

# Ilia L. Rasskazov

theorist experienced in optics, photonics and light-matter interactions

- 31 peer-reviewed papers
- H-index: 12
- OSA, ACS member



## Appointments

07/2021 - current	<i>Scientist</i> The Institute of Optics, University of Rochester, NY, USA
07/2018 - 07/2021	<i>Postdoctoral Associate</i> The Institute of Optics, University of Rochester, NY, USA
07/2016 - 07/2018	<i>Postdoctoral Associate</i> Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, IL, USA
01/2014 - 07/2016	<i>Research Associate</i> Siberian Federal University, Russia
12/2012 - 03/2013	<i>Visiting Scientist</i> University of Pennsylvania, PA, USA
01/2010 - 12/2011	<i>Laboratory Assistant</i> Siberian Federal University, Russia



## Education

2011 - 2015	<i>PhD in Physics</i> , Siberian Federal University, Russia
2009 - 2011	<i>MS Engineering majoring in Physics</i> , Siberian Federal University, Russia
2005 - 2009	<i>BS Engineering majoring in Physics</i> , Siberian Federal University, Russia



## Projects

2020 - 2021	<b>NSF SBIR</b> project #201481 “Advanced Manufacturing of Photonic Smart Coatings for Utility-Scale PV Applications”
2016 - 2017	<b>IARPA</b> -supported project #IARPA-BAA-15-07 “Standoff Illuminator for Measuring Absorbance and Reflectance Infrared Light Signatures (SILMARILS)”
2012 - 2013	Collaborator at <b>NSF</b> -supported project #1216970 “Computational Framework for Non-asymptotic Homogenization with Applications to Metamaterials”



## Invited Talks

07/28/2020	“Collective lattice resonances: Plasmonics, all-dielectric photonics and beyond”, Skolkovo Institute of Science and Technology, Russia
07/07/2020	“Light scattering from multilayered spheres”, ITMO University, Russia (METANANO School)
05/29/2019	“Electromagnetic light scattering from particles”, KTH Royal Institute of Technology, Sweden
05/22/2019	“Plasmon-enhanced upconversion”, KTH Royal Institute of Technology, Sweden



## Synergistic Activities

mentor	<a href="#">The Science Mentors</a> program supporting junior scholars
scientific expert	French National Research Agency (ANR), Generic Call 2019
developer	<a href="#">STRATIFY</a> : Open-access MATLAB software for versatile modeling of light scattering from multilayered spheres

## Contact



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[Symmetry](#)

## Reviewed for

(99 in total): ACS Appl Energy Mater; ACS Appl Mater Inter; Appl Optics; Appl Sci; Atmosphere; Chemometr Intell Lab; Coatings; Eur Phys J Plus; Front Phys; J Appl Phys; J Eur Opt Soc-Rapid; J Opt; J Opt Soc Am A/B; J Phys Chem C; J Phys D Appl Phys; J Quant Spectrosc Ra; Materials; Methods Appl Fluores; Opt Express; Opt Lett; Opt Mater Express; OSA Contin; Photonics, Photonics Res; Physica E; Rev Phys; Sci Rep; Sensors; Sustainability, Symmetry



