

# MIKHAIL Y. SHALAGINOV

2Pi, Inc.  
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Academic record accounts: [Google Scholar](#), [ORCID](#)  
April 15th, 2024; 21 pages

## SUMMARY

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### Research highlights:

- implemented a single-element aberration-free metalens with extremely wide field of view
- demonstrated the first non-mechanically actuated parfocal zoom metalens
- demonstrated a varifocal metalens with diffraction-limited performance
- developed an ultracompact on-chip, single-layer integration of diamond spins with optical and microwave channels
- enabled a room-temperature single-photon source with a record-high photon rate
- pioneered broadband enhancement of single-photon emitters with hyperbolic metamaterials

**Publications summary:** h-index 28, in total > 4500 citations (Google Scholar); 5 co-authored book chapters; 45 journal article publications (10 as a first author) in high-profile journals, such as Nature Nanotechnology, Nature Communications, Nano Letters, Advanced Optical Materials, Laser & Photonics Reviews, etc; 3 US patents; numerous invited talks at international conferences.  
Ranked among the world's top 2% of scientists in 2022 and 2023 (by Stanford University)

## EDUCATION

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**Ph.D.**, School of Electrical & Computer Engineering, 08/2017  
Purdue University, West Lafayette, IN, USA  
Thesis: Novel Plasmonic Materials and Nanodevices for Integrated Quantum Photonics  
Advisor: Dr. Vladimir M. Shalaev

**B.S.**, Applied Mathematics and Physics (summa cum laude), 06/2010  
Moscow Institute of Physics and Technology,  
Department of General and Applied Physics, Dolgoprudny, Moscow Region, Russia  
Thesis: Investigation of the temperature dependence of the surface impedance of iron pnictides at different frequencies  
Advisor: Dr. Artem F. Shevchun

## PROFESSIONAL CAREER

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Co-founder of 2Pi Optics, Inc./Chief Scientific Officer 05/2022 – present

Postdoctoral Associate, Department of Materials Science & Engineering, 08/2017–04/2022  
Massachusetts Institute of Technology, MA, USA

Research Assistant, Birck Nanotechnology Center, 08/2010–08/2017  
School of Electrical & Computer Engineering, Purdue University, IN, USA

## HONORS & AWARDS

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Finalist of the Activate Fellowship Program 2020 12/17/2020  
**\*46 finalists selected from nearly 400 applicants**

Finalist of the MIT Kavanaugh Fellowship Program 2020 10/16/2020

1 <sup>st</sup> prize awards of the AVS 2020 International Twitter Poster Competition in the categories: Nanoscience and Nanomanufacturing and Top Postdoc	07/20/2020
Best poster award, 2019 MRS Fall Meeting <b>*awarded to top 5 out of almost 700 poster presenters from all over the world</b>	12/02/2019
Best poster presentation prize at MIT Materials Day 2018 <b>*awarded to top 5 out of 60 participants from the MIT Department of Material Science &amp; Engineering</b>	10/10/2018
Top 10 pitch presentation award at MARC 2018 prize for presenting the work "All-dielectric phase-change nanoantennae and metasurfaces in mid-IR"	01/30/2018
2017 College of Engineering Outstanding Graduate Student Research Award <b>*awarded to 2 graduate students (out of 700+) from the School of Electrical &amp; Computer Engineering at Purdue University</b>	04/2017
2015 SPIE Officer Travel Grant	08/2015
Graduate Ambassador of Birck Nanotechnology Center <b>*awarded to top 10 graduate students at the Birck Nanotechnology Center</b>	2013-2017
Leadership and Service Award from ECE Graduate Student Association	12/2013
Semi-finalist in the 2013 OSA Foundation's Maiman Outstanding Student Paper Competition, for the paper titled: "Broadband enhancement of spontaneous emission from nitrogen-vacancy centers in nanodiamonds by hyperbolic metamaterials." <b>*highest scoring student paper in the category Metamaterials and Complex Media</b>	04/2013
3 <sup>rd</sup> prize, Second International Olympiad in Mathematical Physics, Samara State University, Russia	09/2010
1 <sup>st</sup> prize, research project competition, International Summer School "Schola ludus 2010", Institute of Physical Biology South Bohemia University, Czech Republic. Project title: Modeling of hydrogen storage materials	07/2010
1 <sup>st</sup> team prize & personal award for the best solutions of certain problems, Students Training Contest Olympiad in Mathematical and Theoretical Physics, Samara State University, Russia	05/2010
1 <sup>st</sup> team prize, 3 <sup>rd</sup> personal prize, Open Students' Olympiad in Mathematical Physics, Samara State University, Russia	04/2009
Winner certificate, All-Russian Olympiad in Applied Physics and Mathematics 2009, Moscow Institute of Physics & Technology, Russia	04/2009

## **RESEARCH EXPERIENCE HIGHLIGHTS**

**Reconfigurable metasurfaces based on phase-change materials (MIT):** demonstrated for the first time (1) high-performance non-mechanically-actuated metalens with a switchable focal length, (2) electrically controlled phase-change metasurface, and (3) parafocal zoom metalens. Metasurfaces were constructed of a newly developed low-loss phase-change material Ge-Sb-Se-Te.

journal articles: J[29] M. Y. Shalaginov, et al, Nature Communications 12 (1225), 1-8, 2021

J[31] Y. Zhang, et al, Nature Nanotechnology 16, 661–666, 2021

J[41] F. Yang\*, H.-I Lin\*, M. Y. Shalaginov\*, et al, Adv. Opt. Mater. 2200721, 2022

**\*spotlighted in "Optics in 2021", by OSA Optics & Photonics News**

**A single-element planar metalens with ultra-wide field of view (MIT):** implemented a high-efficiency mid-infrared metalens with diffraction-limited focusing and record-high field of view exceeding 170°.

journal article: J[27] M. Y. Shalaginov, et al, Nano Letters, 20 (10), 7429–7437, 2020

**\*front page of mit.edu on Sep. 21st, 2020**

**\*Top 10 MIT research stories of 2020**

**Nonlinear Mid-infrared Metasurface based on a Phase-Change Material (MIT):** fabricated and analyzed a phase-change metasurface for enhancing third harmonic generation in mid-infrared.

journal article: J[28] F. Yue†, R. Piccoli†, M. Y. Shalaginov†, et al, Laser Photon. Rev. 15, 2000373, 2021

**On-chip integrated spin-microwave-plasmon interface (Purdue University):** designed and experimentally validated a single-layer on-chip quantum interface composed of electron spins in nanodiamonds coupled to v-groove optical collectors and microwave channels.

journal article: J[22] M. Y. Shalaginov, et al, ACS Photonics, 7, 2018–2026, 2020

**Ultra-bright room-temperature single-photon emitter (Purdue University):** developed a nanophotonic single-photon source with record-high emission rates up to 30 million photons per second at room temperature. Extremely high emission was achieved by coupling robust nitrogen-vacancy centers to nano-patch plasmonic antennae made of low-loss silver.

journal article: J[16] S. Bogdanov, M. Y. Shalaginov, et al, Nano Letters, 18 (8), 4837-4844, 2018

**\*highlighted in Purdue News Release**

**\*featured in the OPN special issue "Optics in 2018"**

**Electron spin contrast of Purcell-enhanced color centers in nanodiamonds (Purdue University):** experimentally studied the influence of spontaneous emission rate enhancement on electron spin readout properties of nitrogen-vacancy ensembles at low excitation regime.

journal article: J[12] S. Bogdanov, M. Y. Shalaginov, et al, Phys. Rev. B, 96, 035146, 2017

