

TYMISH Y. OHULCHANSKY

(a.k.a. Ohulchansky, Ohulchanskyy, Ogul'chansky, Ogulchanski)

ADDRESS AND CONTACT INFORMATION:

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ONLINE IDENTIFIERS:

Google Scholar profile: [https://scholar.google.com/citations?user= VHlpGUAAAAJ&hl=en](https://scholar.google.com/citations?user=VHlpGUAAAAJ&hl=en)
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EDUCATION:

1984-1991: Faculty of Physics, Taras Shevchenko National University of Kyiv, Ukraine. **BS/MS** in *Physics*.
1996-2001: Taras Shevchenko National University of Kyiv, Kyiv, Ukraine. **PhD** (*Optics and Laser Physics*).
2001-2004: Institute for Lasers, Photonics and Biophotonics, University at Buffalo, Buffalo, NY, USA. Postdoctoral (*Biophotonics*).

APPOINTMENTS (*in reverse chronological order*):

2026-present: Research Associate Professor, Institute for Lasers, Photonics and Biophotonics and Department of Chemistry, University at Buffalo, Buffalo, NY, USA.

2021-present: Adjunct Research Professor, Department of Chemical and Biological Engineering, University at Buffalo, Buffalo, NY, USA.

2016-2026: Distinguished Professor, College of Physics and Optoelectronic Engineering, Shenzhen University, Shenzhen, Guangdong, China.

2016-2020: Research Associate Professor, Institute for Lasers, Photonics and Biophotonics, University at Buffalo, Buffalo, NY, USA.

2013-2016: Research Associate Professor, Institute for Lasers, Photonics and Biophotonics, and Department of Chemistry, University at Buffalo, Buffalo, NY, USA.

2008-2016: Deputy Director for Photomedicine, Institute for Lasers, Photonics and Biophotonics, University at Buffalo, Buffalo, NY, USA.

2008-2013: Research Assistant Professor, Institute for Lasers, Photonics and Biophotonics, University at Buffalo, Buffalo, NY, USA.

2004-2008: Research Scientist, Institute for Lasers, Photonics and Biophotonics, University at Buffalo, Buffalo, NY, USA.

2001-2004: Postdoctoral Research Associate, Institute for Lasers, Photonics and Biophotonics, University at Buffalo, Buffalo, NY, USA.

1996-2001: Senior Engineer and Teaching Assistant, Experimental Physics Department, Faculty of Physics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine.

1991-1996: Engineer and Teaching Assistant, Experimental Physics Department, Faculty of Physics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine.

HONORS AND AWARDS:

2024 *SPIE Senior Member*

2009 *Western New York (WNY) Inventor of the Year Award*

2005 *Licensed Innovation Award* from Research Foundation of State University of New York

2004 *Visionary Innovator Award* from the Office of Science, Technology Transfer and Economic Outreach (STOR) at the University at Buffalo

RESEARCH AREA AND MAJOR ACHIVEMENTS:

Area of research is based on knowledge and experience in:

- i) Photophysics and photochemistry of organic molecules;
- ii) Design/development of organic, metal, ceramic, semiconductor and hybrid nanostructures;
- iii) Biophotonics and phototheranostics;
- iv) Advanced optical spectroscopy/microscopy/imaging in biomedical and materials science applications.

Current research

- ❖ Advanced optical spectroscopy and imaging for biomedical and materials science applications;
 - Hyperspectral and time resolved optical imaging in near and short-wave (NIR-SWIR) spectral regions.
- ❖ Nanomaterials for biophotonics and photonics;
 - NIR-SWIR photoluminescence imaging nanoprobe and NIR photoluminescence/medical imaging guided drug nanocarriers for photoinduced/multimodal/synergistic theranostics of cancer and other diseases.
- ❖ Photonic approaches to detection, imaging and therapy of cancer and other diseases;
 - Mechanisms and therapeutic applications of NIR-SWIR photobiomodulation.

