





Kseniia Baryshnikova

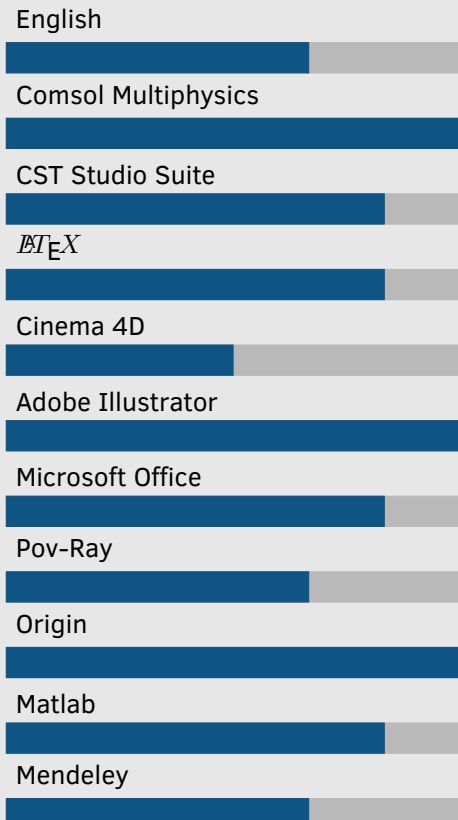
Ph.D. in Optics

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About me

A young scientist with a huge experience in theoretic and numerical research, oral talks, teaching, paper publishing and grant management.

Skills



(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Scientific interests

- Dielectric nanophotonics.
- Active and tunable meta-optics.
- Theoretical description of metasurfaces and finite arrays of nanoparticles.
- Optimization and nanophotonics designs construction.
- Perovskites meta-optics.
- Multipole decomposition methods.
- Bianisotropy and non-reciprocal effects.

Work experience

- 2013-current ITMO University, St. Petersburg, Russia
Research engineer → Postdoc → Senior Lecturer
- 2012-2013 Ioffe institute, RAS, St. Petersburg, Russia
Laboratory assistant
- 2011 SHM R&E Center, RAS, St. Petersburg, Russia
Laboratory assistant

Education

- 2013-2016 ITMO University, St. Petersburg, Russia
Ph.D. in Optics
- 2007-2013 Peter the Great St. Petersburg Polytechnical University, St. Petersburg, Russia
Bachelor and Master degrees
- 2004-2007 Physics and Mathematics Lyceum № 239, St. Petersburg, Russia
High School

Teaching experience

- Summer practice for high school students at ITMO University (2017-2021)
- Comsol simulation practice at METANANO Summer School (2020)
- Comsol simulation course for bachelor students at ITMO University (2019, 2021)
- Plasmonics course for master students at ITMO University (2019)
- Educational Center "Sirius", Program "Big Challenges" (2019)

Selected talks

 An overall number of the talks exceeds 25.

- Third Eurasian Women's Forum (St. Petersburg, Russia), speaker at Foresight session «Steps to Success» (2021)
- CLEO: Science and Innovations (online), "Halide-Perovskite Metasurfaces Governed by the Kerker Effect" (2021)
- NANOP (Rome, Italy), "Ultra-broadband directive scattering of silicon nanoparticles in the optical range" (2019)
- ICMAT (Singapore), "All-Dielectric Metasurfaces with Angular-Asymmetric and Polarization Sensitive Optical Response" (2019)
- Sci-Pop (Science Bar Hopping, TEDxYouth@Vzmakh, Winner of Science Slam RusNano etc) (2018-2022)
- METANANO (2016-2021)

Grants and Awards

2021	The winner of the RSF grant competition "Research by scientific groups under the guidance of young scientists"
2018	The winner of the joint program of DAAD and the Ministry of Science and Higher Education of the Russian Federation "Mikhail Lomonosov"
2017	The winner of the RSF grant competition among young scientists with scientific degree
2015	The winner of the program "FASIE"
2015	Diploma for scientific results, which have a significant novelty and medium-term prospects of their effective commercialization. (Received at the Conference "Physica.SPb")
2014	Diploma of I degree for the best oral report at the XVIth All-Russian International Conference on the Physics of Semiconductors and Nanostructures, Semiconductor Opto- and Nanoelectronics
2014	Diploma for scientific results, which have a significant novelty and medium-term prospects of their effective commercialization. (Received at the Conference "Physica.SPb")
2014	Diploma for the best poster on the conference "Physica.SPb"

Projects

2015-2021	Multipole decomposition Multipole analysis and optimization of all-dielectric nanostructures
2015-2019	Optical Anapoles Investigation of non-radiating states in all-dielectric nanostructures
2013-2016	Antireflective coatings Investigation of nanostructured coatings for antireflection of photovoltaic devices
2012-2014	Plasmonic nanostructures Investigation of plasmonic nanoparticles and metasurfaces near the interface
2011	WHM in microresonators Investigation of whispering-gallery modes in multi-layered microresonators with quantum dots array

Main Publications

An overall number of the publications exceeds 47. *H-index* is 14.