**Enhancement of single-photon emission from diamond color centers coupled to metamaterials (Purdue University):** pioneered experimental studies of broadband emission enhancement on single solid-state emitters coupled to hyperbolic metamaterials.

journal articles: J[6] M. Y. Shalaginov, et al, Laser Photon. Rev., 9 (1), 120-127, 2015

J[3] M. Y. Shalaginov, et al, Appl. Phys. Lett. 102, 173114, 2013

J[13] O. A. Makarova, M. Y. Shalaginov, et al, Opt. Lett., 42 (19), 3968-3971, 2017

**\*front cover, highlighted in Purdue News Release**

**Plasmonic waveguides clad by hyperbolic metamaterials (Purdue University):** performed analytical derivations of mode dispersion in arbitrary anisotropic multilayer waveguides and 2D numerical studies of plasmonic waveguides with a dielectric core and hyperbolic-media claddings.

journal articles: J[5] S. Ishii, M. Y. Shalaginov, et al Opt. Lett. 39 (16), 4663-4666, 2014

J[7] V. E. Babicheva, M. Y. Shalaginov, et al, Opt. Express, 23 (8), 9681, 2015

J[8] V. E. Babicheva, M. Y. Shalaginov, et al, Opt. Express, 23 (24), 31109, 2015

**\*in top downloads of Optics Letters from August 2014**

## GRANT PROPOSAL EXPERIENCE

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- NSF SBIR 2020 – as PI (\$256k)

Experience in drafting successfully funded grant proposals:

- MIT-Skoltech pilot grant 2020 (\$200k)
- DURIP ONR 2016 (\$280k)
- DoE 2016 (\$1.3M)

- MIT.nano seed grant by NCSOFT 2019 (\$140k)

## TEACHING EXPERIENCE

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**Instructor of Machine Learning course at AARD** 07/2021 – 08/2021  
 Taught fundamentals of machine learning to high-school students and supervised their research projects

**Content developer for online MIT edX courses on Integrated Photonics** 08/2020 – 03/2021

**Instructor of Quantum Computing Lab at Winter College in Optics:** 02/12/2020  
 Developed and delivered a 2hr workshop; taught a group of 80 students the basics of programming quantum logic circuits using Qiskit framework and executing the developed codes on IBM quantum nodes.

**Participant of Kaufman Teaching Certificate Program (MIT Teaching & Learning Lab)** 06/2018  
 Learnt and practiced the basics of developing a course, planning & facilitating class sessions, implementing active learning techniques, constructing effective assignments, creating inclusive learning environment.

**Teaching assistant**  
 ECE 412 “Introduction to Engineering Optics” (Fall semesters) 08/2013 – 12/2015  
 ECE 414 “Elements of Electro- and Fiber Optics” 01/2015 – 05/2015  
 Purdue University, West Lafayette, IN, USA  
 Assisted in teaching, substituted instructor in giving lectures, conducted review sessions and office hours, graded exams and homework assignments

**Teaching assistant**  
 GK-12 Program, Lafayette Tecumseh Junior High School, 01/2013 – 04/2013  
 Lafayette, IN, USA  
 Designed and delivered a lesson “Exploring the world of optical devices: Building a telescope”; obtained funding for community service/service learning projects; assisted in teaching 7<sup>th</sup> grade Math

**Teaching assistant,**  
 Distance Education Physics and Mathematics School, 09/2006 – 06/2009  
 Moscow Institute of Physics and Technology, Russia  
 Graded homework assignments and wrote reviews

## MENTORING

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### undergraduate students at Purdue University

[1] Ran Cui 11/2014 – 05/2017  
 [2] Oksana Makarova 09/2015 – 08/2017  
 [3] Nathan Campbell 09/2016 – 12/2016  
 [4] Jihan Salsabila 11/2016 – 03/2017

### undergraduate students at Massachusetts Institute of Technology

[1] Fan Yang 03/2018 – 09/2018  
 [2] Raja B. Azhar 04/2019 – 07/2019  
 [3] Marilyn R. Meyers 12/2020 – 06/2021

### high-school students

[1] Helena Jiang (RSI program at MIT) 07/2019 – 08/2019  
 [2] Seoyoung Joo (summer student at MIT) 07/2019 – 08/2019  
 [3] Steven Tan (AARD program) 07/2021 – 12/2021  
 [4] Julia Hui (AARD program) 07/2021 – 01/2023  
 [5] Justin Chen (AARD program) – 3<sup>rd</sup> prize at Reg. V Science & Eng. Fair, MA 12/2021 – 05/2022

[6] Crystal Li (summer student at MIT)	06/2022 – 09/2023
[7] Emma Chen (AARD program)	06/2022 – 08/2022
[8] Maximus Liu (AARD program)	06/2022 – 02/2023

## PROFESSIONAL AFFILIATIONS

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Optica (Optical Society)	since 2011
MRS, Material Research Society	since 2011
SPIE, Society of Photographic Instrumentation Engineers	since 2012
IEEE, Institute of Electrical and Electronics Engineers,	since 2013
APS, American Physical Society	since 2013
ACES, Applied Computational Electromagnetics Society	since 2020

## OUTREACH & SERVICE

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Co-host of the ‘632 nm Podcast’ events on twitter spaces aimed to discuss big scientific and technological breakthroughs (interviews with Rainer Weiss, George Church, etc.)	12/2021 – present
Editorial Board Member of SPIE Career Lab (community of 2000+ participants)	02/2021 – 01/2022
Invited speaker & tutor at the ICTP Winter College on Optics: Quantum Photonics and Information" (Italy),	02/2020
Facilitator of SPIE Student Chapter Leadership Workshop (invited and funded by SPIE)	08/2019
MIT DMSE postdoctoral representative	09/2018
Organizer of Purdue Quantum Journal Club	09/2015 – 09/2016
<u>Founder of SPIE Purdue Student Chapter</u>	11/2014
President of SPIE Purdue Student Chapter Purdue University, West Lafayette, IN, USA	11/2014 – 05/2015
Session Chair and Judge at SURF Research Symposium 2013 Purdue University, West Lafayette, IN, USA	07/2013
President of Nanotechnology Student Advisory Council Purdue University, West Lafayette, IN, USA	06/2013 – 06/2014
President of OSA Purdue Student Chapter, President of ECE Graduate Student Association, Research and Awareness Committee Member of Nanotechnology Student Advisory Council, Purdue University, West Lafayette, IN, USA	09/2012 – 09/2013
Vice-President of OSA Purdue Student Chapter, Purdue University, West Lafayette, IN, USA	06/2011– 06/2012
<u>Founder of OSA Purdue Student Chapter</u> , Purdue University, West Lafayette, IN, USA	06/2011
Volunteer, NanoDays (educational activities for K-12 students) Purdue University, West Lafayette, IN, USA	04/2011-2016
Participant of GK-12 Program	01/2013 – 04/2013

Judge, 2013 Undergraduate Research Poster Symposium  
Purdue University, West Lafayette, IN, USA

03/2013

Reviewer for peer-reviewed scientific journal: Nature Communications, Nano Letters, ACS Nano, JOSA A, JOSA B, Optics Letters, Optics Express, Optical Material Express, Applied Physics Letters, Physical Review A, Physical Review B, Scientific Reports, Nanoscale, PNAS, Nanophotonics

### **CONFERENCE & WORKSHOP ORGANIZATION**

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CO[5] Co-organizer and chair of the session "Light-matter interaction in Nanophotonics" at PIERS 2023, Prague, Czech Republic, July 3-6, 2023.

CO[4] Co-organizer and chair of the session "Time domain modeling of switchable and tunable devices in Photonics" at 2020 ACES (Applied Computational Electromagnetics Society) Symposium, Monterey, CA, USA, March 22-26, 2020.

