

Ekaterina Tiguntseva

Curriculum Vitae

PhD student

H-index: 9

Date of birth: 30.01.1993

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Education:

1. **PhD.** Optics. 2017-present time (ITMO University). Title of thesis: “Nanoscale light sources based hybrid perovskite”.
2. **MSc.** Laser micro- and nanotechnologies. 2015-2017 (ITMO University). Title of thesis: “Laser deposition of resonant silicon nanoparticles on perovskite for photoluminescence enhancement”.
3. **BSc.** Technical Physics. 2011-2015 (ITMO University). Title of thesis: “The microchannels formation in glass by picoseconds pulses followed by laser annealing and subsequent chemical etching”.

Field of interest:

Optics, photonics, nanophotonics, perovskite-based nanostructures, emitting nanostructures, resonant nanostructures, perovskite-based nanolasers, nanoparticles, nanoscale light sources.

Work experience:

1. Junior research fellow
2016-present
Department of nanophotonics and metamaterials, ITMO University, Full-time
2. Engineer
2015
Department of laser technology and laser techniques, ITMO University, Part-time

List of publications.

Full papers:

1. **Ekaterina Tiguntseva**, Kirill Koshelev, Alexandra Furasova, Pavel Tonkaev, Vladimir Mikhailovskii, Elena V. Ushakova, Denis G. Baranov, Timur Shegai, Anvar A. Zakhidov, Yuri Kivshar, and Sergey V. Makarov. (2020). Room-Temperature Lasing from Mie-Resonant Non-Plasmonic Nanoparticles. ACS Nano (Just Accepted). (<https://pubs.acs.org/doi/10.1021/acsnano.0c01468>)
2. **Tiguntseva, E.**, Chebykin, A., Ishteev, A., Haroldson, R., Balachandran, B., Ushakova, E., F., Komissarenko, H., Wang, V., Milichko, A., Tsypkin, D., Zuev, W., Hu, S., Makarov, A., Zakhidov. (2017). Resonant silicon nanoparticles for enhancement of light absorption and photoluminescence from hybrid perovskite films and metasurfaces.

- Nanoscale, 9(34), 12486-12493. [IF= 7.2]
(<https://pubs.rsc.org/en/content/articlehtml/2017/nr/c7nr01631j>)
3. **Tiguntseva, E. Y.**, Zograf, G. P., Komissarenko, F. E., Zuev, D. A., Zakhidov, A. A., Makarov, S. V., Kivshar, Y. S. (2018). Light-Emitting Halide Perovskite Nanoantennas. Nano letters, 18(2), 1185-1190. [IF= 12.08]
(<https://pubs.acs.org/doi/abs/10.1021/acs.nanolett.7b04727>)
 4. **Tiguntseva, E. Y.**, Baranov, D. G., Pushkarev, A. P., Munkhbat, B., Komissarenko, F., Franckevicius, M., Anvar A Zakhidov, Timur Shegai, Yuri S Kivshar, Makarov, S. V. (2018). Tunable Hybrid Fano Resonances in Halide Perovskite Nanoparticles. Nano letters, 18(9), 5522-5529. [IF= 12.08]
(<https://pubs.acs.org/doi/abs/10.1021/acs.nanolett.8b01912>)
 5. **Tiguntseva, E. Y.**, Sadrieva, Z., Stroganov, B. V., Kapitonov, Y. V., Komissarenko, F., Haroldson, R., B., Balachandran, W., Hu, Q., Gu, A., Zakhidov, A., Bogdanov, S., Makarov. (2019). Enhanced temperature-tunable narrow-band photoluminescence from resonant perovskite nanograting. Applied Surface Science, 473, 419-424. [IF= 4.4]
(<https://www.sciencedirect.com/science/article/pii/S0169433218334135>)
 6. Gets, D. S., **Tiguntseva, E. Y.**, Berestennikov, A. S., Lyashenko, T. Y. G. E., Pushkarev, A. P., Makarov, S. V., Zakhidov, A. A. (2018). Photoinduced migration of ions in optically resonant perovskite nanoparticles. JETP Letters, 107(12), 742-748. [IF= 1.4]
(<https://link.springer.com/article/10.1134/S002136401812007X>)
 7. Makarov, S., Furasova, A., **Tiguntseva, E.**, Hemmetter, A., Berestennikov, A., Pushkarev, A., Zakhidov, A., Kivshar, Y. (2018). Halide-Perovskite Resonant Nanophotonics. Advanced Optical Materials, 1800784. [IF= 7.43]
(<https://onlinelibrary.wiley.com/doi/full/10.1002/adom.201800784>)
 8. Furasova, A., Calabró, E., Lamanna, E., **Tiguntseva, E.**, Ushakova, E., Ubyivovk, E., Vladimir Mikhailovskii, Anvar Zakhidov, Sergey Makarov, Di Carlo, A. Resonant Silicon Nanoparticles for Enhanced Light Harvesting in Halide Perovskite Solar Cells. Advanced Optical Materials, 1800576. [IF= 7.43]
(<https://onlinelibrary.wiley.com/doi/full/10.1002/adom.201800576>)
 9. Markina, D. I., E. **Yu Tiguntseva**, A. P. Pushkarev, M. A. Samsonov, M. Vengris, B. Munkhbat, T. Shegai, G. B. Hix, A. A. Zakhidov, and S. V. Makarov. "Photophysical properties of halide perovskite CsPb (Br_{1-x}I_x)₃ thin films and nanowires." Journal of Luminescence 220 (2020): 116985. [IF= 2.732]
(<https://www.sciencedirect.com/science/article/pii/S0022231319311068>)
 10. Polushkin, Artem S., **Ekaterina Y. Tiguntseva**, Anatoly P. Pushkarev, and Sergey V. Makarov. "Single-particle perovskite lasers: from material properties to cavity design." Nanophotonics 9, no. 3 (2020): 599-610. [IF= 6.908]
(<https://www.degruyter.com/view/journals/nanoph/9/3/article-p599.xml?language=de>)
 11. Shishkin, Ivan, Artem Polushkin, **Ekaterina Tiguntseva**, Aleksei Murzin, Boris Stroganov, Yury Kapitonov, Sergei A. Kulinich, Alexandr Kuchmizhak, and Sergey Makarov. "Single-step direct laser writing of halide perovskite microlasers." Applied Physics Express 12, no. 12 (2019): 122001. [IF= 2.555]
(<https://iopscience.iop.org/article/10.7567/1882-0786/ab4b1b/meta>)