Major research results

- A novel approach on encapsulation of photodynamic therapy (PDT) drugs in nanoparticles has been introduced, multiple nanoformulations of PDT drugs have been developed.
- Novel approach in PDT has been developed that exploits nonlinear optical interactions of near-infrared laser radiation with native constituents of a biological medium.
- Optical bioimaging approach, which employs NIR-to-NIR upconversion photoluminescence of rare-earth ions doped fluoride nanocrystals as bioimaging probes, has been pioneered.
- Multiple rare-earth ions doped nanomaterials have been designed and introduced as light energy up-and down-converters for biomedical applications.
- Multifunctional biocompatible phototheranostic nanoplateforms targeting cancer and other pathological conditions have been developed, including silica-based nanoparticles, core-thermoresponsive shell polymeric nanoparticles, nanoliposomes and protein nanocrystals.
- Magnetophoretically controllable nanoformulations combining magnetic and optically active counterparts have been engineered and employed in biomedical applications.
- An effect of photobiomodulation (PBM) at various light wavelengths and doses on multiple cell types and models in vitro and in vivo was studied with focus on cancer and Alzheimer's disease models.

RESEARCH SUPPORT:

Completed research support:

“Leveraging phototheranostics and photobiomodulation in brain disease diagnosis and treatment”, Foreign scholar research grant project awarded by National Natural Science Foundation of China (NSFC) for 2025-2026 (grant W2431056, \$224,150), **PI**.

“Dynamic imaging of short wave infrared photoluminescence lifetimes from lanthanide doped nanoparticles sensing microenvironment in biomedical applications”, Joint Polish-Chinese project awarded by National Science Centre of Poland (NCN) and NSFC for 2024-2026 (grant 62361136586 for Chinese team, ~\$210,140, **PI**).

“Deep-depth High-resolution Multimodal Optical Microscope”, grant D2404003 awarded by Shenzhen Medical Research Special Fund for 2025-2027, \$832,000, **Co-I**.

“Visualized Stem Cell Targeted Tumor Technology for Precision Diagnosis and Treatment of Cancer” grant JCYJ20170818090620324 awarded by Shenzhen Science and Technology Innovation Committee (Shenzhen Basic Project) for 2019-2022 (extended for 2023), ~\$300,000, **PI**.

“Nanocarriers for cancer phototherapy guided by multimodal optically-based imaging in near- and short wave infrared regions”, grant 61875135 awarded by National Natural Science Foundation of China for 2019-2022, ~\$95,000, **PI**.

“Concurrent Photon Upconversion and Cutting in Lanthanide Doped Nanoparticles for Biomedical Applications”, Joint Polish-Chinese project awarded by National Science Centre of Poland and National Natural Science Foundation of China (grant 61961136005) for 2019-2022, ~\$200,000 for Chinese side, **Co-I**.

“Development of a multi-scale imaging system for dynamic visualization of the transport of nanodrugs in living small animals”, Major Scientific Research Instrument Development project, 81727804, awarded by the National Natural Science Foundation of China to the multi-institutional team for 2018-2022 (\$370,000 is the Shenzhen University's part of \$1,237,000 total funding, **Co-I**).

“Major Research Instrumentation: Development of an Instrument for Quantitative Characterization of Behavior of Magnetic Particles and Magnetically-Labeled Biomaterials in Emerging Applications”, awarded by National Science Foundation (NSF) for 2013-2017 (\$535,315). **Co-PI**.

“Potentiometric photoacoustic imaging of brain activity enabled by near infrared to visible light converting nanoparticles”, awarded by NIH (1R21EY026411) for 2015–2017, \$294,603, **Co-I**.

“Nanomaterials Enabled Functional Imaging and Optogenetics for Real-Time Mapping and Stimulation of Brain Activity”, “Big Idea” grant awarded by SUNY Brain Network of Excellence for 2015-2016 (\$450,000), **Co-I**.

“Multifunctional Nanoparticles in Diagnosis and Therapy of Pancreatic Cancer”, NIH (R01), 2005-2010, **Co-I**.

“Novel Cancer Nanotechnology Platforms for Photodynamic Therapy and Imaging”, NIH (R01), 2005-2010, **Co-I**.

“Developing new advances in medical Imaging through nanotechnology”, John R. Oishei Foundation, 2005-2008, **Co-I**.

PATENTS AND PATENT APPLICATIONS:

- 1) Qu, J.; Xu, H.; Huang, Y.; **Ohulchanskyy**, T. Y. Therapy method based on photodynamic therapy system, and photodynamic therapy system, 2020.08.28, International patent application, PCT/CN2020/112029.
- 2) Prasad, P. N.; Pliss, A.M.; Kachynski, A.V.; **Ohulchanskyy**, T. Y.; Kuzmin, A.N. Photodynamic therapy using in situ nonlinear photon upconversion of nir light by biological medium, 2017.02.23, US patent application, US20170050045A1.
- 3) Prasad, P. N.; **Ohulchanskyy**, T. Y.; Chen, G.; Jee, H. Core-shell nanoparticles, methods of making same,

and uses of same, 2016.07.14, US patent application, US20160202606A1.