CO[3] Workshop coordinator and leading member of the Organizing Committee  
Purdue Quantum Center Workshop 2017 "Coherent Effects in Physics & Chemistry"  
West Lafayette, IN, USA, April 28, 2017.

CO[2] Member of the Organizing Committee  
International Workshop "Quantum Control of Light & Matter" (Purdue Quantum Center Kickoff),  
West Lafayette, IN, USA, October 14-15, 2015.

CO[1] Member of the Organizing Committee  
International Workshop "Novel Ideas in Optics: From Advanced Materials to Revolutionary Applications", West Lafayette, IN, USA, May 31-June 2, 2012.

### **JOURNAL ARTICLES**

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#### ***published in international peer-reviewed journals***

J[45] M. Kang<sup>†</sup>, B. M. Triplett<sup>†</sup>, **M. Y. Shalaginov**<sup>†</sup>, S. Deckoff-Jones, C. Blanco, M. Truman, E. Shirshneva-Vashchenko, J. Cook, Q. Du, T. S. Karnik, C.-C. Popescu, A. Zachariou, Y. Zhang, C. M. Schwarz, S. An, C. Fowler, H. Zhang, I. Divliansky, L. B. Glebov, M. C. Richardson, A. M. Agarwal, C. Rivero-Baleine, J. Hu, T. Gu, K. A. Richardson, "Photochemically Engineered Large - Area Arsenic Sulfide Micro - Gratings for Hybrid Diffractive - Refractive Infrared Platforms", Adv. Photon. Res., 5 (1), 2300241, 2024.

<sup>†</sup>*equal contribution*

**\*selected as a front cover**

J[44] Z. Qin, L. Shen, **M. Y. Shalaginov**, H. Wang, H. Chen, X. Lin, "Single-photon extraction via spatial topological transition", Appl. Phys. Rev., 11 (1), 011412, 2024.

J[43] A. Ueno, H.-I Lin, F. Yang, S. An, L. Martin-Monier, **M. Y. Shalaginov**, T. Gu, J. Hu, "Dual-band optical collimator based on deep-learning designed, fabrication-friendly metasurfaces", Nanophotonics, 12 (17), 3491, 2023.

J[42] F. Yang, **M. Y. Shalaginov**, H.-I Lin, S. An, A. Agarwal, H. Zhang, C. Rivero-Baleine, T. Gu, J. Hu "Wide field-of-view metalens: a tutorial", Advanced Photonics 5 (3), 033001, 2023.

J[41] F. Yang, S. An, **M. Y. Shalaginov**, H. Zhang, J. Hu, T. Gu, "Understanding wide field-of-view flat lenses: an analytical solution", Chin. Opt. Lett., 21 (2), 023601, 2023.

**\*selected as Editors' Pick of Chinese Optics Letters**

J[40] C. Ríos, Q. Du, Y. Zhang, C.-C. Popescu, **M. Y. Shalaginov**, P. Miller, C. Roberts, M. Kang, K. A. Richardson, T. Gu, S. A. Vitale, J. Hu, "Ultra-compact nonvolatile photonics based on electrically reprogrammable transparent phase change materials", *Photonix*, 3 (26), 1-13, 2022.

J[39] F. Yang†, H.-I Lin†, **M. Y. Shalaginov**†, K. Stoll, S. An, C. Rivero-Baleine, M. Kang, A. Agarwal, K. Richardson, H. Zhang, J. Hu, T. Gu, "Reconfigurable parfocal zoom metalens", *Adv. Opt. Mater.*, 2200721, 2022.

†*equal contribution*

J[38] Y. S. Obeng, N. V. Nguyen, P. K. Amoah, J. Ahn, **M. Y. Shalaginov**, J. Hu, K. A. Richardson, "Dielectric spectroscopic investigation of reversible photo-induced changes in amorphous Ge<sub>2</sub>Sb<sub>2</sub>Se<sub>5</sub> thin films", *J. Appl. Phys.*, 131, 075102, 2022.

J[37] F. Yang, S. An, **M. Y. Shalaginov**, H. Zhang, C. Rivero-Baleine, J. Hu, T. Gu, "Design of broadband and wide-field-of-view metalenses", *Opt. Lett.*, 46 (22), 5735-5738, 2021.

J[36] S. An, B. Zheng, **M. Y. Shalaginov**, H. Tang, H. Li, L. Zhou, Y. Dong, M. Haerinia, A. M. Agarwal, C. Rivero-Baleine, M. Kang, K. A. Richardson, T. Gu, J. Hu, C. Fowler, H. Zhang, "Deep convolutional neural networks to predict mutual coupling effects in metasurfaces", *Adv. Opt. Mater.*, 2102113, 2021.

J[35] H.-I. Lin, H.-Y. Tan, Y.-M. Liao, K.-C. Shen, **M. Y. Shalaginov**, M. Kataria, C.-T. Chen, J.-W. Chang, Y.-F. Chen, "A transferrable, adaptable, free-standing, and water-resistant hyperbolic metamaterial", *ACS Appl. Mater. Interfaces*, 13 (41) 49224–49231, 2021.

J[34] Y. Zhang, Q. Zhang, C. Ríos, **M. Y. Shalaginov**, J. B. Chou, C. Roberts, P. Miller, P. Robinson, V. Liberman, M. Kang, K. A. Richardson, T. Gu, S. A. Vitale, and J. Hu, "Transient tap couplers for wafer-level photonic testing based on optical phase change materials", *ACS Photonics*, 8 (7) 1903–1908, 2021.

J[33] Y. Zhang, C. Ríos, **M. Y. Shalaginov**, M. Li, A. Majumdar, T. Gu, J. Hu, "Myths and truths about optical phase change materials: A perspective", *Appl. Phys. Lett.*, 118, 210501, 2021.

J[32] P. Su, **M. Shalaginov**, T. Gu, S. An, D. Li, L. Li, H. Jiang, S. Joo, L. Kimerling, H. Zhang, J. Hu, A. Agarwal, "Large-area optical metasurface fabrication using nanostencil lithography", *Opt. Lett.*, 46 (10), 2324-2327, 2021.

J[31] Y. Zhang, C. Fowler, J. Liang, B. Azhar, **M. Y. Shalaginov**, S. An, J. B. Chou, C. M. Roberts, V. Liberman, M. Kang, C. Ríos, K. A. Richardson, C. Rivero-Baleine, T. Gu, H. Zhang, J. Hu, "Electrically reconfigurable non-volatile metasurface using low-loss optical phase-change material", *Nature Nanotechnology*, 16, 661–666, 2021.

**\*highlighted in Nature Nanotechnology News & Views: Tunable phase-change metasurfaces**

J[30] S. An, B. Zheng, H. Tang, **M. Y. Shalaginov**, L. Zhou, H. Li, M. Kang, K. A. Richardson, T. Gu, J. Hu, C. Fowler, H. Zhang, "Multifunctional metasurface design with a generative adversarial network", *Adv. Opt. Mater.*, 9 (5), 2001433, 2021.

**\*cover picture**

J[29] **M. Y. Shalaginov**, S. An, Y. Zhang, F. Yang, P. Su, V. Liberman, J. B. Chou, C. M. Roberts, M. Kang, C. Ríos, Q. Du, C. Fowler, A. Agarwal, K. Richardson, C. Rivero-Baleine, H. Zhang, J. Hu, T. Gu, "Reconfigurable all-dielectric metalens with diffraction limited performance", *Nature Communications*, 12 (1225), 1-8, 2021.

