



# Oleh YERMAKOV

## Personal Information

Date of Birth 1 February 1993

Place of Birth Kharkiv, Ukraine

Citizenship Ukraine

Family Married, son (2 y.o.)

## Research Interests

Theoretical physics, photonics, near-field optics, plasmonics, metasurfaces, surface waves, hyperbolic medium, optical angular momentum, spin-orbit interactions, optical fibers, numerical methods.

## Education

2016 – 2020 **PhD Student**, *Optics*, ITMO University, St. Petersburg, Russia.

Supervisor - Prof. Andrey A. Bogdanov.

2014 – 2016 **Master of Science**, *Photonics and Optical Information Technology*, ITMO University, St. Petersburg, Russia.

Supervisor - Dr. Andrey A. Bogdanov. Advisor - Dr. Ivan V. Iorsh.

Sept. 2015 – **Master of Science**, *Physics*, Ecole Polytechnique Federale de Lausanne (EPFL),  
Jan. 2016 Lausanne, Switzerland.

1 semester as an exchange student

2014–2016 **Master of Science**, *Applied Physics*, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.

2010 – 2014 **Bachelor of Science**, *Applied Physics (cum laude)*, V.N. Karazin Kharkiv National University, Kharkiv, Ukraine.

## PhD Thesis

Title Dispersion and polarization peculiarities of surface electromagnetic waves on resonant anisotropic metasurfaces [download]

Supervisor Prof. Andrey A. Bogdanov [review in Russian]

Opponents Prof. Andrea Alù, City College of New York, USA [review]

Prof. Sergey Bozhevolnyi, University of Southern Denmark, Denmark [review]

Defence 23 December 2020 [video recording via Youtube]

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## Master Thesis

Title Hybrid surface plasmons on anisotropic metasurface  
**The best graduation research work among ITMO Univ. Masters 2016**  
Supervisor Dr. Andrey A. Bogdanov  
Advisor Dr. Ivan V. Iorsh

## Scholarships and Awards

- 2022 German-Russian Interdisciplinary Science Center (G-RISC) grant
- 2021 The best talk (I place), Conference of young scientists and post-graduate students IEP-2021, Uzhgorod, Ukraine [online]
- 2020 1<sup>st</sup> prize, EPS Young Minds & IRE NASU contest of articles for young scientists of Kharkiv, Kharkiv, Ukraine
- 2020 The best talk and active participation award, All-Russian school-seminar "Wave phenomena in inhomogeneous media" named after A.P. Sukhorukov ("Waves-2020")
- 2020 IEEE Photonics Society Graduate Student Scholarship
- 2020 German-Russian Interdisciplinary Science Center (G-RISC) grant
- 2019 SPIE Optics and Photonics Education Scholarship
- 2019 Scholarship of the Russian Federation Government
- 2018 ITMO University grant for international academic mobility of postgraduate students
- 2017 Individual grant "PhD Student" from the Foundation for the Advancement of Theoretical Physics and Mathematics "BASIS"
- 2017 Best Student Paper Award, SPIE Optics+Optoelectronics 2017, Prague, Czech Republic
- 2017 SPIE Travel Scholarship
- 2016 First prize in the "Nano and Metamaterials Section" for the presentation, II International Young Scientists Forum on Applied Physics and Engineering, Kharkiv, Ukraine
- 2016 The best Master thesis of ITMO University
- 2016 The best presentation (2nd prize) at the young scientists' section, International Winter School on Physics of Semiconductors, Zelenogorsk, Russia
- 2015 Award for students in Theoretical Physics from "Dynasty" Foundation
- 2014 Scholarship for research activity from ITMO University
- 2014 Scholarship of the International Research Centre for Nanophotonics and Metamaterials

## Grants

### Principal Investigator

2020-2022 *Polarization degree of freedom for surface and guided modes at planar structures: theory, experiment and practical devices*, Russian Foundation for Basic Research (RFBR), 20-02-00636, 3.75M RUB.

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2018-2019 *Surface waves at resonant anisotropic metasurface in the optical and microwave ranges: theory and experiment*, Russian Foundation for Basic Research (RFBR), 18-32-00739, 1M RUB.

### Participant

- 2019-2022 *Dynamically tunable photonic devices based on phase memory materials*, Russian Science Foundation (RSF), 19-72-10086, 15M RUB.
- 2017-2019 *Surface optical states in dielectric and plasmonic nanostructures*, Russian Foundation for Basic Research (RFBR), 17-02-01234, 2.1M RUB.
- 2017-2021 *High-Q microcavities based on localized optical states in the continuum*, Russian Science Foundation (RSF), 17-12-01581, 30M RUB.
- 2017-2019 *High-Q optical microcavities based on localized optical states in the continuum*, Ministry of Education and Science of the Russian Federation, 3.1668.2017.