- 4) Prasad, P. N.; **Ohulchanskyy**, T. Y.; Chen, G.; Jee, H. Core-shell nanoparticles, methods of making same, and uses of same, 2016.07.13, European patent application, EP3041794A1.
- 5) Prasad, P. N.; **Ohulchanskyy**, T. Y.; Chen, G.; Jee, H. Core-shell nanoparticles, methods of making same, and uses of same, 2016.07.13, China patent application, CN105764854A.
- 6) Prasad, P. N.; **Ohulchanskyy**, T. Y.; Chen, G.; Jee, H. Core-shell nanoparticles, methods of making same, and uses of same, 2016.07.14, International patent application, 2016.05.28, WO2015076897A1.
- 7) Prasad, P. N.; Pliss, A.M.; Kachynski, A.V.; **Ohulchanskyy**, T. Y.; Kuzmin, A.N. Photodynamic therapy using in situ nonlinear photon upconversion of nir light by biological medium, 2015.11.05, International patent application, WO2015168080A1.
- 8) P. N. Prasad, I. Roy, E. J. Bergey, **T. Y. Ohulchanskyy**, H. E. Pudavar, A. R. Oseroff, R. K. Pandey, J. Morgan. Ceramic based nanoparticles for entrapping therapeutic Agents for Photodynamic Therapy and Method of Using Same. 2008.04.29, United States Patent, 7,364,754, licensed to NanoBiotix (France).
- 9) R. Pandey, L. Goswami, A.Oseroff, J.Morgan, P. Prasad, E. Bergey, **T. Ohulchanskyy**, I.Roy. Organically modified silica nanoparticles with covalently incorporated photosensitizers for drug delivery in photodynamic therapy. 2009.09.03, International patent application, WO2009038659A3.
- 10) P. N. Prasad, S.Kim, **T. Y. Ohulchanskyy**, R.K. Pandey. Nanoparticles for two-photon activated photodynamic therapy and imaging, 2008.09.25, US patent application, US20080233051.
- 11) P. N. Prasad, H. E. Pudavar, K. Baba, I. Roy, **T.Y. Ohulchanskyy**, R. K. Pandey, A. Oseroff. Method for delivering hydrophobic drugs via nanocrystal formulations, 2008.09.04, International patent application, WO2008048205.
- 12) P. N. Prasad, K. Baba, H. E. Pudavar, I. Roy, **T.Y. Ohulchanskyy**, H. Nakanishi, A. Masuhara, H. Kasai, Method of bioimaging using nanocrystals of fluorescent dyes, 2008.05.08, International patent application, WO2008054341A2.
- 13) P. N. Prasad, S.Kim, **T.Y. Ohulchanskyy**, R.K. Pandey. Nanoparticules pour thérapie photodynamique et imagerie à activation biphotonique, 2008.05.02, International patent application, WO2008030624A3.
- 14) P. N. Prasad, H. E. Pudavar, K. Baba, I. Roy, **T.Y. Ohulchanskyy**, R. K. Pandey, A. Oseroff. Method for delivering hydrophobic drugs via nanocrystal formulations, 2007.06.14, US patent Application, US20070134340A1.
- 15) P. N. Prasad, K. Baba, H. E. Pudavar, I. Roy, **T.Y. Ohulchanskyy**, H. Nakanishi, A. Masuhara, H. Kasai, Method of bioimaging using nanocrystals of fluorescent dyes, 2007.04.19, US patent application, US20070086949A1.
- 16) Prasad, P. N.; Bergey, E. J.; Dutta, P.; Bharali, D.J.; Stachowiak, M.; **Ohulchanskyy**, T.Y.; Klejbor, I.; Roy, I., 2006.10.12, International patent application, WO2006017476.
- 17) Prasad, P. N.; Bergey, E. J.; Dutta, P.; Bharali, D.J.; Stachowiak, M.; **Ohulchanskyy**, T.Y.; Klejbor, I.; Roy, I. Amino functionalized ormosil nanoparticles as delivery vehicles, 2006.04.27, US patent application, US20060088599A1.
- 18) **Ohulchanskyy**, T. Y.; Kuzmin, A.; Prasad, P. N.; Chen, G. Nanoparticles converting light energy from near-infrared to short-wavelength infrared region for photothermal therapy and laser applications. Invention disclosure (SUNY at Buffalo).
- 19) Chen, G.; Prasad, P. N.; Agren, H.; **Ohulchanskyy**, T. Y. Enhancing upconversion through cascade energy transfer in dye-sensitized core/shell nanostructures. Invention disclosure (SUNY at Buffalo).