**\*highlighted in MIT News**

J[28] F. Yue†, R. Piccoli†, **M. Y. Shalaginov**†, T. Gu, K. Richardson, R. Morandotti, J. Hu, L. Razzari, "Nonlinear mid-infrared metasurface based on a phase-change material", *Laser Photon. Rev.*, 15, 2000373, 2021.

†*equal contribution*

J[27] **M. Y. Shalaginov**, S. An, F. Yang, P. Su, D. Lyzwa, A. Agarwal, H. Zhang, J. Hu, T. Gu, "Single-element diffraction-limited fisheye metalens", *Nano Letters*, 20 (10), 7429–7437, 2020.

**\*front page of mit.edu on Sep. 21st, 2020**

**\*top 10 MIT research stories of 2020**

J[26] C. Ríos, Y. Zhang, **M. Shalaginov**, S. Deckoff-Jones, H. Wang, S. An, H. Zhang, M. Kang, K. A. Richardson, C. Roberts, J. B. Chou, V. Liberman, S. A. Vitale, J. Kong, T. Gu, J. Hu, "Multi-level electro-thermal switching of optical phase-change materials using graphene", *Adv. Photonics Res.*, 2, 2000034, 2021.

J[25] S. An, B. Zheng, **M. Y. Shalaginov**, H. Tang, H. Li, L. Zhou, J. Ding, A. M. Agarwal, C. Rivero-Baleine, M. Kang, K. A. Richardson, T. Gu, J. Hu, C. Fowler, H. Zhang, "Deep learning modeling approach for metasurfaces with high degrees of freedom", *Opt. Express.*, 28 (21), 31932-31942, 2020.

**\*editor's pick**

**\*in top downloads of Optical Express from October 2020**

J[24] H.-I. Lin, C.-C. Wang, K.-C. Shen, **M. Y. Shalaginov**, P. K. Roy, K. P. Bera, M. Kataria, C. R. P. Inbaraj, Y.-F. Chen, "Enhanced laser action from smart fabrics made with rollable hyperbolic metamaterials", *npj Flexible Electronics*, 4 (20), 2020.

J[23] **M. Y. Shalaginov**, S. An, Y. Zhang, S. D. Campbell, F. Yang, C. Ríos, L. Kang, D. H. Werner, H. Zhang, J. Hu, T. Gu, "Design for quality: reconfigurable flat optics based on active metasurfaces", *Nanophotonics* 9, 3505–3534, 2020. [**invited review**]

J[22] **M. Y. Shalaginov**, S. Bogdanov, A. S. Lagutchev, A. V. Kildishev, A. Boltasseva, V. M. Shalaev, "On-chip single-layer integration of diamond spins with microwave and plasmonic channels", *ACS Photonics*, 7, 2018–2026, 2020.

J[21] L. Shen, X. Lin, **M. Y. Shalaginov**, T. Low, X. Zhang, B. Zhang, H. Chen, "Broadband enhancement of on-chip single-photon extraction via tilted hyperbolic metamaterials", *Appl. Phys. Rev.*, 7, 021403, 2020.

J[20] J. R. Rodriguez, Z. Qi, H. Wang, **M. Y. Shalaginov**, C. Goncalves, M. Kang, K. A. Richardson, J. Guerrero-Sanchez, M. G. Moreno-Armenta, V. G. Pol, "Ge<sub>2</sub>Sb<sub>2</sub>Se<sub>5</sub> glass as high-capacity promising lithium-ion battery anode", *Nano Energy*, 104326, 2019.

J[19] S. An, C. Fowler, B. Zheng, **M. Y. Shalaginov**, H. Tang, H. Li, L. Zhou, J. Ding, A. M. Agarwal, C. Rivero-Baleine, K. A. Richardson, T. Gu, J. Hu, H. Zhang, "A deep learning approach for objective-driven all-dielectric metasurface design", *ACS Photonics*, 6, 3196–3207, 2019.

J[18] Y. Zhang, J. B. Chou, J. Li, H. Li, Q. Du, A. Yadav, S. Zhou, **M. Y. Shalaginov**, Z. Fang, H. Zhong, C. Roberts, P. Robinson, B. Bohlin, C. Ríos, H. Lin, M. Kang, T. Gu, J. Grossman, J. Warner, V. Liberman, K. Richardson, J. Hu, "Broadband transparent optical phase change materials for high-performance nonvolatile photonics", *Nature Communications*, 10 (1), 1-9, 2019.

J[17] S. Geiger, Q. Du, B. Huang, **M. Y. Shalaginov**, J. Michon, H. Lin, T. Gu, A. Yadav, K. A. Richardson, X. Jia, J. Hu, "Understanding aging in chalcogenide glass thin films using precision resonant cavity refractometry", *Opt. Mater. Express*, 9 (5), 2252-2263, 2019.

J[16] S. Bogdanov, **M. Y. Shalaginov**, A. Lagutchev, C.-C. Chiang, D. Shah, A. S. Baburin, I. A. Ryzhikov, I. A. Rodionov, A. Boltasseva, V. M. Shalaev, "Ultrabright room-temperature single-photon emission from nanodiamond nitrogen-vacancy centers with sub-nanosecond excited-state lifetime", *Nano Letters*, 18 (8), 4837-4844, 2018.

**\*highlighted in Purdue News Release**

**\*featured in the OPN special issue "Optics in 2018"**

J[15] L. Zhang, J. Ding, H. Zheng, S. An, H. Lin, B. Zheng, Q. Du, G. Yin, J. Michon, Y. Zhang, Z. Fang, **M. Y. Shalaginov**, L. Deng, T. Gu, H. Zhang, J. Hu, "Ultra-thin high-efficiency mid-infrared transmissive Huygens meta-optics", *Nature Communications*, 9 (1481), 1-9, 2018

**\*highlighted in MIT News**

**\*among the 50 most read Nature Communications physics articles published in 2018**

J[14] S. K. H. Andersen, S. Bogdanov, O. Makarova, Y. Xuan, **M. Y. Shalaginov**, A. Boltasseva, S. I. Bozhevolnyi, V. M. Shalaev, "Hybrid Plasmonic Bullseye Antennas for Efficient Photon Collection", *ACS Photonics*, 5(3), 692-698, 2018.

J[13] O. A. Makarova, **M. Y. Shalaginov**, S. Bogdanov, A. V. Kildishev, A. Boltasseva, V. M. Shalaev, "Patterned multilayer metamaterial for fast and efficient photon collection from dipolar emitters", *Opt. Lett.*, 42 (19), 3968-3971, 2017.

J[12] S. Bogdanov, **M. Y. Shalaginov**, A. Akimov, A. S. Lagutchev, P. Kapitanova, J. Liu, D. Woods, M. Ferrera, P. Belov, J. Irudayaraj, A. Boltasseva, V. M. Shalaev, "Electron spin contrast of Purcell-enhanced nitrogen-vacancy ensembles in nanodiamonds", *Phys. Rev. B*, 96, 035146, 2017.

J[11] R. Chandrasekar, Z. Wang, X. Meng, S. I. Azzam, **M. Y. Shalaginov**, A. Lagutchev, Y. L. Kim, A. Wei, A. V. Kildishev, A. Boltasseva, V. M. Shalaev, "Lasing action with gold nanorod hyperbolic metamaterials", *ACS Photonics*, 4(3), 674-680, 2017.

