

## Vitaliy A. Shkoldin, Ph.D.

Tel.: +7 (921) 976-39-16 / +381 62 8920079

<https://t.me/BinSmile> Email: [v@al404.spb.ru](mailto:v@al404.spb.ru) [LinkedIn](#) [Google Scholar](#)

Physicist and python-programmer, who has a strong background in microscopy and nanophotonics. Know a different approaches to experiment and easy to lean how to work with new equipment. I have experience of work in one of the successful optical lab in Russia. I have 22 publication, and 6 of them Q1.

## EDUCATION

---

**PhD** of Physics and Mathematics (Condensed-matter physics) 29.06.2022  
[Thesis](#) (ru, with en synopsis) ([En summary](#))

**Title of thesis:** “Development of ultra-compact optical emission sources based on tunnel contact with localized optical nanoantenna”

---

**St. Petersburg Academic University RAS** (Russia) <https://spbau.ru> 06.2017 —  
postgraduate studies 08.2021  
Scientific advisor – Prof. Ivan S. Mukhin

---

**St. Petersburg Polytechnical University** (Russia) 09.2011 —  
<https://english.spbstu.ru/> 09.2017  
M.Sc. and B.Sc.: Electronics and nanoelectronics

## RESEARCH EXPERIENCE

**St. Petersburg Academic University RAS** 05.2017 — 10.2022  
Renewable Energy Sources Laboratory St. Petersburg, Russia  
*Ph.D. Student with Prof. Mukhin Ivan*

- Investigation of light emitted tunnel junction
- Supervised Master’s students project about nanomechanics

**ITMO University** 05.2017 — 10.2022  
Department of Physics and Engineering St. Petersburg, Russia  
*Research Engineer with Samusev Anton*

- Investigation of light emitted tunnel junction
- Nanoparticle manipulation in scanning electron microscope

**“NT-SPb” Surface probe for nanotechnology** 05.2018 — 09.2022  
<https://nano.ifmo.ru> (ru) St. Petersburg, Russia

- Maintenance and service of Scanning Probe Microscopes (SPM)
- Business trips and remote SPM installation
- Conducting workshops and education schools on SPM
- Custom improvement of SPM

**Ioffe Institute** 2013 — 2017  
Diffusion and Creation of Defects in Semiconductors Laboratory St. Petersburg, Russia  
*Graduate student with prof Mariya V. Zamoryanskaya*

- Cathodluminescence study of semiconductors structures based on SiC by depth.
- X-ray microanalysis

## SKILLS AND COMPETENCIES

- Scanning Probe Microscopy (AFM and especially tunneling microscopy)
- Scanning Electron Microscopy
- Focused Electron Beam-Induced Deposition
- Optical microspectroscopy
- Spatial manipulation with nanoparticles
- Vacuum equipment – work and service
- Reverse engineering of equipment protocols
- Coupling different equipment
- Big data array analysis and data manipulation automation
- Programming on Python (NumPy, Pandas...), LabView and easy operate with different internal hardware languages
- Big data array analysis and data manipulation automation
- Programming on Python (Pandas, Numpy, BeautifulSoup4, PySerial...), Bash
- LabView and easy operate with different internal hardware languages

## FAMILIAR WITH:

- Thorlabs optical components;
- AIST-NT SmartSPM and Combiscope, atomic force microscopes with optical access;
- Scienta Omicron VT AFM XA 50/500 and VT650 – Ultra-High vacuum scanning probe microscope
- NT-MDT and NT-SPb various atomic force microscopes;
- FEI Quanta Inspect S scanning electron microscope;
- Zeiss Crossbeam Neon 40b scanning electron microscope;
- Kleindiek Nanomanipulator MM3A-EM (nanoparticle manipulation in SEM);
- Horiba LabRAM HR-800 Raman spectrometer;
- Princeton Instruments SpectraPro SP-2500 high-sensitivity spectrometer;
- Various fiber spectrometers (Avantes, OceanInsight, etc.);
- Hand-made setups based on Arduino and ESP8267.

## SCHOLARSHIPS AND GRANTS

- Scholarship Program of the Government of Russia for Young Scientists (2022-2024)
- Grant for the Scientific and Technical Research Project by Committee on Science and Higher Education in St.Petersburg (2021, 2022)
- Russian Foundation for Basic Research for the best basic scientific research projects carried out by young scientists studying in graduate schools ("Aspirants") (2019)
- Fund (Federal) for Assistance to Small Innovative Enterprises UMNİK (the Russian abbreviation for "Member of the Youth Research and Innovation Competition") (2019)
- Grant for the Scientific and Technical Research Project by Committee on Science and Higher Education in St.Petersburg (2016)

## SELECTED PUBLICATION [\(GOOGLE SCHOLAR\)](#)

(3 out of 22)

- Lebedev, D. V., **Shkoldin, V. A.**, Mozharov, A. M., Larin, A. O., Permyakov, D. V., Samusev, A. K., ... & Mukhin, I. S. (2022).  
**Nanoscale Electrically Driven Light Source Based on Hybrid Semiconductor/Metal Nanoantenna.**  
*The Journal of Physical Chemistry Letters*, 13, 4612-4620.  
[DOI:[10.1021/acs.jpcllett.2c00986](https://doi.org/10.1021/acs.jpcllett.2c00986)] [IF:6.38] [SJR:2.009] [Q1]
- Mozharov, A., Berdnikov, Y., Solomonov, N., Novikova, K., Nadoyan, I., **Shkoldin, V.**, ... & Mukhin, I. (2021).  
**Nanomass Sensing via Node Shift Tracing in Vibrations of Coupled Nanowires Enhanced by Fano Resonances.**  
*ACS Applied Nano Materials*, 4(11), 11989-11996.  
[DOI:[10.1021/acsanm.1c02558](https://doi.org/10.1021/acsanm.1c02558)] [IF:5.64] [SJR:1.178] [Q1]
- Lebedev, D. V., **Shkoldin, V. A.**, Mozharov, A. M., Permyakov, D. V., Dvoretckaja, L. N., Bogdanov, A. A., ... & Mukhin, I. S. (2020).  
**Scanning Tunneling Microscopy-Induced Light Emission and I (V) Study of Optical Near-Field Properties of Single Plasmonic Nanoantennas.**  
*The Journal of Physical Chemistry Letters*, 12(1), 501-507.  
[DOI:[10.1021/acs.jpcllett.0c03039](https://doi.org/10.1021/acs.jpcllett.0c03039)] [IF:6.38] [SJR:2.009] [Q1]

## PARTICIPATION IN CONFERENCES

- International Conference on the Physics of Optical Materials and Devices ([2022](#), Belgrade, Serbia) ([Book of Abstracts](#))
- International Conference on Metamaterials and Nanophotonics "METANANO" ([2021](#) online, [2020](#) online)
- International School and Conference "Saint-Petersburg OPEN", (2022, 2021, 2019, 2018, Saint-Petersburg)
- All-Russian Youth Conference on Physics of Semiconductors and Nanostructures, Semiconductor Opto- and Nanoelectronics (2018, 2017, 2015, St. Petersburg)
- International conference PhysicA.SPb (2016, St. Petersburg)
- Russian Conference on Electron Microscopy (RKEM-2016), (2016, Moscow, Zelenograd)
- International Conference on Luminescence and Optical Spectroscopy of Condensed Matter (ICL2014), (2014, Wroclaw, Poland)