## Peer-reviewed journal papers

2021

- 35 W. Xu, [I. L. Rasskazov](#), H. Liu, Y. Ji, J. Hu, D. Zhou, H. Ågren and B. Dong, “[Photonic crystal photoelectric devices based on perovskite materials](#)”, Submitted (2021).
- 34 R. Gaponenko, A. Moroz, [I. L. Rasskazov](#), K. Ladutenko, A. Shcherbakov and P. Belov, “[Supredirective dielectric spherical multilayer antennas](#)”, Submitted (2021).
- 33 L. Wang, [I. L. Rasskazov](#) and P. S. Carney “[Clustering diffused-particle method for scattering from large ensembles of electromagnetically polarizable particles](#)”, Submitted (2021).
- 32 L. Wang, [I. L. Rasskazov](#) and P. S. Carney “[Clausius-Mossotti relation revisited: Media with electric and magnetic response](#)”, Submitted (2021).
- 31 [I. L. Rasskazov](#), A. Moroz and P. S. Carney, “[Extraordinary fluorescence enhancement in metal-dielectric core-shell nanoparticles](#)” *J. Phys. Chem. Lett.*, Accepted (2021). [[to be featured on Journal Cover](#)]
- 30 A. S. Kostyukov, A. E. Ershov, R. G. Bikbaev, V. S. Gerasimov, [I. L. Rasskazov](#), S. V. Karpov and S. P. Polyutov, “[Substrate-mediated lattice Kerker effect in Al metasurfaces](#)” *J. Opt. Soc. Am. B*, Accepted (2021). [[Belonged to the Feature Issue](#)]
- 29 A. S. Kostyukov, [I. L. Rasskazov](#), V. S. Gerasimov, S. P. Polyutov, S. V. Karpov and A. E. Ershov, “[Multipolar lattice resonances in plasmonic finite-size metasurfaces](#)” *Photonics* **8**(4), 109 (2021).
- 28 A. D. Utyushev, V. I. Zakomirnyi and [I. L. Rasskazov](#), “[Collective lattice resonances: Plasmonics and beyond](#)”, *Reviews in Physics* **6**, 100051 (2021).
- 27 [I. L. Rasskazov](#), V. I. Zakomirnyi, A. D. Utyushev, P. S. Carney and A. Moroz, “[Remarkable predictive power of the modified long wavelength approximation](#)” *J. Phys. Chem. C* **125**(3), 1963-1971 (2021).
- 26 V. S. Gerasimov, A. E. Ershov, R. G. Bikbaev, [I. L. Rasskazov](#), I. L. Isaev, P. N. Semina, A. S. Kostyukov, V. I. Zakomirnyi, S. P. Polyutov and S. V. Karpov “[Plasmonic lattice Kerker effect in ultraviolet-visible spectral range](#)” *Phys. Rev. B* **103**, 035402 (2021).
- 25 [I. L. Rasskazov](#), P. S. Carney and A. Moroz, “[STRATIFY: a comprehensive and versatile MATLAB code for a multilayered sphere](#)”, *OSA Continuum* **3**(8), 2290-2309 (2020). [[Belonged to top Downloads from Aug, Nov 2020](#)]
- 24 [I. L. Rasskazov](#), P. S. Carney and A. Moroz, “[Intriguing branching of the maximum position of the absorption cross section in Mie theory explained](#)”, *Opt. Lett.* **45**(14), 4056-4059 (2020).
- 23 V. I. Zakomirnyi, [I. L. Rasskazov](#), L. K. Sørensen, P. S. Carney, Z. Rinkevicius and H. Ågren, “[Plasmonic nano-shells: atomistic discrete interaction versus classic electrodynamics models](#)”, *Phys. Chem. Chem. Phys.* **22**(24), 13467-13473 (2020). [[Belonged to 2020 PCCP HOT articles](#)]
- 22 S. Sun, [I. L. Rasskazov](#), P. S. Carney, T. Zhang and A. Moroz, “[Critical role of shell in enhanced fluorescence of metal-dielectric core-shell nanoparticles](#)”, *J. Phys. Chem. C* **124**(24), 13365-13373 (2020).
- 21 A. D. Utyushev, V. I. Zakomirnyi, A. E. Ershov, V. S. Gerasimov, S. V. Karpov and [I. L. Rasskazov](#), “[Collective lattice resonances in all-dielectric nanostructures under oblique incidence](#)”, *Photonics* **7**(2), 24 (2020).
- 20 A. D. Utyushev, I. L. Isaev, V. S. Gerasimov, A. E. Ershov, V. I. Zakomirnyi, [I. L. Rasskazov](#), S. P. Polyutov, H. Ågren and S. V. Karpov, “[Engineering novel tunable optical high-Q nanoparticle array filters for a wide range of wavelengths](#)”, *Opt. Express* **28**(2), 1426-1438 (2020).
- 19 V. I. Zakomirnyi, A. E. Ershov, V. S. Gerasimov, S. V. Karpov, H. Ågren and [I. L. Rasskazov](#), “[Collective lattice resonances in arrays of dielectric nanoparticles: a matter of size](#)”, *Opt. Lett.* **44**(23), 5743-5746 (2019).
- 18 A. S. Kostyukov, A. E. Ershov, V. S. Gerasimov, S. A. Filimonov, [I. L. Rasskazov](#) and S. V. Karpov, “[Super-efficient laser hyperthermia of malignant cells with core-shell nanoparticles based on alternative plasmonic materials](#)”, *J. Quant. Spectrosc. Radiat. Transf.* **236**, 106599 (2019).
- 17 [I. L. Rasskazov](#), A. Moroz and P. S. Carney, “[Electromagnetic energy in multilayered spherical particles](#)”, *J. Opt. Soc. Am. A* **36**(9), 1591-1601 (2019).
- 16 [I. L. Rasskazov](#), R. Singh, P. S. Carney, R. Bhargava, “[Extended multiplicative signal correction for infrared microspectroscopy of heterogeneous samples with cylindrical domains](#)”, *App. Spec.* **73**(8), 859-869 (2019). [[Editor's Choice](#)]