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**SELECTED CONFERENCES, SEMINARS, WEBINARS, WORKSHOPS (\* presenting author)**

C[85] "AI for Meta-Optics", (**invited**)

**M. Y. Shalaginov\***

ML/AI Conversations New York City meetup, April 2, 2024

C[84] "Wide-angle meta-optics and its applications in 3-D sensing", (**invited**)

**M. Y. Shalaginov\***

NASA ISO5 Optical Cleanroom Seminar Series, October 19, 2023

C[83] "Reconfigurable Meta-optics Based on Phase-change Materials", (**invited**)

**M. Y. Shalaginov\***, F. Yang, Y. Zhang, H.-I Lin, S. An, C. Popescu, M. Kang, K. Richardson, C. Rivero-Baleine, J. Hu, T. Gu,

PIERS 2023, July 3-6, 2023

C[82] "Cryptocurrency mining with quantum computers",

M. Liu, K. Najafi, M. Dubrovsky, **M. Y. Shalaginov\***,

Quantum 2.0, June 19-22, 2023

C[81] "Fisheye-metalens stereo camera",

**M. Y. Shalaginov\***, H.-I Lin, F. Yang, D. Weninger, S. An, A. Agarwal, J. Hu, T. Gu

Photonics West, Jan. 28 - Feb.2, 2023

C[80] "Metasurface-enabled wide-angle stereoscopic imaging", (**postdeadline talk**)

**M. Y. Shalaginov\***, H.-I Lin, F. Yang, D. M. Weninger, C. Li, A. M. Agarwal, J. Hu, T. Gu,

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C[79] "Reconfigurable Parfocal Zoom Metalens",

**M. Y. Shalaginov\***, F. Yang, S. An, H.-I Lin, K. Stoll, M. Kang, A. Agarwal, K. Richardson, C. Rivero-Baleine, H. Zhang, J. Hu, T. Gu,

CLEO: QELS Fundamental Science, May 14–21, 2022.

C[78] "Phase-change-material metasurface for nonlinear mid-infrared frequency conversion",

**M. Y. Shalaginov\***, F. Yue, R. Piccoli, T. Gu, K. Richardson, R. Morandotti, J. Hu, L. Razzari,

14th Pacific Rim Conference on Ceramic and Glass Technology and GOMD 2021, Dec. 12-17, 2021.

C[77] "Phase-change reconfigurable metasurfaces" (**invited**),

**M. Y. Shalaginov\***, Y. Zhang, F. Yang, P. Su, C. Rios, J. Liang, B. Azhar, S. Deckoff-Jones, A. Agarwal, T. Gu, J. Hu; S. An, C. Fowler, H. Zhang; J. Chou, V. Liberman, C. M. Roberts; M. Kang, A. Yadav, K. Richardson; C. Rivero-Baleine,

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C[76] "Reconfigurable optics with phase-change materials" (**invited**),

**M. Y. Shalaginov\***,

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C[75] "Electrically-switchable foundry-processed phase change photonic devices",

C. Ríos\*, Y. Zhang, Q. Du, C.-C. Popescu, M. Shalaginov, P. Miller, C. Roberts, M. Kang, K. Richardson, S. An, C. Fowler, H. Zhang, T. Gu, S. A. Vitale, J. Hu,

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C[74] "Ge<sub>2</sub>Sb<sub>2</sub>Se<sub>4</sub>Te<sub>1</sub> metasurface for enhancing third-harmonic generation in the mid-infrared",

F. Yue\*, R. Piccoli, M. Y. Shalaginov, T. Gu, K. A. Richardson, R. Morandotti, J. Hu, L. Razzari, Integrated Photonics Research, Silicon and Nanophotonics, July 26–29, 2021.

- C[73] "Wide field-of-view achromatic metalenses",  
F. Yang\*, M. Shalaginov, S. An, H. Zhang, C. Rivero-Baleine, T. Gu, J. Hu,  
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- C[72] "Electrically Reconfigurable Nonvolatile Metasurface based on Phase Change Materials",  
Y. Zhang, C. Fowler, J. Liang, B. Azhar, M. Y. Shalaginov, S. Deckoff-Jones, S. An, J. B. Chou, C. M. Roberts, V. Liberman, M. Kang, C. Ríos, K. A. Richardson, C. Rivero-Baleine, T. Gu, H. Zhang, J. Hu  
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- C[71] "A Deep Neural Network Near-Universal Dielectric Meta-Atom Generator",  
C. Fowler, S. An, B. Zheng, H. Li, H. Tang, M. Haerinia, Y. Dong, Y. Zhang, M. Y. Shalaginov, A. M. Agarwal, C. Rivero-Baleine, M. Kang, K. A. Richardson, T. Gu, J. Hu, H. Zhang,  
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- C[70] "On-chip electrothermal switching of low-loss phase change materials for nonvolatile programmable photonic circuits",  
C. Ríos\*, Q. Du, Y. Zhang, M. Shalaginov, P. Miller, C. Roberts, M. Kang, K. A. Richardson, T. Gu, S. Vitale, J. Hu,  
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- C[69] "Mid-infrared metasurface based on a phase-change material for enhanced third-harmonic generation",  
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S. An\*, B. Zheng, M. Y. Shalaginov, H. Tang, H. Li, L. Zhou, M. Haerinia, Y. Dong, A. M. Agarwal, C. Rivero-Baleine, M. Kang, K. A. Richardson, T. Gu, J. Hu, C. Fowler, H. Zhang,  
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- C[67] "Integrated nonvolatile phase-shifter based on electrically reconfigurable low-loss phase-change materials",  
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- C[66] "Sculpting the light with reconfigurable meta-optics" (**invited**),  
**Mikhail Shalaginov\***,  
17th International Young Scientist conference, April 15-16, 2021.
- C[65] "All-dielectric varifocal metalens for aberration-free imaging",  
**M.Y. Shalaginov\***, S. An, Y. Zhang, F. Yang, P. Su, V. Liberman, J. Chou, C. M. Roberts, M. Kang, C. Rios, Q. Du, C. Fowler, A. Agarwal, K. Richardson, C. Rivero-Baleine,  
H. Zhang, J. Hu, T. Gu,  
MRS Fall Meeting 2020, November 27 – December 4, 2020.
- C[64] "Optical phase-change materials (O-PCMs) for reconfigurable photonics",  
Y. Zhang, C. Ríos, M. Y. Shalaginov, S. An, C. Fowler, J. B. Chou, C. M. Roberts, V. Liberman, S. Vitale, M. Kang, K. A. Richardson, C. Rivero-Baleine, T. Gu, H. Zhang, J. Hu\*,  
Asia Communications and Photonics Conference 2020, October 24-27, 2020.
- C[63] "Reconfigurable all-dielectric metalens for diffraction-limited imaging",  
**M. Y. Shalaginov**, S. An, Y. Zhang, F. Yang, P. Su, V. Liberman, J. B. Chou, C. M. Roberts, M. Kang, C. Rios, Q. Du, C. Fowler, A. Agarwal, K. A. Richardson, C. Rivero-Baleine, H. Zhang, J. Hu\*, T. Gu,

SPIE Optics + Photonics 2020, August 24-28, 2020.

C[62] "Optical electron spin relaxometry in diamond nitrogen-vacancy centers for applications in quantum and nanoscale photonics",

S. Bogdanov\*, A. Solanki, Z. Martin, M. Shalaginov, X. Xu, P. Upadhyaya, A. V. Kildishev, A. Boltasseva, V. M Shalaev,

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C[61] "Assembly and integration of plasmon-enhanced single-photon sources",

S. I. Bogdanov\*, O Makarova, M Shalaginov, C-C Chiang, X Xu, I. A. Rodionov, A Boltasseva, V. M. Shalaev,

SPIE Optics + Photonics 2020, August 24-28, 2020.