## Main Articles

### 2021

10. O. Yermakov, V. Lenets, A. Sayanskiy, J. Baena, E. Martini, S. Glybovski, and S. Maci. *Surface waves on self-complementary metasurfaces: all-frequency hyperbolicity, extreme canalization and TE-TM polarization degeneracy*, **Physical Review X**, 11(3), 031038 (2021).  
DOI: <https://doi.org/10.1103/PhysRevX.11.031038>

### 2020

9. O. Yermakov, H. Schneidewind, U. Hubner, T. Wieduwilt, M. Zeisberger, A. Bogdanov, Yu. S. Kivshar and M. A. Schmidt. *Nanostructure-empowered efficient coupling of light into optical fibers at extraordinarily large angles*, **ACS Photonics**, 7(10), 2834-2841 (2020).  
DOI: <https://doi.org/10.1021/acsphotonics.0c01078>  
*Comment: Front Cover of October Issue*
8. M. Mazanov, O. Yermakov, I. Deriy, O. Takayama, A. Bogdanov, and A. V. Lavrinenko. *Photonic Spin Hall Effect: Contribution of Polarization Mixing Caused by Anisotropy*, **Quantum Reports**, 2(4), 489-500 (2020).  
DOI: <https://doi.org/10.3390/quantum2040034>  
*Comment: Special Issue: Spin Hall Effect in Photonic Materials*

### 2019

7. O. Y. Yermakov, A. A. Bogdanov, and A. V. Lavrinenko. *Broadband polarization degeneracy of guided waves in subwavelength structured ZnO pattern*, **IEEE Journal of Selected Topics in Quantum Electronics** 25(3), 1 (2019).  
DOI: <https://doi.org/10.1109/JSTQE.2018.2886306>  
*Comment: Invited Paper*

### 2018

6. O. Y. Yermakov, A. A. Hurshkainen, D. A. Dobrykh, P. V. Kapitanova, I. V. Iorsh, S. B. Glybovski, and A. A. Bogdanov. *Experimental observation of hybrid TE-TM polarized surface waves supported by a hyperbolic metasurface*, **Physical Review B** 98(19), 195404 (2018).  
DOI: <https://doi.org/10.1103/PhysRevB.98.195404>  
*Comment: Kaleidoscope: November 2018*
5. O. Y. Yermakov, D. V. Permyakov, F. V. Porubaev, P. A. Dmitriev, A. K. Samusev, I. V. Iorsh, R. Malureanu, A. V. Lavrinenko, and A. A. Bogdanov. *Effective surface conductivity of optical hyperbolic metasurfaces: from far-field characterization to surface wave analysis*, **Scientific Reports** 8(1), 14135 (2018).  
DOI: <https://doi.org/10.1038/s41598-018-32479-y>
4. O. Takayama, P. Dmitriev, E. Shkondin, O. Yermakov, M. Panah, K. Golenitskii, F. Jensen, A. Bogdanov, and A. Lavrinenko. *Experimental observation of Dyakonov plasmons in the mid-infrared*, **Semiconductors** 52(4), 442 (2018).  
DOI: <https://doi.org/10.1134/S1063782618040279>

## 2017

3. A. Samusev, I. Mukhin, R. Malureanu, O. Takayama, D. V. Permyakov, I. S. Sinev, D. Baranov, O. Yermakov, I. V. Iorsh, A. A. Bogdanov, and A. V. Lavrinenko. *Polarization-resolved characterization of plasmon waves supported by an anisotropic metasurface*, **Optics Express** 25(26), 32631 (2017).  
DOI: <https://doi.org/10.1364/OE.25.032631>

## 2016

2. O. Y. Yermakov, A. I. Ovcharenko, A. A. Bogdanov, I. V. Iorsh, K. Y. Bliokh, and Yu. S. Kivshar. *Spin control of light with hyperbolic metasurfaces*, **Physical Review B** 94(7), 075446 (2016).  
DOI: <https://doi.org/10.1103/PhysRevB.94.075446>

## 2015

1. O. Y. Yermakov, A. I. Ovcharenko, M. Song, A. A. Bogdanov, I. V. Iorsh, and Yu. S. Kivshar. *Hybrid waves localized at hyperbolic metasurface*, **Physical Review B** 91(23), 235423 (2015).  
DOI: <https://doi.org/10.1103/PhysRevB.91.235423>  
*Comment: Editors' Suggestion*

## Proceedings (Scopus, WoS)

### 2021

17. O. Yermakov and A. Bogdanov. *Canalization, routing and polarization peculiarities of hyperbolic plasmon-polaritons on resonant anisotropic metasurfaces* // 2021 International Conference on Information Technology and Nanotechnology (ITNT), 1-4 (2021).  
DOI: <https://doi.org/10.1109/ITNT52450.2021.9649233>

16. S. Asadulina, A. Bogdanov, S. Glybovski and O. Yermakov. *Polarization degeneracy of TE and TM eigenmodes for dielectric metasurface in the microwave* // Journal of Physics: Conference Series, 2015, 012008 (2021).  
DOI: <https://doi.org/10.1088/1742-6596/2015/1/012008>

