

Principal Investigator (Last, First, Middle):

BIOGRAPHICAL SUMMARY

NAME Gorodetski Yuri		POSITION TITLE Associate Professor	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Technion IIT, Haifa	Bsc	10/2003	Mechanical engineering (optomechanics)
Technion IIT, Haifa	Msc	10/2006	Optical properties of polarization-dependent geometric phase elements with partially polarized light
Technion, IIT, Haifa	PhD	10/2010	Geometric spin-orbit interaction of surface waves
ISIS, Université de Strasbourg	postdoctoral	10/2013	Fundamental properties of surface plasmons

A. Personal Statement (Briefly describe how your experience and qualifies you to undertake the role assigned (e.g., PI, researcher, etc.) in the project proposed in the current application).

My research interests consist of polarization effects in nano-optics, spin-orbit interaction and angular momentum of propagating light and of surface waves. I did a research on geometric Berry phases in optics, investigated optical effects induced by an interaction of light with space-variant subwavelength gratings and explored surface-plasmon polariton (SPP) based spin-orbit interaction on spatially inhomogeneous surface corrugations. The effects, such as the plasmonic angular Doppler effect, Aharonov-Bohm effect and the optical spin-Hall effect were experimentally and theoretically studied and reported in over 15 publications. I gained a wide experience working with near-field optical microscopy, focused ion beam, scanning electron microscopy etc. During my career I have learned sophisticated nanofabrication and nano-characterization techniques, which will be implemented in my future research. Recently with a help of my group members I have investigated various novel effects of light-matter interaction with chiral metasurfaces. We design, model, fabricate and test sophisticated geometries of nanoscale gratings enabling us to control the light in the nanoscale with unprecedented precision and in ways that were not possible before. I supervise 6 PhD and Master students that work in a tight collaboration on the research projects in the Lab.

B. Positions and Honors (List in chronological order previous positions, concluding with the present position. List any honors)

Positions and Employment

2020-current	Associate Professor	Ariel University
2014-2020	Senior Lecturer	Ariel University

Principal Investigator (Last, First, Middle):

2013-2014	Senior Lecturer	Academic College Ort Braude, Karmiel
2010-2013	Postdoc fellow	ISIS, Université de Strasbourg

Public Professional Activities

Reviewer for journals: Optics Express, Applied Physics Letters, Optics Letters, Plasmonics, Scientific Reports, etc.

Honors

2017	The award for excellence in teaching (AU)
2007-2010	Levi Eshkol excellence scholarship
2007	Russell Berrie scholarship for nano science research
2007	Applied Materials prize for excellence in graduate studies
2007	Aharon & Ovadia Barazani fund prize for the best M.Sc. thesis
2004	Creativity contest in science and technology winning
2004	Faculty prize for the best graduate project

Teaching

- **As a Lecturer in Ariel University:**

Electromagnetic Fields, Mechatronics Lab, Optics, Optics for engineers, Measurement Lab, Statics

- **As a Lecturer at Ort Braude:**

Geometrical Optics, Physical Optics, Optics Lab, Physics 2

- **As a TA in the Technion:**

Optics, Introduction to Mechatronics, Introduction to Sensors, Electric Drive, Nano optics, Linear Optics I, II

Other Teaching Experience

2000-2010	Youth center, Technion - Teacher and lab instructor. Development of teaching materials and teaching in physics and robotics for school students organized groups. Tuition of group activities
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Principal Investigator (Last, First, Middle):

- 2002 **e-Teacher** – School physics teacher
- 2001-2002 **School of Practical Engineering** - Teaching Assistant in Mechanics.
- 2000 **Technion** – Basic physics teacher for enrollees.

C. Selected Peer-reviewed Publications *(List selected peer-reviewed publications or manuscripts in press. Mark the 5 most relevant articles for the research proposal).*