C[60] "Reconfigurable All-dielectric Metasurfaces based on Optical Phase change Materials: Design Approaches" (**invited**),

**M. Y. Shalaginov\***, S. An, Y. Zhang, F. Yang, C. Fowler, H. Zhang, J. Hu, T. Gu

2020 International ACES Symposium, July 27-31, 2020.

C[59] "Reshaping Light with Metasurfaces: from fisheyes to reconfigurable optics",

**M. Y. Shalaginov\***,

Harvard CNS seminar, July 9, 2020

C[58] "Reconfigurable Non-volatile High-performance Metalens",

**M. Y. Shalaginov\***, S. An, Y. Zhang, F. Yang, P. Su, V. Liberman, J. Chou, C. Roberts, M. Kang, C.

Rios, Q. Du, C. Fowler, A. Agarwal, K. Richardson, C. Rivero-Baleine, H. Zhang, J. Hu, and T. Gu, Conference on Lasers and Electro-Optics 2020, May 10-15, 2020.

C[57] "All-dielectric Metasurface Designs Enabled by Deep Neural Networks",

S. An\*, C. Fowler, B. Zheng, M. Y. Shalaginov, H. Tang, H. Li, J. Ding, M. Kang, A. M. Agarwal, C. Rivero-Baleine, K. A. Richardson, T. Gu, J. Hu, and H. Zhang,

Conference on Lasers and Electro-Optics 2020, May 10-15, 2020.

C[56] "Reconfigurable meta-optics with chalcogenide alloys",

**M. Y. Shalaginov\***,

MIT.nano webinar series "Nano Explorations", May 4, 2020.

C[55] "Advanced imaging optics enabled by ultra-thin, all-dielectric metasurfaces",

T. Gu\*, **M. Y. Shalaginov**, S. An, F. Yang, Q. Du, Y. Zhang, C. Fowler, C. Rivero-Baleine, H. Zhang, J. Hu,

SPIE Defense + Commercial Sensing 2020, April 27-May 8, 2020.

C[54] "High-performance reconfigurable meta-optics based on optical phase change materials",

T. Gu\*, **M. Y. Shalaginov**, S. An, S. D. Campbell, Y. Zhang, C. Ríos, L. Kang, M. Kang, C. Gonçalves, C. Rivero-Baleine, K. Richardson, D. H. Werner, H. Zhang, J. Hu,

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C[53] "Single-layer Planar Metasurface Lens with  $> 170^\circ$  Field of View",

**M. Y. Shalaginov\***, S. An, F. Yang, P. Su, A. Agarwal, H. Zhang, J. Hu, T. Gu,

Frontiers in Optics, Washington, DC, USA, September 15-19, 2019.

C[52] "High-performance mid-IR metasurface optics",

**M. Shalaginov**, S. An, H. Zheng, L. Zhang, C. Fowler, J. Ding, T. Gu, H. Zhang, J. Hu\*,

SPIE Optics + Photonics, San Diego, CA, USA, August 11-15, 2019.

- C[51] "A hybrid plasmonic-dielectric platform for high-speed, room-temperature quantum nanophotonics",  
S. Bogdanov, **M. Y. Shalaginov**, Z. Kudyshev, A. S. Lagutchev, A. Boltasseva, V. M. Shalaev\*,  
SPIE Optics + Photonics, San Diego, CA, USA, August 11-15, 2019.
- C[50] "Time domain modeling of bi-anisotropic media and phase change materials with generalized dispersion",  
L. J. Prokopeva\*, V. Liberman, J. Chou, C. Roberts, M. Shalaginov, Y. Zhang, J. Hu, Z. Kudyshev, A. Kildishev,  
SPIE Optics + Photonics, San Diego, CA, USA, August 11-15, 2019.
- C[49] "Designing nonvolatile integrated photonics with low-loss optical phase change materials",  
Y. Zhang, Q. Zhang, J. B. Chou, R. Soref, J. Li, C. Roberts, M. Kang, C. Gonçalves, C. Ríos, M. Shalaginov, K. Richardson, V. Liberman, T. Gu, J. Hu\*,  
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- C[48] "Reconfigurable Infrared Flat Optics with Novel Phase Change Materials", V Liberman\*, Y Zhang, M Shalaginov, C Rios, P Robinson, C Roberts, K Tibbetts, M Kang, K Richardson, J Hu, J. B. Chou, OSA Advanced Photonics Congress (AP) 2019, Burlingame, CA, USA, July 29-August 1, 2019.
- C[47] "Electrically reconfigurable nonvolatile metasurface using optical phase change materials",  
Y. Zhang\*, J. Liang, M. Shalaginov, S. Deckoff-Jones, C. Ríos, J. B. Chou, C. Roberts, S. An, C. Fowler, S. D. Campbell, B. Azhar, C. Gonçalves, K. Richardson, H. Zhang, D. H. Werner, T. Gu, J. Hu,  
Conference on Lasers and Electro-Optics 2019, San Jose, CA, USA, May 5-10, 2019.
- C[46] "Reversible switching of optical phase change materials using graphene microheaters",  
C. Ríos\*, Y. Zhang, S. Deckoff-Jones, H. Li, J. B. Chou, H. Wang, M. Shalaginov, C. Roberts, C. Gonçalves, V. Liberman, T. Gu, J. Kong, K. Richardson, J. Hu,  
Conference on Lasers and Electro-Optics 2019, San Jose, CA, USA, May 5-10, 2019.
- C[45] "Reshaping light: reconfigurable photonics enabled by broadband low-loss optical phase change materials",  
Y. Zhang, J. B Chou, M. Shalaginov, C. Rios, C. Roberts, P. Robinson, B. Bohlin, Q. Du, Q. Zhang, J. Li, M. Kang, C. Gonçalves, K. Richardson, T. Gu, V. Liberman, J. Hu\*,  
SPIE Defense + Commercial Sensing 2019, Baltimore, MD, USA, April 14-18, 2019.
- C[44] "High-index-contrast dielectric metasurface optics for MWIR imaging",  
**M. Shalaginov**, S. An, L. Li, H. Zheng, J. Ding, L. Zhang, C. Rivero-Baleine, T. Gu, H. Zhang, J. Hu\*,  
SPIE Defense + Commercial Sensing 2019, Baltimore, MD, USA, April 14-18, 2019.
- C[43] "Modeling of all-dielectric metasurfaces using deep neural networks",  
S. An\*, C. Fowler, M. Y. Shalaginov, Y. Zhang, P. Su, M. Kang, B. Zheng, H. Tang, H. Li, A. M. Agarwal, C. Rivero-Baleine, K. A. Richardson, T. Gu, J. Hu, H. Zhang,  
2019 International Applied Computational Electromagnetics Society Symposium (ACES), Miami, FL, USA, April 14-19, 2019.
- C[42] "Assembling nanoscale quantum photonic devices",  
S. Bogdanov\*, O. Makarova, M. Shalaginov, C.-C. Chiang, A. S. Lagutchev, A. Boltasseva, A. V. Kildishev, V. M. Shalaev,  
SPIE Photonics West, OPTO, San Francisco, CA, USA, February 2-7, 2019.
- C[41] "Ultra-thin, reconfigurable meta-optics using optical phase change materials" (**invited**),  
**M. Shalaginov**, Y. Zhang, S. An, J. Chou, Q. Du, A. Yadav, M. Kang, C. Blanco, P. Su, M. Driggers, A. Kirk, E. Baleine, A. Agarwal, C. Rivero-Baleine, V. Liberman, K. Richardson, H. Zhang, J. Hu, T. Gu\*,

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C[40] "Ultra-compact metallic interface for NV spin readout",  
**M. Y. Shalaginov**, S. Bogdanov\*, A. Lagutchev, A. Boltasseva, V. M. Shalaev,  
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C[39] "Room-temperature high-speed control of quantum emitters with plasmonic" (**invited**),  
S. Bogdanov\*, **M. Y. Shalaginov**, O. Makarova, C.-C. Chiang, A. Lagutchev, A. Boltasseva,  
V. M. Shalaev,  
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C[38] "Spin readout of nitrogen-vacancy centers with plasmonic nanostructures" (**invited**),  
S. Bogdanov\*, **M. Y. Shalaginov**, O. Makarova, C.-C. Chiang, A. Lagutchev, A. Boltasseva,  
V. M. Shalaev,  
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C[37] "Reconfigurable photonics enabled by optical phase change materials" (**invited**),  
Y. Zhang, J. B Chou, Q. Zhang, J. Li, Huashan Li, Q. Du, A. Yadav, M. Kang, C. Blanco, H. Zhong,  
M. Y Shalaginov, J. C Grossman, R. Soref, V. Liberman, K. Richardson, J. Hu, T. Gu\*,  
SPIE Photonics Europe, Strasbourg, France, April 23-26, 2018.