2020

2019

- 2019
- 15 V. I. Zakomirnyi, S. V. Karpov, H. Ågren and I. L. Rasskazov, “Collective lattice resonances in disordered and quasi-random all-dielectric metasurfaces”, *J. Opt. Soc. Am. B* **36**(7), E21-E29 (2019). [Belonged to the Feature Issue]
- 2018
- 14 V. S. Gerasimov, A. E. Ershov, R. G. Bikbaev, I. L. Rasskazov, I. V. Timofeev, S. P. Polyutov and S. V. Karpov, “Engineering mode hybridization in regular arrays of plasmonic nanoparticles embedded in 1D photonic crystal”, *J. Quant. Spectrosc. Radiat. Transf.* **224**, 303-308 (2019).
- 13 I. L. Rasskazov, L. Wang, C. J. Murphy, R. Bhargava and P. S. Carney, “Plasmon-enhanced upconversion: engineering enhancement and quenching at nano and macro scales”, *Opt. Mater. Express* **8**(12), 3787-3804 (2018). [Belonged to top Downloads from November 2018]
- 12 V. I. Zakomirnyi, I. L. Rasskazov, V. S. Gerasimov, A. E. Ershov, S. P. Polyutov, S. V. Karpov and H. Ågren, “Titanium nitride nanoparticles as an alternative platform for plasmonic waveguides in the visible and telecommunication wavelength ranges”, *Photonic Nanostruct.* **30**, 50-56 (2018). [Invited]
- 11 I. L. Rasskazov, N. Spagazzini, P. S. Carney and R. Bhargava, “Dielectric sphere clusters as a model to understand infrared spectroscopic imaging data recorded from complex samples”, *Anal. Chem.* **89**(20), 10813-10818 (2017).
- 2017
- 10 V. I. Zakomirnyi, I. L. Rasskazov, V. S. Gerasimov, A. E. Ershov, S. P. Polyutov and S. V. Karpov, “Refractory titanium nitride two-dimensional structures with extremely narrow surface lattice resonances at telecommunication wavelengths”, *Appl. Phys. Lett.* **111**(12), 123107 (2017).
- 9 V. S. Gerasimov, A. E. Ershov, S. V. Karpov, A. P. Gavrilyuk, V. I. Zakomirnyi, I. L. Rasskazov, H. Ågren and S. P. Polyutov, “Thermal effects in systems of colloidal plasmonic nanoparticles in high-intensity pulsed laser fields”, *Opt. Mater. Express* **7**(2), 555-568 (2017). [invited] [Belonged to the Feature Issue]
- 8 A. E. Ershov, V. S. Gerasimov, A. P. Gavrilyuk, S. V. Karpov, V. I. Zakomirnyi, I. L. Rasskazov and S. P. Polyutov, “Thermal limiting effects in optical plasmonic waveguides”, *J. Quant. Spectrosc. Radiat. Transf.* **191**, 1-6 (2017).
- 7 V. I. Zakomirnyi, I. L. Rasskazov, S. V. Karpov and S. P. Polyutov, “New ideally absorbing Au plasmonic nanostructures for biomedical applications”, *J. Quant. Spectrosc. Radiat. Transf.* **187**, 54-61 (2017).
- 2016
- 6 I. L. Rasskazov, S. V. Karpov, G. Y. Panasyuk and V. A. Markel, “Overcoming the adverse effects of substrate on the waveguiding properties of plasmonic nanoparticle chains”, *J. Appl. Phys.* **119**(4), 043101 (2016).
- 2014
- 5 I. L. Rasskazov, S. V. Karpov and V. A. Markel, “Waveguiding properties of short linear chains of nonspherical metal nanoparticles”, *J. Opt. Soc. Am. B* **31**(12), 2981-2989 (2014).
- 4 I. L. Rasskazov, S. V. Karpov and V. A. Markel, “Surface plasmon polaritons in curved chains of metal nanoparticles”, *Phys. Rev. B* **90**(7), 075405 (2014).
- 2013
- 3 I. L. Rasskazov, S. V. Karpov and V. A. Markel, “Nondecaying surface plasmon polaritons in linear chains of silver nanospheroids”, *Opt. Lett.* **38**(22), 4743-4746 (2013).
- 2 I. L. Rasskazov, V. A. Markel and S. V. Karpov, “Transmission and spectral properties of short optical plasmon waveguides”, *Opt. Spectrosc.* **115**(5), 666-674 (2013).
- 1 S. V. Karpov and I. L. Rasskazov, “Simulation of conditions for fabrication of optical nanowaveguides in the form of chains of spherical metal nanoparticles by electrostatic functionalization of the process substrate”, *Colloid J.* **75**(3), 279-288 (2013).