15. O. Yermakov, H. Schneidewind, U. Hubner, T. Wieduwilt, M. Zeisberger, A. Bogdanov, Yu. S. Kivshar and M. A. Schmidt. *Exceptionally high coupling of light into optical fibers via all-dielectric nanostructures* // Conference on Lasers and Electro-Optics (CLEO): Science and Innovations, SM1P.4 (2021).  
DOI: [https://doi.org/10.1364/CLEO\\_SI.2021.SM1P.4](https://doi.org/10.1364/CLEO_SI.2021.SM1P.4)

14. O. Yermakov, H. Schneidewind, U. Hubner, T. Wieduwilt, M. Zeisberger, A. Bogdanov, Yu. S. Kivshar and M. A. Schmidt. *Record-breaking light coupling into nanostructured optical fibers under large incident angles* // Proceedings of SPIE, 11773, 117730B (2021).  
DOI: <https://doi.org/10.1117/12.2590790>

## 2020

13. O. Yermakov, and A. A. Bogdanov. *Polarization states of surface electromagnetic waves on resonant anisotropic metasurfaces: from theory to experimental verification in microwaves* // 2020 IEEE Ukrainian Microwave Week (UkrMW), 559-563 (2020).  
DOI: <https://doi.org/10.1109/UkrMW49653.2020.9252569>

12. O. Yermakov, A. Hurshkainen, D. Dobrykh, P. V. Kapitanova, I. V. Iorsh, S. B. Glybovski, and A. A. Bogdanov. *Polarization hybridization of surface waves on anisotropic metasurface* // Journal of Physics: Conference Series, 1461, 012196 (2020).  
DOI: <https://doi.org/10.1088/1742-6596/1461/1/012196>

## 2019

11. M. Stepikhova, D. Yurasov, A. Yablonskiy, S. Sergeev, O. Yermakov, S. Dyakov, E. Skorokhodov, A. Novikov, and Z. Krasil'nik. *Photoluminescence enhancement phenomena in photonic crystal slabs formed on Si structures with the self-assembled Ge nanoislands* // IEEE 16th International Conference on Group IV Photonics, 1949 (2019)  
DOI: <https://doi.org/10.1109/GROUP4.2019.8853878>

## 2018

10. O. Y. Yermakov, and A. A. Bogdanov. *Eigenmodes degeneracy with Huygens-like all-dielectric metasurface* // Journal of Physics: Conference Series, 1092, 012169 (2018).  
DOI: <https://doi.org/10.1088/1742-6596/1092/1/012169>

9. O. Y. Yermakov, D. V. Permyakov, P. A. Dmitriev, A. K. Samusev, I. V. Iorsh, A. V. Lavrinenko, and A. A. Bogdanov. *Plasmonic anisotropic metasurfaces: from far-field measurements to near-field properties* // Proceedings of SPIE, 10671, 1067118 (2018).  
DOI: <https://doi.org/10.1117/12.2306801>

## 2017

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8. O. Y. Yermakov, F. V. Porubaev, A. A. Bogdanov, A. K. Samusev, I. V. Iorsh. *Retrieval procedure of effective conductivity for plasmonic resonant anisotropic metasurface* // AIP Conference Proceedings, 1874, 030040 (2017).  
DOI: <https://doi.org/10.1063/1.4998069>

7. O. Y. Yermakov, I. S. Mukhin, A. K. Samusev, A. A. Bogdanov, I. V. Iorsh. *Effective conductivity tensor of plasmonic anisotropic metasurface: Theory and experiment* // Progress In Electromagnetics Research Symposium (PIERS), IEEE, 1524 (2017).  
DOI: <https://doi.org/10.1109/PIERS.2017.8261988>

6. O. Y. Yermakov, A. A. Bogdanov, I. V. Iorsh, K. Y. Bliokh, and Yu. S. Kivshar. *Tunable spin-directional coupling for surface localized waves with anisotropic metasurface* // Proceedings of SPIE, 10227, 1022703 (2017).

DOI: <https://doi.org/10.1117/12.2261663>

**Comment: Best Student Paper Award**

## 2016

5. O. Y. Yermakov, A. I. Ovcharenko, A. A. Bogdanov, I. V. Iorsh, A. H. Babaieva. *Hybrid surface plasmon polaritons localized at anisotropic metasurface* // II International Young Scientists Forum on Applied Physics and Engineering (YSF), IEEE, 73-76 (2016).

DOI: <https://doi.org/10.1109/YSF.2016.7753804>

4. O. Y. Yermakov, A. I. Ovcharenko, A. A. Bogdanov, I. V. Iorsh, A. V. Lavrinenko, A. H. Babaieva. *New degrees of freedom of spin-optronics implemented by using hybrid surface waves localized at hyperbolic metasurface* // Proceedings of the International Conference Days on Diffraction (DD-2016), IEEE, 449-454 (2016).

DOI: <https://doi.org/10.1109/DD.2016.7756892>

3. A. A. Bogdanov, O. Yermakov, A. Ovcharenko, M. Song, D. Baranov, I. Sinev, I. Mukhin, A. Samusev, I. Iorsh, A. Lavrinenko, Y. S. Kivshar. *Hybrid localized waves supported by resonant anisotropic metasurfaces* // Conference on Lasers and Electro-Optics (CLEO): Fundamental Science, FM3D-6 (2016).

