7. *Scientists Without Borders*, "The power of teamwork" (05/18/2011)
8. *Northwestern News*, "Students excel in maternal health care challenge" (09/06/2011)

INVITED TALKS

1. **SPIE Optics and Photonics**, Optical and Quantum Sensing and Precision Metrology II, PC12016-161, San Francisco, CA (2022)
2. **SPIE Photonics West**, Quantum Sensing and Nano Electronics and Photonics XVIII, 12009-3, San Francisco, CA (2022)
3. **SPIE Photonics West,** Optical and Quantum Sensing and Precision Metrology, 117003B, San Francisco, CA (2021)
4. **SPIE Photonics West,** Photonic and Phononic Properties of Engineered Nanostructures XI, 116941O, San Francisco, CA (2021)
5. **SPIE Optics and Photonics**, Active Photonic Platforms XII, 11461-56, San Diego, CA (2020)
6. **SPIE Optics and Photonics**, Spintronics XIII, 11470-70, San Diego, CA (2020)
7. **SPIE FOCUS, Northwestern University**: Light and Matter Conference, Evanston, IL, (2019)
8. **City University of New York**, Advanced Science Research Center, Photonics Initiative, colloquium, New York City, NY (2019)
9. **University of Iowa**, Department of Physics and Astronomy, colloquium, Iowa City, IA, (2019)
10. **Virginia Commonwealth University**, Department of Electrical and Computer Engineering, colloquium, Richmond, VA, (2019)
11. **University of Illinois at Urbana-Champaign,** Department of Electrical and Computer Engineering, colloquium, Urbana, IL (2019)
12. **University of Nebraska**, Department of Electrical and Computer Engineering, colloquium, Lincoln, NE, (2019)
13. **Old Dominion University**, Department of Physics and Astronomy, colloquium, Norfolk, VA (2019)
14. **SPIE Photonics West**, Quantum Sensing and Nano Electronics and Photonics XVI, 10926-54, San Francisco, CA (2019)

15. **IEEE Summer Topical Meeting Series,** Quantum Networks, WD3.1, Waikoloa, HI (2018)
16. **City College of New York**, Department of Physics, seminar, New York City, NY (2018)
17. **Argonne National Laboratory**, Center for Nanoscale Materials, seminar, Lemont, IL (2018)
18. **8th International Conference on Lasers, Optics and Photonics,** Las Vegas, NV (2017)
19. **Russian Quantum Center**, seminar, Skolkovo, Russia (2017)
20. **SPIE Photonics West**, Quantum Sensing and Nano Electronics and Photonics XIII, 9755-49, San Francisco, CA (2016)

CONTRIBUTED CONFERENCE TALKS

1. **OSA Quantum 2.0 Conference**, virtual event, QM4B.5 (2020)
2. **SPIE Optics and Photonics**, Plasmonics: Design, Materials, Fabrication, Characterization, and Applications, 11462-16, virtual event, (2020)
3. **Conference on Lasers and Electro-Optics**, FM4C.3, virtual event, (2020)
4. **Conference on Lasers and Electro-Optics**, FTh4D.4, virtual event, (2020)
5. **Conference on Lasers and Electro-Optics**, FM1M.6, San Jose, CA (2019)
6. **Conference on Lasers and Electro-Optics**, FTu4E.6, San Jose, CA (2018)
7. **SPIE Optics and Photonics**, Quantum Nanophotonics, 10359-20, San Diego, CA (2017)
8. **Conference on Lasers and Electro-Optics**, FW4H.3, San Jose, CA (2017)
9. **SPIE Optics and Photonics**, Metamaterials, Metadevices, and Metasystems, 9918-81, San Diego, CA (2016)
10. **SPIE Optics and Photonics**, Metamaterials, Metadevices, and Metasystems, 9544-16, San Diego, CA (2015)

CAMPUS AND DEPARTMENTAL TALKS

1. "Plasmon-enhanced quantum emitters for ultrafast quantum photonics", ECE EXPLORATIONS seminar, UIUC, (2021)
2. "Plasmon-enhanced quantum emitters for ultrafast quantum photonics", IQUIST seminar, UIUC, (2020)
3. "Ultrabright sub-nanosecond emission from single nitrogen-vacancy centers in nanodiamonds" OSA IONS Conference, Purdue University, West Lafayette, IN (2018)
4. "Material platforms for integrated quantum photonics", NSAC conference, Purdue University, West Lafayette, IN (2016)
5. "Practical nanophotonics: new approaches and material platforms", 10th anniversary celebration of Birck Nanotechnology Center, Purdue University, West Lafayette, IN (2016)

RESEARCH EXPERTISE AND TECHNICAL SKILLS

Optical characterization techniques: time-resolved single-photon counting, optical and Fourier spectroscopy, optically detected magnetic resonance. Cryogenic electrical characterization techniques: sensitive current-voltage and capacitance-voltage measurements, spectral noise characterization and photodetector quantum efficiency measurements. Structural device characterization: scanning electron microscopy, optical profilometry and atomic force microscopy. Semiconductor device processing techniques: lithography, wet and dry etching, e-beam and thermal evaporation, plasma-enhanced chemical vapor deposition. Packaging techniques: flip-chip bonding, underfilling, substrate removal and chemical-mechanical

polishing. Electromagnetic simulation with analytical and numerical methods: COMSOL Multiphysics, Matlab. Large-scale experimental setup automation and data acquisition via Labview, Matlab and microcontroller programming.

TEACHING AND MENTORING EXPERIENCE

University of Illinois at Urbana-Champaign, Urbana, IL (2020 - present)
1. ECE 340 "Semiconductor Devices" – taught in Spring 2020, Fall 2020, Spring 2022
2. ECE 498SB "Manipulation of Elementary Quantum Systems" – developed and taught the course in Fall 2021
3. Supervised 3 graduate and 10 undergraduate students

Purdue University, West Lafayette, IN (2015 - 2019)
Mentored four graduate and five undergraduate students

Northwestern University, Evanston, IL (Winter 2012- Spring 2013)
Graduate student mentor
Trained two graduate students and one undergraduate student in processing and characterization of single photodiodes and integrated arrays
Teaching Assistant
Prepared course slides, taught lectures, reviewed course material during office hours, supervised and managed six lab projects, graded homework assignments
Outreach activity
Held educational activities designed to teach children about light and lasers in the framework of Northwestern SPIE chapter's outreach to Evanston middle schools.

High School Jean Rostand, Mantes-la-Jolie, Ile-de-France, France (9/04-04/05)
Physics and Mathematics Teacher
1. Taught Physics and Mathematics to several classes of 10th-12th grade students
2. Reviewed course material with students during office hours on an individual basis

PROFESSIONAL AFFILIATIONS AND SERVICE TO PROFESSION

Member of the Optical Society of America
Member of the IEEE Photonics Society
Reviewer: *Nature Communications, Optica, Nano Letters, Advanced Optical Materials, Optics Letters*, *Optics Express*, *Journal of the American Chemical Society, Photonics Research, Applied Physics Letters*, *Nanophotonics*, *Optics Materials Express, OSA Continuum*

LANGUAGES

1. Russian, native
2. French, full command
3. English, full command
4. Swedish, intermediate
5. German, basic