Proceedings:

12. Makarov, S. V., **Tiguntseva, E. Y.**, Zakhidov, A. A., & Kivshar, Y. S. (2018, May). Perovskite Nanostructures and Metasurfaces Enhanced by Mie Resonances. In CLEO: QELS_Fundamental Science (pp. FTh4M-6). Optical Society of America. *Conference paper*
13. **Tiguntseva, E. Y.**, Zalogina, A. S., Milichko, V. A., Zuev, D. A., Omelyanovich, M. M., Ishteev, A., ... & Zakhidov, A. A. (2017, November). Laser deposition of resonant silicon nanoparticles on perovskite for photoluminescence enhancement. In Journal of Physics: Conference Series (Vol. 929, No. 1, p. 012053). IOP Publishing. *Conference paper*
14. **Tiguntseva, E. Y.**, Saraeva, I. N., Kudryashov, S. I., Ushakova, E. V., Komissarenko, F. E., Ishteev, A. R., ... & Makarov, S. V. (2017, November). Laser post-processing of halide perovskites for enhanced photoluminescence and absorbance. In Journal of Physics: Conference Series (Vol. 917, No. 6, p. 062002). IOP Publishing. *Conference paper*
15. **Tiguntseva, E. Y.**, Ishteev, A. R., Komissarenko, F. E., Zuev, D. A., Ushakova, E. V., Milichko, V. A., ... & Zakhidov, A. A. (2017, September). Resonant halide perovskite nanoparticles. In AIP Conference Proceedings (Vol. 1874, No. 1, p. 040049). AIP Publishing. *Conference paper*
16. Zalogina, A. S., Zograf, G. P., Makarov, S. V., Savelev, R. S., Kudryashov, S. I., **Tiguntseva, E. Y.**, ... & Belov, P. A. (2017, May). Zero phonon line enhancement by Mie-type resonances of nanodiamonds with nitrogen-vacancy centers. In Progress In Electromagnetics Research Symposium-Spring (PIERS), 2017 (pp. 122-124). IEEE. *Conference paper*
17. Polushkin, A. S., S. Kruk, R. Malurean, **E. Yu Tiguntseva**, A. Zakhidov, A. A. Bogdanov, Y. Kivshar, and S. V. Makarov. "Fabrication of halide-perovskite resonant microcylinders by nanoimprint lithography." In 4th International Conference on Metamaterials and Nanophotonics, vol. 1461, no. 1. 2020.

Patents:

2017

A. Chebykin, S. Makarov, E. Tiguntseva, A. Zakhidov. "Active optical device based on perovskite with resonant nanoparticles".