DOI: [https://doi.org/10.1364/CLEO\\_QELS.2016.FM3D.6](https://doi.org/10.1364/CLEO_QELS.2016.FM3D.6)

## 2015

2. O. Y. Yermakov, A. I. Ovcharenko, I. V. Iorsh, A. A. Bogdanov, Y. S. Kivshar. *New types of surface waves on hyperbolic metasurface* // Proceedings of the International Conference Days on Diffraction (DD-2015), IEEE, 371-376 (2015).

DOI: <https://doi.org/10.1109/DD.2015.7354895>

1. I. V. Iorsh, I. Trushkov, O. Yermakov, A. Ovcharenko, A. A. Bogdanov, P. A. Belov, and Yu. S. Kivshar. *Dyakonov-like plasmonic localized waves on graphene metasurfaces* // Progress In Electromagnetics Research Symposium (PIERS), IEEE, 2347-2351 (2015).

## Conferences

### 2021

38. (Hyper)Complex Seminar 2021, Lodz (Poland), 11 - 14 November 2021 [online]. <http://www.hypercomplexseminar.com/>  
**Talk:** *Mathematical approaches and structures in photonic systems.*
37. 7th International conference on Information Technology and Nanotechnology (ITNT-2021), Samara (Russia), 20 - 24 September 2021 [online]. <http://itnt-conf.org/>  
**Talk:** *Canalization, routing and polarization peculiarities of hyperbolic plasmon-polaritons on resonant anisotropic metasurfaces.*
36. VI International Conference on Metamaterials and Nanophotonics "METANANO-2021", 12 - 16 September 2021 [online]. <https://metanano.ifmo.ru/>  
**Talk 1:** *High-efficient light coupling into optical fibers at large incidence angles.*  
**Talk 2:** *Self-complementary metasurfaces – novel platform for near-field photonics.*
35. International school-seminar for young scientists "Functional materials for technical and biomedical applications", Kharkiv (Ukraine), 6 - 10 September 2021. <http://school.isma.kharkov.ua/en/index.html>  
**Talk:** *Three personal stories about simple ideas discovering new horizons in fundamental optical problems.*
34. 9th International conference "Nanotechnologies and Nanomaterials" (NANO-2021), Lviv (Ukraine), 25 - 27 August 2021 [online]. <http://nano-conference.iop.kiev.ua/en/>  
**Talk:** *Hyperbolic plasmons at resonant anisotropic metasurfaces.*
33. OPTO-2021, Wroclaw (Poland), 12 - 15 July 2021 [online]. <http://opto.edu.pl/>  
**Talk:** *Resonant anisotropic metasurfaces for near-field applications.*
32. II International Advanced Study Conference "Condensed Matter & Low Temperature Physics 2021" (CM&LTP-2021), Kharkiv (Ukraine), 6 - 12 June 2021. <http://www.ilt.kharkov.ua/cmltp2021/>  
**Talk:** *Surface plasmon-polaritons at two-dimensional resonant anisotropic systems.*
31. Conference of young scientists and post-graduate students IEP-2021, Uzhgorod (Ukraine), 26 - 28 May 2021 [online]. [http://www.iep.org.ua/content/conferenc/iep\\_2021/index\\_en.html](http://www.iep.org.ua/content/conferenc/iep_2021/index_en.html)  
**Talk:** *Near-field fundamentals and applications of photonic anisotropic metasurfaces.*  
**Comment:** **The best talk (I place)**
30. CLEO-2021, San Jose (USA), 9 - 14 May 2021 [online]. <https://www.cleoconference.org/home/>  
**Talk:** *Exceptionally high coupling of light into optical fibers via all-dielectric nanostructures.*
29. International Conference for Young Professionals in Physics and Technology (ICYPPT), Kharkiv (Ukraine), 26 - 30 April 2021 [online]. <https://sites.google.com/view/icyppt2021/icyppt>  
**Talk:** *Self-complementary metasurfaces for near-field applications.*

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28. SPIE Optics + Optoelectronics 2021 (digital forum), Prague (Czech Republic), 19 - 29 April 2021 [online]. <https://spie.org/conferences-and-exhibitions/optics-and-optoelectronics?SSO=1>  
**Talk:** *Record-breaking light coupling into nanostructured optical fibers under large incident angles.*
27. X International Conference "Photonics and Information Optics", Moscow (Russia), 27 - 29 January 2021 [online]. <http://fioconf.mephi.ru/en/>  
**Talk:** *Record-breaking light coupling into optical fiber under large incident angles.*  
**Talk:** *Theoretical and experimental study of surface waves on anisotropic resonant metasurfaces.*

