

Yali Sun, PhD



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Education

- 2017 – 2021 📌 **PhD, Department of Physics, ITMO University, Russia** in Optics
Research direction: *Optical properties of resonant metal-dielectric nanoantennas and their applications.*
Cooperation: *Prof. Song Yanlin, Institute of Chemistry, Chinese Academy of Sciences, China; Prof. Vittorianna Tasco, CNR Nanotec, Italy*
- 2014 – 2017 📌 **M.Sc., Huazhong University of Science and Technology, China** in Optical Engineering.
Thesis title: *Tuning of optical nanoantenna via femtosecond laser and electrically metasurface-based optical switch.*
- 2015 – 2016 📌 **Exchanging student, ITMO University, Russia** in Physics and Astronomy.
Research topic: *Hybrid metal-dielectric nanophotonics*
- 2010 – 2014 📌 **B.Sc., Wuhan University of Technology, China** in Electronic Science and Technology.
Main courses: *C language, signal and system, analog digital, electronic circuit EDA, single chip, high frequency, physical optics, photoelectron technology.*

Research Interest

- 📌 Hybrid plasmonic/dielectric nanophotonics; nonlinear; tunable; structure coloring; chirality; sensing

Conferences

- Invited talk 📌 IEEE-NEMS 2021
- Oral talk 📌 Metanano 2020, Metamaterials 2019, SPIE Optics and Photonics 2019
- Poster 📌 Metanano 2019, Metanano 2018, Metamaterials 2018, Nanophotonics and Micro/Nano Optics 2018, Saint Petersburg Open 2018
- Summer school 📌 The International Doctoral Summer School on Nanophotonics and Metamaterials 2020, Photonics and Optoelectronics Meeting 2019, Metamaterials school 2019

Research grant

- BRICS STI Framework Programme (Russia-China-India)
Funding Period: 01.01.2020 – 31.12.2022
Funding for Russian side: 15,000,000 Rubles (ITMO University)
Role: main applicant and responsible researcher

Personal awards and Scholarships

- 2019 ■ Academic Mobility (ITMO University, Russia)
 - Zuegel Family Scholarship (OSA, USA)
 - MKS Instruments Research Excellence Awards (SPIE, USA)
- 2017 ■ China Scholarship Council (201706160135)
- 2016, 2015 ■ National First Prize Academic Scholarship; Zhixing Scholarship
- 2013, 2012, 2011 ■ University Scholarship

Skills

- Languages ■ Strong reading, writing and speaking competencies for English, Mandarin Chinese; some Russian
- Experiments ■ Dark-field, Raman, SHG, THG, Photoluminescence, laser ablation and annealing, laser crystallization, heating, reflection, transmission, near-field mapping
- Simulations ■ CST Microwave Studio – scattering, absorption, transmission, reflection, near-field distribution, radiation pattern, directivity, Purcell factor
- Programming ■ Matlab, C, L^AT_EX typesetting and publishing.

Publications

Journal articles

- 1 Su, M., **Sun, Y.**, Chen, B., Zhang, Z., Yang, X., Chen, S., ... Song, Y. (2020). A fluid-guided printing strategy for patterning high refractive index photonic microarrays. *Science Bulletin*.
- 2 **Sun, Y.**, Yaroshenko, V., Chebykin, A., Ageev, E., Makarov, S., & Zuev, D. (2020). Metal-dielectric nanoantenna for radiation control of a single-photon emitter. *Optical Materials Express*, 10(1), 29–35.
- 3 **Sun, Y.**, Sinev, I., Zalogina, A., Ageev, E., Shamkhi, H., Komissarenko, F., ... Zuev, D. (2019). Reconfigurable near-field enhancement with hybrid metal-dielectric oligomers. *Laser & Photonics Reviews*, 13(2), 1800274.