1. M. Fox, **Y. Gorodetski**, Generalized approach to plasmonic phase modulation in topological bi-gratings, *Appl. Phys. Lett.*, **120**, 031105 (2022)
2. E. D. Epstein, L. Singh, M. Fox, S. Sternklar, Y. Gorodetski, Topological dislocations for plasmonic mode localization, *ACS Appl. Nano Mater.* **4**, 1202-1208 (2021).
3. L. Singh, E. D. Epstein, D. Cheskis, S. Sternklar, and **Y. Gorodetski**, Experimental investigation of Kramers–Kronig relations in chiral metasurfaces with reduced rotational symmetry, *Journal of Optics*, **22**, 12LT01 (2021).
4. E. D. Epstein, L. Singh, S. Sternklar, and **Y. Gorodetski**, The role of plasmonic excitations in the optical activity of periodic structures with configurational chirality, *Appl. Phys. Lett.* **116**, 131106 (2020).
5. K. Liu, N. Maccaferri, Y. Shen, X. Li, R. P. Zaccaria, X. Zhang, and **Y. Gorodetski**, D. Garoli, Particle trapping and beaming using a 3D nanotip excited with a plasmonic vortex, *Optics Letters*, **45**, 791-827 (2019).
6. D. Rajesh, S. Nechayev, D. Cheskis, S. Sternklar, and **Y. Gorodetski**, Probing Spin-Orbit Interaction via Fano Interference, *Applied Phys. Lett.* **113**, 261104 (2018) [number of citations: 8, Impact Factor: 3.49].
7. T. Chervy, S. Azzini, E. Lorchat, S. Wang, **Y. Gorodetski**, J. A. Hutchison, S. Berciaud, T. W. Ebbesen, C. Genet, Room Temperature Chiral Coupling of Valley Excitons with Spin-Momentum Locked Surface Plasmons, *ACS Photonics*, **5**, 1281–1287(2018).
8. N. Maccaferri, **Y. Gorodetski**, A. Toma, P. Zilio, F. De Angelis, and D. Garoli, Magnetoplasmonic Control of Plasmonic Vortices, *Appl. Phys. Lett.* **111**, 201104 (2017).
9. D. Garoli, P. Zilio, F. De Angelis and **Y. Gorodetski**, Helicity locking of chiral light emitted from a plasmonic nanotaper, *Nanoscale*, **9**, 6965-6969 (2017).
10. D. Garoli, P. Zilio, **Y. Gorodetski**, F. Tantussi, and F. De Angelis, Beaming of Helical Light from Plasmonic Vortices via Adiabatically Tapered Nanotip, *Nano Lett.* **16**, 6636 (2016).
11. **Y. Gorodetski**, C. Genet, and T. W. Ebbesen, Ultra-thin Plasmonic Chiral Phase Plate, *Opt. Lett.* **41**, 4390 (2016).
12. D. Garoli, P. Zilio, **Y. Gorodetski**, F. Tantussi, F. De Angelis, Optical vortex beam generator at nanoscale level, *Sci. Rep.* **6**, 29547 (2016).
13. **Y. Gorodetski**, T. Chervy, S. Wang, J. A. Hutchison, Drezet, C. Genet, and T. W. Ebbesen, Tracking surface plasmon pulses using ultrafast leakage imaging, *Optica*, **3**, 48 (2015).
14. **Y. Gorodetski**, A. Drezet, C. Genet, and T. W. Ebbesen, Generating far-field orbital angular Momenta from near filed optical chirality, *Phys. Rev. Lett.* **110**, 203906 (2013); (synopsis published).
15. E. Hasman, V. Kleiner, N. Dahan, **Y. Gorodetski**, K. Frischwasser, I. Balin, Manipulation of Thermal Emission by Use of Micro and Nanoscale Structures. *J. Heat Transfer.* **134**, 031023 (2012).
16. **Y. Gorodetski**, K. Y. Bliokh, B. Stein, C. Genet, N. Shitrit, V. Kleiner, E. Hasman, and T. W. Ebbesen, Weak Measurements of Light Chirality with a Plasmonic Slit, *Phys. Rev. Lett.* **109**, 013901 (2012); (synopsis published).
17. N. Shitrit, I. Bretner, **Y. Gorodetski**, V. Kleiner, and E. Hasman, Optical Spin Hall Effects in Plasmonic Chains, *Nano Lett.* **11**, 2068 (2011).

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18. N. Dahan, **Y. Gorodetski**, K. Frischwasser, V. Kleiner and E. Hasman, Geometric Doppler Effect: Spin-Split Dispersion of Thermal Radiation, *Phys. Rev. Lett.*, **105**, 136402 (2010).
19. **Y. Gorodetski**, S. Nechayev, V. Kleiner and E. Hasman, Plasmonic Aharonov-Bohm effect: Optical spin as the magnetic flux parameter, *Phys. Rev. B*, **82**, 125433 (2010).
20. **Y. Gorodetski**, N. Shitrit, I. Bretner, V. Kleiner, and E. Hasman, Observation of Optical Spin Symmetry Breaking in Nanoapertures, *Nano Lett.* **9**, 3016(2009).
21. K. Y. Bliokh, **Y. Gorodetski**, V. Kleiner, and E. Hasman, Coriolis Effect in Optics: Unified Geometric Phase and Spin-Hall Effect, *Phys. Rev. Lett.* **101**, 030404 (2008).
22. **Y. Gorodetski**, A. Niv, V. Kleiner, and E. Hasman, Observation of the Spin-Based Plasmonic Effect in Nanoscale Structures, *Phys. Rev. Lett.* **101**, 043903 (2008).
23. A. Niv, **Y. Gorodetski**, V. Kleiner, and E. Hasman, Topological spin-orbit interaction of light in anisotropic inhomogeneous subwavelength structures, *Opt. Lett.* **33**, 2910 (2008).
24. N. Dahan, A. Niv, G. Biener, **Y. Gorodetski**, V. Kleiner, and E. Hasman, Enhanced coherency of thermal emission: Beyond the limitation imposed by delocalized surface waves, *Phys. Rev. B* **76**, 045427 (2007).
25. **Y. Gorodetski**, G. Biener, A. Niv, V. Kleiner and E. Hasman, Optical properties of polarization-dependent geometric phase elements with partially polarized light, *Opt. Commun.*, **266**, 365(2006).
26. **Y. Gorodetski**, G. Biener, A. Niv, V. Kleiner and E. Hasman, Space-variant polarization manipulation for far-field polarimetry by use of subwavelength dielectric gratings, *Opt. Lett.* **30**, 2245 (2005).

D. Research Support (*List selected ongoing and completed research projects in the past three years in order of relevance to the research proposed in the application*)

- 2021-2022 – Joint research grant Holon Institute of Technology and Ariel University Total amount for AU part of 17,500NIS
- 2019-2020 – Joint research grant Holon Institute of Technology and Ariel University Total amount for AU part of 20,000NIS
- 2019-2022 – Israel Ministry of Science Technology and Space, Applied Science and Engineering Grant, "Polarization dependent functional nanophotonics". Total amount of 600,000NIS
- 2017-2020 - Israel Ministry of Science Technology and Space and CNRS, "Investigation of ultra-compact chiral plasmonic structures"
Total amount of 68,850NIS
- 2016-2019 – Israel Ministry of Science Technology and Space, Applied Science and Engineering Grant, "Time-resolved Leakage Radiation Microscopy for Investigation of Ultra-fast Plasmonic Phenomena".
Total amount of 609,000 NIS