## 2020

26. XI Young Scientists Conference "Problems of Theoretical Physics", Kyiv (Ukraine), 21 - 23 December 2020 [online]. <https://indico.bitp.kiev.ua/event/7/>  
**Talk:** *Surface waves on resonant anisotropic metasurfaces.*
25. IEEE Ukrainian Microwave Week, 10th International Kharkiv Symposium on Physics and Engineering of Microwaves, Millimeter and Submillimeter Waves (MSMW), Kharkiv (Ukraine), 21 - 25 September 2020 [online]. <http://uamweek.ieee.org.ua/>  
**Talk:** *Polarization states of surface electromagnetic waves on resonant anisotropic metasurfaces: from theory to experimental verification in microwaves.*  
**Comment:** **3<sup>d</sup> prize, the Young Professionals Competition for the Best Paper Presentations sponsored by the European Microwave Association**
24. International school-seminar for young scientists "Functional materials for technical and biomedical applications", Kharkiv (Ukraine), 7 - 10 September 2020. <http://school.isma.kharkov.ua/en/index.html>  
**Talk:** *Near-field fundamentals and applications of resonant photonic metasurfaces.*
23. All-Russian school-seminar "Wave phenomena in inhomogeneous media" named after A.P. Sukhorukov ("Waves-2020"), Moscow (Russia), 30 June 2020 [online]. <http://waves.phys.msu.ru/>  
**Talk** (in Russian): *Polarization degree of freedom of highly localized waves: from fundamentals to practical devices.*  
**Comment:** **The best talk and active participation award**
22. International scientific and technical conference "Physical and Technical Problems of Energy and Their Solutions 2020", Kharkiv (Ukraine), 30 June 2020. <http://physics-energy.karazin.ua/research>  
**Talk:** *Near-field Fundamentals and Applications of Resonant Photonic Metasurfaces.*

## 2019

21. IV International Conference on Metamaterials and Nanophotonics "METANANO-2019", St. Petersburg (Russia), 15 - 19 July 2019. <https://metanano.ifmo.ru/>  
**Talk:** *Polarization hybridization of surface waves on anisotropic metasurface.*

20. 10th International Conference on Materials for Advanced Technologies (ICMAT), Singapore, 23 – 28 June 2019. <https://icmat2019.mrs.org.sg/>

**Poster:** *All-dielectric metasurface supporting broadband polarization eigenmodes degeneracy.*

19. 9th International Conference on Surface Plasmon Photonics (SPP9), Copenhagen (Denmark), 26 – 31 May 2019. <http://spp9.dk/>

**Poster:** *Polarization degeneracy of guided modes in photonic crystal waveguide and its applications.*

## 2018

18. International Conference on Metamaterials and Nanophotonics "METANANO-2018", Sochi (Russia), 17 - 21 September 2018. <https://metanano.ifmo.ru/2018/>

**Talk:** *Eigenmodes degeneracy with Huygens-like all-dielectric metasurface.*

17. 3rd International Conference "NanoPlasm-2018", Cetraro (Italy), 10 - 15 June 2018. <http://www.nanoplasmconference.com/>

**Poster:** *Surface waves of mixed TE-TM polarization at anisotropic metasurface in microwaves: theory and experiment.*

16. Annual International Conference "Days on Diffraction 2018", St. Petersburg (Russia), 4 - 8 June 2018. <http://www.pdmi.ras.ru/~dd/>

**Talk:** *Surface waves of mixed TE-TM polarization at Jerusalem-cross-based anisotropic metasurface in microwaves.*

15. SPIE Photonics Europe Symposium, Strasbourg (France), 22 - 26 April 2018. <http://spie.org/conferences-and-exhibitions/past-conferences-and-exhibitions/photonics-europe-2018>

**Talk:** *Plasmonic anisotropic metasurfaces: from far-field measurements to near-field properties.*

## 2017

14. International Conference on Metamaterials and Nanophotonics "METANANO-2017", Vladivostok (Russia), 18-22 September 2017. <https://metanano.ifmo.ru/2017/>

**Talk:** *Retrieval procedure of effective conductivity for plasmonic resonant anisotropic metasurface.*

13. PIERS 2017, St. Petersburg (Russia), 22-25 May 2017. <http://www.pierns.org/piers2017StPetersburg/>

**Talk:** *Effective conductivity tensor of plasmonic anisotropic metasurface: theory and experiment.*

12. SPIE Optics+Optoelectronics 2017, Prague (Czech Republic), 24-27 April 2017. <https://spie.org/conferences-and-exhibitions/past-conferences-and-exhibitions/optics-and-optoelectronics-2017>

**Talk:** *Tunable spin-directional coupling for surface localized waves with anisotropic metasurface.*

**Comment:** **Best Student Paper Award**

11. 4th International School and Conference "Saint-Petersburg OPEN 2017", St. Petersburg (Russia), 3-6 April 2017. <http://ru.spbopen.spbau.com/>  
**Poster, pitch talk:** *Spin control of light using hyperbolic plasmons.*