C[36] "Ultrabright room-temperature emission from single plasmon-enhanced nitrogen-vacancy  
centers in diamond",  
S. Bogdanov\*, **M. Y. Shalaginov**, A Lagutchev, C.-C. Chiang, D. Shah, A. S. Baburin, I. A. Ryzhikov,  
I. A. Rodionov, A. Boltasseva, V. M. Shalaev,  
Conference on Lasers and Electro-Optics 2018, San Jose, CA, USA, May 13-18, 2018.

C[35] "Broadband low-loss optical phase change materials and devices" (**invited**),  
Y. Zhang, J. Chou, J. Li, Q. Du, Q. Zhang, H. Zhong, A. Yadav, M. Kang, Z. Fang, H. Zheng,  
M. Shalaginov, T. Gu, K. Richardson, V. Liberman, J. Hu\*,  
SPIE Photonics West, OPTO, San Francisco, CA, USA, January 27-February 1, 2018.

C[34] "Towards integrated plasmonic quantum devices" (**invited**),  
S. Bogdanov\*, **M. Y. Shalaginov**, J. C. Ndukaife, O. A. Makarova, A. V. Akimov, A. S. Lagutchev,  
A. V. Kildishev, A. Boltasseva, V. M. Shalaev,  
SPIE Optics + Photonics, San Diego, CA, USA, August 6-10, 2017.

C[33] "Massive parallel positioning of nanodiamonds on nanophotonic structures",  
J. C. Ndukaife\*, B. P. Isaacoff, M. Y. Shalaginov, S. Bogdanov, A. G. A. Nnanna, J. S. Biteen,  
M. Segev, V. M. Shalaev, A. Boltasseva,  
Conference on Lasers and Electro-Optics 2017, San Jose, CA, USA, May 14-19, 2017.

C[32] "Spin contrast of Purcell-enhanced nitrogen-vacancy centers in diamond",  
S. Bogdanov\*, **M. Y. Shalaginov**, A. V. Akimov, A. Lagutchev, J. Liu, D. Woods, M. Ferrera,  
P. Kapitanova, P. Belov, J. Irudayaraj, A. Boltasseva, V. M. Shalaev,  
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C[31] "Material Platforms for Integrated Quantum Photonics" (**invited**),  
**M. Y. Shalaginov**\*, S. Bogdanov, A. Boltasseva, V. M. Shalaev  
2<sup>nd</sup> Annual Conference on Micro & Nanoscale Science for Addressing Grand Challenges,  
West Lafayette, IN, USA, April 12, 2017.

C[30] "Towards a plasmonic quantum register" (**invited**),  
V. M. Shalaev\*, S. Bogdanov, M. Y. Shalaginov, J. Ndukaife, V. Vorobyov, V. Soshenko, A. Korneev,  
U. Guler, A. Lagutchev, A. Boltasseva, G. Goltsman, A. Akimov

Quantum Nanophotonics Workshop, Benasque, Spain, February 26 - March 3, 2017.

C[29] "Patterning metamaterials for fast and efficient single-photon sources",  
O. A. Makarova\*, **M. Y. Shalaginov**, S. Bogdanov, U. Guler, A. Boltasseva, A. V. Kildishev,  
V. M. Shalaev,  
SPIE Photonics West, OPTO, San Francisco, CA, USA, January 28-February 2, 2017.

C[28] "New material platforms and metasurface designs for quantum nanophotonics" (**invited**),  
**M. Y. Shalaginov**, S. Bogdanov, R. Chandrasekar, Zh. Wang, V. Vorobyov, J. Liu, X. Meng,  
A. S. Lagutchev, A. V. Kildishev, J. Irudayaraj, A. Boltasseva, A. V. Akimov, and V. M. Shalaev\*,  
Metamaterials 2016, Crete, Greece, September 17-22, 2016.

C[27] "Towards sensors and quantum registers using color center in diamond and nanophotonic structures" (**invited**),  
V. M. Shalaev, **M. Y. Shalaginov**, S. Bogdanov\*, V. V. Vorobyov, J. Liu, A. V. Akimov,  
A. S. Lagutchev, J. M. K. Irudayaraj, A. V. Kildishev, A. Boltasseva,  
SPIE Optics + Photonics, San Diego, CA, USA, August 28-September 1, 2016.

C[26] "New material platforms and metasurface designs for nanophotonics" (**keynote**),  
V. M. Shalaev\*, N. Kinsey, A. M. Shaltout, U. Guler, J. Kim, S. Bogdanov, M. Y. Shalaginov,  
A. Boltasseva,  
SPIE Optics + Photonics, San Diego, CA, USA, August 28-September 1, 2016.

C[25] "Controlling quantum photonics with metamaterials" (**invited**),  
**M. Y. Shalaginov**, S. Bogdanov, V. Vorobyov, J. Liu, A. S. Lagutchev, A. V. Kildishev, J. Irudayaraj,  
A. Boltasseva, A. V. Akimov, and V. M. Shalaev\*,  
META'16, Malaga, Spain, July 25-28, 2016.

C[24] "New materials for Plasmonics: Designs and applications from Flat Optics to Quantum Nanophotonics",  
U. Guler\*, H. Reddy, K. Chaudhury, A. Dutta, M. Y. Shalaginov, S. Bogdanov, V. M. Shalaev,  
A. Boltasseva,  
Integrated Photonics Research, Silicon and Nanophotonics 2016, Vancouver, Canada, July 18-20, 2016.

C[23] "Subwavelength optics with hyperbolic metamaterials: waveguides, scattering, and optical topological transitions" (**invited**),  
S. Ishii\*, V. E. Babicheva, M. Y. Shalaginov, A. Boltasseva, A. V. Kildishev, and E. Narimanov,  
ICTON 2016, Trento, Italy, July 10-14, 2016.

C[22] "Quantum photonics with color centers in diamond and nanophotonic structures" (**invited**),  
S. Bogdanov\*, **M. Y. Shalaginov**, J. Liu, V. V. Vorobyev, P. V. Kapitanova, M. Ferrera,  
A. S. Lagutchev, A. V. Akimov, P. A. Belov, A. V. Kildishev, J. Irudayaraj, A. Boltasseva,  
V. M. Shalaev,  
SPIE Photonics West OPTO, San Francisco, CA, USA, February 13-18, 2016.

C[21] "Optical interface to the NV center in diamond",  
V. V. Vorobyov\*, V. Soshenko, A. V. Akimov, A. N. Smolyaninov, V. Sorokin, S. Bolshedvorskyy,  
M. Y. Shalaginov, A. Lagutchev, V. M. Shalaev,  
Quantum Information Processing & Communication 2015, Leeds, UK, September 13-18, 2015.