- 4 Ling, Y., Huang, L., Hong, W., Liu, T., **Sun, Y.**, Luan, J., & Yuan, G. (2017). Asymmetric optical transmission based on unidirectional excitation of surface plasmon polaritons in gradient metasurface. *Optics express*, 25(12), 13648–13658.
- 5 Liu, T., Huang, L., Hong, W., Ling, Y., Luan, J., **Sun, Y.**, & Sun, W. (2017). Coupling-based Huygens' meta-atom utilizing bilayer complementary plasmonic structure for light manipulation. *Optics express*, 25(14), 16332–16346.
- 6 **Sun, Y.**, Kolodny, S., Lepeshov, S., Zuev, D., Huang, L., Belov, P., & Krasnok, A. (2017). Approach for fine-tuning of hybrid dimer antennas via laser melting at the nanoscale. *Annalen der Physik*, 529(3), 1600272.
- 7 Liu, T., Xi, X., Ling, L., Yonghong, **Sun, Y.**, Li, Z., & Huang, L. (2015). Polarization-insensitive and broad-angle gradient metasurface with high-efficiency anomalous reflection. *ACTA PHYSICA SINICA*, 64(23).
- 8 **Sun, Y.**, Ling, Y., Liu, T., & Huang, L. (2015). Electro-optical switch based on continuous metasurface embedded in Si substrate. *AIP Advances*, 5(11), 117221.
- 9 Li, Z., Huang, L., Lu, K., **Sun, Y.**, & Min, L. (2014). Continuous metasurface for high-performance anomalous reflection. *Applied Physics Express*, 7(11), 112001.

Scopus conference proceedings

- 1 Iudin, V., **Sun, Y.**, Minkevich, E., Ageev, E., & Zuev, D. (2020). Numerical modelling of scattering properties of tunable hybrid nanostructures. In *Aip conference proceedings* (Vol. 2300, 1, p. 020047). AIP Publishing LLC.
- 2 **Sun, Y.**, Ageev, E., & Zuev, D. (2020). Tuning of far-field and near-field via fs-laser in various hybrid oligomers. (Vol. 1461, 1, p. 012172).
- 3 **Sun, Y.**, Manoccio, M., Ageev, E., Esposito, M., Iudin, V., Zhang, S., ... Zuev, D. (2020). Optical resonant properties of plasmonic helices in visible range. In *Aip conference proceedings* (Vol. 2300, 1, p. 020125). AIP Publishing LLC.
- 4 **Sun, Y.**, Zalogina, A., Ageev, E., & Zuev, D. (2019). Polarized laser reshaping and near-field-enhanced applications in hybrid nanostructures. In *Nanoengineering: fabrication, properties, optics, thin films, and devices xvi* (Vol. 11089, p. 110890L). International Society for Optics and Photonics.
- 5 **Sun, Y.** & Zuev, D. (2019). Active polarized tuning of near-field in hybrid metal/dielectric nanostructures upon femtosecond laser reshaping. In *2019 thirteenth international congress on artificial materials for novel wave phenomena (metamaterials)* (pp. X–408). IEEE.
- 6 Zograf, G., Petrova, M., Petrov, M., Belov, P., Komissarenko, F., Makarova, E., ... Zyuzin, M. (2019). Semiconductor resonant all-optical temperature sensor and thermal release trigger of encapsulated anti-cancer drugs for in vitro studies. In *Journal of physics: conference series* (Vol. 1410, 1, p. 012077). IOP Publishing.

- 7 Larin, A., **Sun, Y.**, & Zuev, D. (2018). Numerical design of au/si core-shell nanoparticles. In *Journal of physics: conference series* (Vol. 1092, 1, p. 012074). IOP Publishing.
- 8 **Sun, Y.**, Makarov, S., & Zuev, D. (2018). Numerical study of optical properties of sphere-gap-cone hybrid nanoantenna. In *Journal of physics: conference series* (Vol. 1124, 5, p. 051013). IOP Publishing.
- 9 **Sun, Y.**, Zuev, D., & Makarov, S. (2018). Numerical simulations of hybrid sphere-gap-cone dimer nanoantenna. In *2018 12th international congress on artificial materials for novel wave phenomena (metamaterials)* (pp. 269–271). IEEE.
- 10 **Sun, Y.** & Zuev, D. (2018). Absorption and purcell factor control in hybrid oligomers. In *Journal of physics: conference series* (Vol. 1092, 1, p. 012145). IOP Publishing.
- 11 Kolodny, S. A., **Sun, Y.**, Zuev, D. A., Makarov, S. V., Krasnok, A. E., & Belov, P. A. (2016). Optical tuning of near and far fields form hybrid dimer nanoantennas via laser-induced melting. In *Journal of physics: conference series* (Vol. 741, 1, p. 012152). IOP Publishing.
- 12 **Sun, Y.**, Li, Z., Liu, T., Ling, Y., Han, X., & Huang, L. (2015). Silicon-based electro-optical switching based on tunable metasurface. In *Photonics for energy* (JW3A–67). Optical Society of America.