## 2016

10. II International Young Scientists Forum on Applied Physics and Engineering, Kharkiv (Ukraine), 10 - 14 October 2016. <http://ysc.org.ua/2016/index.php>  
**Invited talk:** *Hybrid surface plasmon polaritons localized at anisotropic metasurface.*  
**Comment:** **First prize in the "Nano and Metamaterials Section" for the presentation.**
9. II All-Russian Scientific Forum "The science of the future - the science of the youth", Kazan (Russia), 20-23 September 2016. <https://www.sfy-conf.ru/>  
**Poster, contest talk** (in Russian): *Hybrid surface plasmons on anisotropic metasurface.*
8. International Conference on Metamaterials and Nanophotonics "METANANO-2016", Anapa (Russia), 5-9 September 2016. <https://metanano.ifmo.ru/2016/>  
**Talk:** *Full control of the spin angular momentum of light in the plane of anisotropic metasurface.*
7. Annual International Conference "Days On Diffraction 2016", St. Petersburg (Russia), 27 June - 01 July 2016. <http://www.pdmi.ras.ru/~dd/>  
**Poster:** *New degrees of freedom of spin-optronics implemented by using hybrid surface waves localized at hyperbolic metasurface.*

## 2015

6. IONS Valencia 2015, Valencia (Spain), 24-26 September 2015. [https://www.osa.org/en-us/meetings/global\\_calendar/events/2015/international\\_osa\\_network\\_of\\_students\\_valencia\\_201/](https://www.osa.org/en-us/meetings/global_calendar/events/2015/international_osa_network_of_students_valencia_201/)  
**Talk:** *Surface waves localized at hyperbolic metasurface.*
5. XV All-Russian School-Workshop "Physics and Application of Microwaves" named after A.P. Sukhorukov, Mozhaisk (Russia), 1 - 6 June 2015. <http://waves.phys.msu.ru/>  
**Talk** (in Russian): *Electromagnetic properties of surface modes propagating along anisotropic hyperbolic metasurface.*
4. Annual International Conference "Days On Diffraction 2015", St. Petersburg (Russia), 28-29 May 2015. <http://www.pdmi.ras.ru/~dd/>  
**Poster:** *New types of surface waves on hyperbolic metasurface.*
3. Young scientists of Russia - 2015, Moscow (Russia), 13 - 14 April 2015. <http://www.dynastyfdn.com/news/1267>  
**Poster:** *Hybrid waves localized at hyperbolic metasurface.*
2. IV international student conference "Academic and Scientific Challenges in the 21st Century", Kharkiv (Ukraine), 20 March 2015.  
**Talk:** *Construction of the anisotropic permittivity and conductivity tensors for uniaxial crystals.*

## 2014

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1. Scientific and Technical Conference "Physical and Technical Problems of Energy and Their Solutions - 2014", Kharkiv (Ukraine), 25 - 26 June 2014.  
**Talk:** *Automatic solar tracking system.*

## Scientific Schools

- 7 School on Advanced Light-Emitting and Optical Materials (SLALOM), 29 - 30 June 2020. <https://slalom.physics.itmo.ru/>
- 6 PhD Summer School on nano-optics and plasmonics, Odense (Denmark), 23 - 26 May 2019. [https://www.sdu.dk/en/om\\_sdu/institutter\\_centre/nanooptics/summer\\_school](https://www.sdu.dk/en/om_sdu/institutter_centre/nanooptics/summer_school)
- 5 International School on Plasmonics and Nano-Optics "Plasmonica - 2018", Cetraro (Italy), 15 - 18 June 2018. <http://www.plasmonica.it/2018school/>
4. Doctoral Summer School: Nanophotonics and Metamaterials, St. Petersburg (Russia). <https://metalab.ifmo.ru/school/>
  - 2016: XXXI EUPROMETA Summer School "Nanophotonics and Metamaterials", 21-24 June 2016. <https://metalab.ifmo.ru/school/2016/>
  - 2017: 28 May - 1 June 2017. <https://metalab.ifmo.ru/school/2017/>
  - 2018: May 28 - 1 June 2018. <https://metalab.ifmo.ru/school/2018/>
  - 2019: Summer School on Topological Photonics, 8 - 12 July 2019. <https://metalab.ifmo.ru/school>
3. PICQUE Roma Scientific School 2015: "Integrated quantum photonics applications: from simulation to sensing", Rome (Italy), 6-10 July 2015. <http://www.picque.eu/romaschool2015/>
2. International Winter School on Physics of Semiconductors, Zelenogorsk (Russia). [http://www.ioffe.ru/winter\\_school/index\\_en.html](http://www.ioffe.ru/winter_school/index_en.html)
  - 2015: Light, semiconductors and technologies, 27 February - 3 March 2015. [http://www.ioffe.ru/winter\\_school/school2015.html](http://www.ioffe.ru/winter_school/school2015.html)
  - 2016: Advanced fabrication technologies of semiconductor nanoheterostructures and devices, 26 February - 1 March 2016. [http://www.ioffe.ru/winter\\_school/school2016.html](http://www.ioffe.ru/winter_school/school2016.html).