Description: Utility model related to the physical sphere and servers for photoluminescence efficiency and can be used for improvement LEDs and lasers characteristics based on perovskites. Technical result - efficiency enhancement of LEDs and lasers with the following optical device. Patent of Russian Federation, №176397, date of issue: 17.01.2018.

Awards and grants:

1. Best poster award (2d place) at METANANO'20, online (September 2020)
2. Special poster award at SLALOM'20, online (July 2020)
3. Grant of saint-Petersburg Government for young scientists 2019 (September 2019)
4. Scholarship of Russian President for PhD students for studying abroad in 2019-2020 (August 2019)
5. Best poster award at ICMAT'19, Singapore (June 2019)
6. 2019 SPIE Optics and Photonics Education Scholarship (May 2019)
7. Travel Grant of the Ph.D. department of ITMO University for Ph.D. students for short trip exchange program (2019).
8. Scholarship of Russian President for young scientists and Ph.D. students 2018-2020 (2018).
9. Travel Grant of the Ph.D. department of ITMO University for Ph.D. students for short trip exchange program (2017).
10. Academic Scholarship of ITMO University for academic success (2016, 2017).
11. ITMO University scholarship for excellent studying (2015, 2016).

Internships:

April 2017. University of Texas at Dallas (UTD), Nanophotonics LAB, Alan G. MacDiarmid NanoTech, Dallas, USA.

Theme of research: Segregation effect of thin hybrid perovskite film.

November 2017. State research institute Center for Physical Sciences and Technology (FTMC), Vilnius, Lithuania.

Theme of research: PLTR of nanoimprint perovskite films.

April 2018. Chalmers University of Technology, Gothenburg, Sweden.

Theme of research: Tunable resonances of perovskite nanowires at low temperature condition.

July 2018. Université de Lorraine, Nancy, France.

Theme of research: TEM, STEM, EDX for perovskite nanoparticles fabricated by laser ablation method.

April 2019. Friedrich Schiller University, Jena, Germany.

Theme of research: Multiphoton absorption of perovskite single nanoparticle, high-order harmonic generation in lead halide perovskites nanostructures in near and deep infrared region.

March 2020-December2020. Chalmers University of Technology, Gothenburg, Sweden.

Theme of research: Strong light-matter interactions in halide perovskites.

List of schools and conferences:

2020

1. Summer SLALOM - School on Advanced Light-Emitting and Optical Materials (online) 2020, online poster talk.
2. International Conference on Metamaterials and Nanophotonics METANANO - 2020 (online), online poster talk.

2019

3. ICMAT 2019. 10th International Conference on Materials for Advanced Technologies. (23 - 28 June 2019 | Marina Bay Sands, Singapore), Poster.
4. Doctoral Summer School Nanophotonics and Metamaterials 2019 (Saint - Petersburg, Russia), Poster.
5. SLALOM - School on Advanced Light-Emitting and Optical Materials (July 15-16, 2019 in St. Petersburg, Russia), Oral talk.
6. International Conference on Metamaterials and Nanophotonics METANANO - 2019 (Saint-Petersburg, Russia), Oral talk.
7. SLALOM - School on Advanced Light-Emitting and Optical Materials (December 2019, St. Petersburg, Russia), Poster.

2018

1. International winter school on Physics of Semiconductors (March 2017, Ioffe Institute, St. Petersburg, Russia), Poster.
2. International School and Conference "Saint - Petersburg OPEN 2018" (Saint - Petersburg, Russia), Poster.
3. Doctoral Summer School Nanophotonics and Metamaterials 2018 (Saint - Petersburg, Russia), Poster.
4. International conference Days on Diffraction, 2018 (Saint - Petersburg, Russia), Poster.
5. International Conference on Metamaterials and Nanophotonics METANANO - 2018 (Sochi, Russia), Oral and poster.
6. Nanophotonics and Micro/Nano Optics International Conference 2018 "NANOP'18"(Rome, Italy), Oral talk.
7. International conference PhysicA.SPb/2018 (Saint - Petersburg, Russia, 23.10.2018-25.10.2018), Poster

2017

1. International winter school on Physics of Semiconductors (March 2017, Ioffe Institute, St. Petersburg, Russia), Poster.
2. International School and Conference "Saint - Petersburg OPEN 2017" (Saint - Petersburg, Russia, 03.04.2017 - 06.04.2017), Poster.
3. Doctoral Summer School Nanophotonics and Metamaterials (Saint - Petersburg, Russia), Poster.
4. 50th anniversary international conference Days on Diffraction, 2017 (Saint - Petersburg, Russia), Poster.
5. International Conference on Metamaterials and Nanophotonics METANANO - 2017 (Vladivostok, Russia), Poster