C[20] "Merging Metamaterials with Quantum Photonics" (**invited**),  
**M. Y. Shalaginov**, S. Bogdanov, P. V. Kapitanova, A. S. Lagutchev, A. V. Kildishev, P. A. Belov,  
A. Boltasseva, V. M. Shalaev\*,  
9th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics:  
Metamaterials 2015, Oxford, UK, September 7-12, 2015.

- C[19] "Effect of photonic density of states on spin-flip induced fluorescence contrast in diamond nitrogen-vacancy center ensembles",  
**M. Y. Shalaginov**, S. Bogdanov\*, J. Liu, A. Lagutchev, A. V. Kildishev, D. Peroulis, J. Irudayaraj, A. Boltasseva, V. M. Shalaev,  
 SPIE Optics + Photonics, San Diego, CA, USA, August 9-13, 2015.
- C[18] "Nitrogen-vacancy single-photon emission enhanced with nanophotonic structures" (**invited**),  
 V. M. Shalaev, **M. Y. Shalaginov**\*, V. V. Vorobyov, S. Bogdanov, A. V. Akimov, A. Lagutchev,  
 A. V. Kildishev, A. Boltasseva,  
 SPIE Optics + Photonics, San Diego, CA, USA, August 9-13, 2015.
- C[17] "Nanoscale sensing of photonic density of states with spins in diamond",  
 S. Bogdanov\*, **M. Y. Shalaginov**, P. V. Kapitanova, A. V. Akimov, J. Liu, M. Ferrera, D. Woods,  
 A. Lagutchev, J. Irudayaraj, P. Belov, A. Boltasseva, V. M. Shalaev,  
 Metamaterials Science & Technology Workshop, La Jolla, CA, USA, July 20-22, 2015.
- C[16] "Metamaterials and transformation optics for single-photon emitters" (**keynote**),  
 V. M. Shalaev\*, **M. Y. Shalaginov**, N. Kinsey, P. R. West, M. Ferrera, A. V. Kildishev, A. Boltasseva,  
 Progress in Electromagnetics Research Symposium (PIERS) 2015, Prague, Czech Republic, July 6-9,  
 2015.
- C[15] "Enhanced multi-photon emission from single NV center coupled to graphene by laser-shaping",  
 J. Liu\*, Y. Hu, P. Kumar, M. Y. Shalaginov, A. Lagutchev, V. M. Shalaev, G. J. Cheng, J. Irudayaraj,  
 Conference on Lasers and Electro-Optics 2015, San Jose, CA, USA, May 11-15, 2015.
- C[14] "Effect of a hyperbolic metamaterial on radiation patterns of a single-photon source",  
**M. Y. Shalaginov**\*, A. Lagutchev, V. M. Shalaev, A. V. Kildishev,  
 Conference on Lasers and Electro-Optics 2015, San Jose, CA, USA, May 11-15, 2015.
- C[13] "Multilayer cladding with hyperbolic dispersion for plasmonic waveguides",  
 V. E. Babicheva\*, **M. Y. Shalaginov**, S. Ishii, A. Boltasseva, A. V. Kildishev,  
 Conference on Lasers and Electro-Optics 2015, San Jose, CA, USA, May 11-15, 2015.
- C[12] "Towards practical realization of plasmonic waveguides cladded by hyperbolic metamaterials",  
 V. E. Babicheva\*, **M. Y. Shalaginov**, S. Ishii, A. Boltasseva, and A. V. Kildishev,  
 SPIE Photonics West OPTO, San Francisco, CA, USA, February 7-12, 2015.
- C[11] "Recent progress in nanophotonics" (**invited**),  
 M. Ferrera\*, N. Kinsey, M. Y. Shalaginov, G. V. Naik, V. E. Babicheva, C. T. DeVault,  
 A. V. Kildishev, A. Boltasseva, V. M. Shalaev,  
 SPIE/COS Photonics Asia, Beijing, China, October 9-11, 2014.
- C[10] "Single-photon source based on NV center in nanodiamond coupled to TiN-based hyperbolic metamaterial" (**invited**),  
 V. M. Shalaev, **M. Y. Shalaginov**\*, V. V. Vorobyov, J. Liu, M. Ferrera, A. V. Akimov, A. Lagutchev,  
 A. N. Smolyaninov, V. V. Klimov, J. Irudayaraj, A. V. Kildishev, A. Boltasseva,  
 SPIE Optics + Photonics, San Diego, CA, USA, August 17-21, 2014.
- C[9] "From metamaterials to metadevices" (**plenary**),  
 V. M. Shalaev\*, U. Guler, G. V. Naik, B. Saha, M. Y. Shalaginov, A. Lagutchev, A. V. Kildishev, M.  
 Ferrera, N. Kinsey, A. Boltasseva,  
 2014 IEEE Photonics Society Summer Topicals, Montreal, Canada, July 14–16, 2014.
- C[8] "Toward industry suitable spin-photon interface based on NV center",

A. V. Akimov\*, **M. Y. Shalaginov**, V. V. Vorobyov, J. Liu, M. Ferrera, A. Lagutchev, A. N. Smolyaninov, V. V. Klimov, J. Irudayaraj, A. V. Kildishev, A. Boltasseva, and V. M. Shalaev, 9th Advanced Research Workshop NanoPeter 2014, Fundamentals of Electronic Nanosystems, Saint Petersburg, Russia, June 21-27, 2014.

C[7] "Single photon source based on NV center in nanodiamond coupled to TiN-based hyperbolic metamaterial",

**M. Y. Shalaginov**, V. V. Vorobyov\*, J. Liu, M. Ferrera, A. V. Akimov, A. Lagutchev, A. N. Smolyaninov, V. V. Klimov, J. Irudayaraj, A. V. Kildishev, A. Boltasseva, and V. M. Shalaev, Conference on Lasers and Electro-Optics 2014, San Jose, CA, USA, June 8-13, 2014.

C[6] "Enabling nanophotonics with plasmonics and metamaterials" (**invited**),

V. M. Shalaev\*, U. Guler, G. V. Naik, X. Meng, M. Y. Shalaginov, A. Lagutchev, E. E. Narimanov, A. V. Kildishev, A. Boltasseva, SPIE Photonics West 2014, San Francisco, CA, USA, February 1-6, 2014.

C[5] "Metamaterials for Quantum Optics" (**invited**),

V. M. Shalaev\*, **M. Y. Shalaginov**, A. Lagutchev, and A. V. Kildishev, International Conference on Quantum Technologies ICQT-2013, Moscow, Russia, July 20-24, 2013.

C[4] "Broadband enhancement of spontaneous emission from nitrogen-vacancy centers in nanodiamonds by hyperbolic metamaterials",

**M. Y. Shalaginov\***, S. Ishii, J. Liu, A. V. Kildishev, and V. M. Shalaev, Conference on Lasers and Electro-Optics 2013, San Jose, CA, USA, June 9-14, 2013.

C[3] "Enhancement of spontaneous emission from NV centers by applying HMM",

**M. Y. Shalaginov\***, S. Ishii, J. Liu, and V. M. Shalaev, 2012 MRS Spring Meeting & Exhibit, San Francisco, USA, April 9-13, 2012.

C[2] "Characterization of nanodiamonds for metamaterial applications",

**M. Y. Shalaginov\***, G. V. Naik, S. Ishii, M. N. Slipchenko, A. Boltasseva, J. X. Cheng, A. N. Smolyaninov, E. Kochman, and V. M. Shalaev, International Conference on Quantum Technologies, Moscow, Russia, July 13-17, 2011.

C[1] "Modeling of hydrogen storage materials"

**M. Y. Shalaginov\***, Y. Saeed, and A. H. Reshak, International Summer School "Schola ludus 2010", Institute of Physical Biology South Bohemia University, Czech Republic, July 29-30, 2010.