*Comment: The best presentation (2nd prize) at the young scientists' section.*

  - 2017: Semiconductor nano- and optomechanics, 3 - 6 March 2017. [http://www.ioffe.ru/winter\\_school/school2017.html](http://www.ioffe.ru/winter_school/school2017.html)
  - 2018: 2D semiconductor systems, 1 - 5 March 2018. [http://www.ioffe.ru/winter\\_school/school2018.html](http://www.ioffe.ru/winter_school/school2018.html)
  - 2019: 100th anniversary of Ioffe Institute. Current research, 28 February - 3 March 2019. [http://www.ioffe.ru/winter\\_school/school2019.html](http://www.ioffe.ru/winter_school/school2019.html)
1. European Summer School 2014: "From the Mystery of Mass to Nobel Prizes. The Physics of the Higgs Boson", Strasbourg (France), 7-12 July 2014. <http://esc.u-strasbg.fr/2014/>

## Internships

2. Leibniz Institute of Photonic Technology, group of Prof. Markus Schmidt, Jena, Germany. <https://www.leibniz-ipht.de/en/research-units/research-departments/fiber-photonics/overview.html>
  - 2021: 19 October - 7 November.
  - 2020: 9-31 March.
  - 2019: 11-18 August.
1. Technical University of Denmark, DTU Fotonik, group of Prof. Andrei Lavrinenko, Kongens Lyngby, Denmark. <http://www.fotonik.dtu.dk/english/research/nanophotonics/meta>
  - 2019: 26 August - 17 September.
  - 2018: 18 June - 8 July.
  - 2018: 4-25 May.

## Seminars

6. Fiber Optics Research Center, Moscow, Russia, 12 October [online].
5. International mini-workshop on Dyakonov surface waves [online].
  - 17 November 2020
4. ITMO University, School of Physics and Engineering, St. Petersburg, Russia.
  - Microwave Seminar, 20 September 2021
  - Theoretical Seminar, 20 May 2020
  - Theoretical Seminar, 13 February 2019
3. Technical University of Denmark, DTU Fotonik, Plasmonics and Metamaterials Group (Prof. Lavrinenko's group), Kongens Lyngby, Denmark.
  - 10 September 2019
  - 8 May 2018
2. Institut d'Optique, Charles Fabry Laboratory, Palaiseau, France.
  - 27 April 2018
1. O. Ya. Usikov Institute for Radiophysics and Electronics of the National Academy of Sciences of Ukraine (IRE NASU), Radiospectroscopy Department (Prof. Tarapov's group), Kharkiv, Ukraine, 11 January 2017.
  - 15 October 2019
  - 11 January 2017

## Reviewer (62 manuscripts total since 2018)

- APS (16) Physical Review Letters (4), Physical Review Applied (2), Physical Review B (3), Physical Review A (5), Physical Review Research (2)
- OSA (22) Optics Letters (6), Photonics Research (3), Optics Express (6), JOSA B (5), Optical Materials Express (1), Applied Optics (1)

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- IOP (12) New Journal of Physics (1), Journal of Physics D: Applied Physics (6), Journal of Optics (1), Journal of Physics: Condensed Matter (1), Physica Scripta (3)
- IEEE (3) IEEE Transactions on Microwave Theory and Techniques (1), IEEE Sensors (2)
- ACS (2) ACS Photonics (1), ACS Nano (1)
- SPIE (4) Journal of Nanophotonics (2), Optical Engineering (2)
- Elsevier (1) Photonics and Nanostructures - Fundamentals and Applications (1)
- AIP (2) AIP Advances (2)
- Conferences Days on Diffraction (2017-2018), METANANO (2018-2021).

## Organization

### Conferences

5. **Technical Program Co-Chair:** METANANO-2022, Kazan (Russia), 22-26 August 2022. <https://metanano.itmo.ru/>
4. **Program Committee:** International Conference for Young Professionals in Physics and Technology (ICYPPPT), Kharkiv (Ukraine), [online], 26 - 30 April 2021. <https://sites.google.com/view/icyppt2021/icyppt>
3. **Organizing Committee:** Summer School on Nanophotonics and Metamaterials
  - Photonics of 2D Materials, 19 - 23 July 2021 (<https://school.physics.itmo.ru/>)
  - Scattering Problems in Photonics, 6 - 10 July 2020 (<https://school.physics.itmo.ru/2020/>)
2. **Organizing and Program Committees:** VIII Young Scientists Congress (in Russian), Section: Photonics, 15 - 19 April 2019. <https://kmu.itmo.ru/>
1. **Technical Committee:** Summer School on Nanophotonics and Metamaterials
  - Topological Photonics, 8 - 12 July 2019 (<https://school.physics.itmo.ru/2019/>)
  - May 28 - 1 June 2018 (<https://school.physics.itmo.ru/2018/>)
  - 15 - 19 May 2017 (<https://school.physics.itmo.ru/2017/>)
  - 21 - 24 June 2016 (<https://school.physics.itmo.ru/2016/>)

### Scholarship and events for Masters enrollees

- 2021 General Chair, Scholarship contest for Master programs enrollees, School of Physics and Engineering, ITMO University <https://physics.itmo.ru/ru/demo-days>
- 2021 Scientific Chair, Demo Days of Master Programs, School of Physics and Engineering, ITMO University, [https://physics.itmo.ru/ru/scholarship2021#block\\_content/41](https://physics.itmo.ru/ru/scholarship2021#block_content/41)