- Evlyukhin, A. B., Poleva, M. A., Prokhorov, A. V., Baryshnikova, K. V., Miroshnichenko, A. E., Chichkov, B. N. (2021) "Polarization Switching Between Electric and Magnetic Quasi-Trapped Modes in Bianisotropic All-Dielectric Metasurfaces", *Laser & Photonics Reviews*, 2100206.
- Ustimenko, N., Baryshnikova, K. V., Melnikov, R., Kornovan, D., Ulyantsev, V., Chichkov, B.N., Evlyukhin, A.B. (2021). "Multipole optimization of light focusing by silicon nanosphere structures," *J. Opt. Soc. Am. B* 38, 3009-3019
- Baryshnikova, K., Gets, D., Liashenko, T., Pushkarev, A., Mukhin, I., Kivshar, Y., Makarov, S. (2020). Broadband antireflection with halide perovskite metasurfaces. *Laser Photonics Reviews*, 14(12), 2000338.
- Song, M., Baryshnikova, K., Markvart, A., Belov, P., Nenasheva, E., Simovski, C., Kapitanova, P. (2019). Smart table based on a metasurface for wireless power transfer. *Physical Review Applied*, 11(5), 054046.
- Terekhov, P. D., Babicheva, V. E., Baryshnikova, K. V., Shalin, A. S., Karabchevsky, A., Evlyukhin, A. B. (2019). Multipole analysis of dielectric metasurfaces composed of nonspherical nanoparticles and lattice invisibility effect. *Physical Review B*, 99(4), 045424.
- Baryshnikova, K. V., Smirnova, D. A., Luk'yanchuk, B. S., Kivshar, Y. S. (2019). Optical anapoles: Concepts and applications. *Advanced Optical Materials*, 7(14), 1801350.

- Terekhov, P. D., Baryshnikova, K. V., Greenberg, Y., Fu, Y. H., Evlyukhin, A. B., Shalin, A. S., Karabchevsky, A. (2019). Enhanced absorption in all-dielectric metasurfaces due to magnetic dipole excitation. *Scientific reports*, 9(1), 1-9.
- Terekhov, P. D., Shamkhi, H. K., Gurvitz, E. A., Baryshnikova, K. V., Evlyukhin, A. B., Shalin, A. S., Karabchevsky, A. (2019). Broadband forward scattering from dielectric cubic nanoantenna in lossless media. *Optics express*, 27(8), 10924-10935.
- Shamkhi, H. K., Baryshnikova, K. V., Sayanskiy, A., Kapitanova, P., Terekhov, P. D., Belov, P., ... Shalin, A. S. (2019). Transverse scattering and generalized Kerker effects in all-dielectric Mie-resonant metaoptics. *Physical review letters*, 122(19), 193905.
- Balezin, M., Baryshnikova, K. V., Kapitanova, P., Evlyukhin, A. B. (2018). Electromagnetic properties of the great pyramid: First multipole resonances and energy concentration. *Journal of Applied Physics*, 124(3), 034903.
- Baryshnikova, K., Filonov, D., Simovski, C., Evlyukhin, A., Kadochkin, A., Nenasheva, E., ... Shalin, A. S. (2018). Giant magnetoelectric field separation via anapole-type states in high-index dielectric structures. *Physical Review B*, 98(16), 165419.
- Babicheva, V. E., Petrov, M. I., Baryshnikova, K. V., Belov, P. A. (2017). Reflection compensation mediated by electric and magnetic resonances of all-dielectric metasurfaces. *JOSA B*, 34(7), D18-D28. *antireflective coatings*. *Scientific reports*, 6, 22136.
- Baryshnikova, K. V., Novitsky, A., Evlyukhin, A. B., Shalin, A. S. (2017). Magnetic field concentration with coaxial silicon nanocylinders in the optical spectral range. *JOSA B*, 34(7), D36-D41.
- Terekhov, P. D., Baryshnikova, K. V., Shalin, A. S., Karabchevsky, A., Evlyukhin, A. B. (2017). Resonant forward scattering of light by high-refractive-index dielectric nanoparticles with toroidal dipole contribution. *Optics Letters*, 42(4), 835-838.
- Terekhov, P. D., Baryshnikova, K. V., Artemyev, Y. A., Karabchevsky, A., Shalin, A. S., Evlyukhin, A. B. (2017). Multipolar response of nonspherical silicon nanoparticles in the visible and near-infrared spectral ranges. *Physical Review B*, 96(3), 035443.
- Baryshnikova, K. V., Petrov, M. I., Babicheva, V. E., Belov, P. A. (2016). Plasmonic and silicon spherical nanoparticle antireflective coatings. *Scientific reports*, 6, 22136.
- Markovich, D., Baryshnikova, K., Shalin, A., Samusev, A., Krasnok, A., Belov, P., Ginzburg, P. (2016). Enhancement of artificial magnetism via resonant bianisotropy. *Scientific reports*, 6, 22546.

Hobbies

Dancing, Theater, Reading Novels, Urban Photography, Art, Philosophy.
Always Looking forward to be indulged in creative activities.

Interpersonal Skills

- Enthusiastic and active player.
- Can easily adjust in different situations.
- Morally fit and well being for any environment.
- Always ready for team work.
- Listening skills.
- Decision-making.
- Conflict resolution and mediation.