### Student Chapters in Optics and Photonics

SPIE 2021 - today Advisor, V.N. Karazin Kharkiv National Univ. SPIE Student Chapter

- 2020 Formation of SPIE V. N. Karazin Kharkiv National Univ. Chapter [https://spie.org/membership/student-services/student-chapters/student-chapter?chapter\\_id=1028832](https://spie.org/membership/student-services/student-chapters/student-chapter?chapter_id=1028832)

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🌐 [https://physics.itmo.ru/en/personality/oleh\\_yermakov](https://physics.itmo.ru/en/personality/oleh_yermakov)

- 2014 - 2019 Member, ITMO Univ. SPIE Student Chapter
- OSA 2021 - today Advisor, V.N. Karazin Kharkiv National University OSA Student Chapter
- 2020 Formation of Kharkiv National University OSA Student Chapter [https://www.osa.org/en-us/get\\_involved/chapters\\_and\\_sections/](https://www.osa.org/en-us/get_involved/chapters_and_sections/)
- 2014 - 2019 Member, ITMO University OSA Student Chapter

## Teaching

### ITMO University

- 2018–2020 *Supervisor*, Master international educational program "Nanophotonics and Metamaterials", Department of Physics and Engineering, ITMO University.
- 2019 *Teaching Assistant*, "Nanoplasmonics" course for 1st year Master students, Department of Physics and Engineering, ITMO University, spring semester 2019. Lecturers: Dr. Mihail Petrov and Dr. Andrey Bogdanov. Duties: seminars, homeworks, tests.
- 2018 *Teaching Assistant*, "Metamaterials" course for 2nd year Master students, Department of Physics and Engineering, ITMO University, fall semester 2018. Lecturer: Prof. Pavel Belov. Duties: seminars, labs on CST.
- 2017 *Teaching Assistant*, "Mathematical Methods in Physics" course for 1st year Master students, Department of Physics and Engineering, ITMO University, fall semester 2017. Lecturer: Dr. Andrey Bogdanov. Duties: seminars, homeworks, tests.

## Popular Science Lectures

6. "Shed Light" at Right Angle [in Russian, online], 13 November 2020.
5. "Game of Thrones" from the point of view of Physics [in Russian]
  - 4 June 2019, for high school students, ITMO University, St. Petersburg, Russia.
  - 23 April 2019, open lecture (organized by Atomic Energy Information Center), art-cafe "Books and coffee", St. Petersburg, Russia.
4. Sweaty electrons, cocktail of light with matter and ultrathin iPhones - why do we need Photonics? [in Russian]
  - 8 June 2020, Summer School for high school students in Physics, Department of Physics and Engineering, ITMO University.
  - 1 December 2019, for high school students in Physics olympiad, Russian Center for Science and Culture, Kyiv, Ukraine.
  - 4 June 2019, for high school students, ITMO University, St. Petersburg, Russia.
  - 19 April 2019, open lecture, ITMO University, St. Petersburg, Russia.
3. Photonics and light control at nanoscale [in Russian] (open lecture), V. N. Karazin Kharkiv National University, Kharkiv, Ukraine, 5 January 2019.
2. Introduction to Metamaterials [in Russian] (for high school students), ITMO University, St. Petersburg, Russia, 8 June 2018.
1. How to write a scientific article and be proud of it? [in Russian] (for students), ITMO University, St. Petersburg, Russia, 24 November 2017.

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## Professional Memberships

7. European Microwave Association (EuMA), ID: AM4110, October 2020 – present.
6. IEEE Microwave Theory and Techniques Society, January 2020 – present.
5. IEEE Photonics, March 2018 – present.
4. METAMORPHOSE VI AISBL, November 2016 – present.
3. IEEE, ID: 94033466, September 2016 – present.
2. OSA, ID: 1166491, December 2014 – present. Chapter Advisor (since 2020).
1. SPIE, ID: 3651284, October 2014 – present. Chapter Advisor (since 2020).

## Computer Skills

- Basic C/C++, Python, OriginLab, Proteus, CodeVisionAVR, Corel Draw.
- Advanced LaTeX, MatLab, Wolfram Mathematica, MIT Photonic Bands (MPB), CST Microwave Studio, COMSOL Multiphysics, POV-Ray, Adobe Illustrator.

## Languages

- English Advanced
- Russian Mother tongue
- French Intermediate
- Ukrainian Mother tongue

## Profiles

- Website [https://physics.ifmo.ru/en/personality/oleh\\_yermakov](https://physics.ifmo.ru/en/personality/oleh_yermakov)
- ORCID 0000-0001-9446-0670
- Researcher ID M-3969-2016
- Scopus ID 56709555600
- Google Scholar <https://scholar.google.com/citations?user=VDeJOhUAAAAJ&hl=en>
- ResearchGate [https://www.researchgate.net/profile/Oleh\\_Yermakov](https://www.researchgate.net/profile/Oleh_Yermakov)
- Publons <https://publons.com/researcher/1611687/oleh-yermakov/>

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