TEACHING AND MENTORING ACTIVITIES:

2023-2026: Advanced optical nanomaterials for phototheranostics, Short Course of Innovation in Research for undergraduate students, College of Physics and Optoelectronic Engineering, Shenzhen University.

2016-2026: Introduction to Biophotonics, Course for PhD students, College of Physics and Optoelectronic Engineering, Shenzhen University.

2016-2026: Professional English (Course for PhD students), College of Physics and Optoelectronic Engineering, Shenzhen University.

2016-2026: Supervising PhD students in the College of Physics and Optoelectronic Engineering, Shenzhen University: A.Yakovliev (PhD thesis "*Hyperspectral imaging for multiplexing short-wave infrared emitting nanoprobe in biomedical applications*"), R.Ziniuk (PhD thesis "*Time-gated luminescence imaging in near- and shortwave infrared spectral regions with rare-earth doped nanoparticles as contrast agents*"), S.Gao (PhD thesis "*Magnetic field-induced near-infrared phototherapy and plasmon-enhanced fluorescence bioimaging with magnetoplasmonic nanoplatform*"), K.Arshad (PhD thesis title "*Protein nanocrystals for optical imaging guided, synergistically enhanced antimicrobial action*"), and MS students: J.Liu (MS thesis "*Developing microscopy system merging near infrared fluorescence and laser speckle bioimaging and its application for in vivo transcranial monitoring of cerebral blood vessels and their photodynamic damage*").

2020-2022: Advanced optical nanomaterials for biomedical applications, online course on Selected Topics in Biomaterials for MSc students, Faculty of Chemistry, Wroclaw University of Science and Technology.

2015-2016: Course on Introduction to Molecular Imaging: Optical imaging, SUNY at Buffalo.

2008-2013: Substitute lecturer of Biophotonics (Special Topics Graduate Course), SUNY at Buffalo.

2004-2016: Instructor in optical spectroscopy, microscopy and imaging for graduate students at the Institute for Lasers, Photonics and Biophotonics, SUNY at Buffalo.

2004-2016: Mentoring graduate and undergraduate students in research at the Institute for Lasers, Photonics and Biophotonics, SUNY at Buffalo.

1991-2001: Teaching assistant, laboratory courses in General Physics (Electricity and Magnetism, Mechanics, Optics) for undergraduate students in the Faculty of Physics, Taras Shevchenko National University, Kyiv, Ukraine.

1991-2001: Instructor in optical absorption/photoluminescence spectroscopy of organic materials for undergraduate students in the Experimental Physics Department, Taras Shevchenko National University, Kyiv, Ukraine.

SERVICES AND MEMBERSHIP:

Peer reviewer for journals: *Light: Science and Applications*; *Journal of the American Chemical Society*; *Nano Letters*; *ACS Nano*; *Small*; *Nanoscale*; *Advanced Science*; *Chemical Communications*; *Chemistry of Materials*; *Nanomedicine: Nanotechnology, Biology, and Medicine*; *Biomaterials*; *Theranostics*; *Advanced Optical Materials*; *Langmuir*; *Journal of Physical Chemistry*; *Journal of Materials Science*; *Journal of Biophotonics*; *Scientific Reports*; *RSC Advances*; *Photochemistry and Photobiology*; *Photodiagnosis and Photodynamic Therapy*; *Crystal Growth & Design*; *Colloids and Surfaces A: Physicochemical and Engineering Aspects*; *Colloids and Surfaces B: Biointerfaces*; *Optical Materials*; *Optics Express*; *Biomedical Optics Express*; *AIP Advances*; *Chemical Physics Letters*; etc.

Review Editor for *Frontiers in Photonics* (Frontiers), Editorial Board Member: *Photonics* (MDPI), *Current Nanomedicine* (Bentham Science), *PhotoniX Life* (Springer).

External grant reviewer for the Swiss National Science Foundation, Academic Research Fund of Singapore Ministry of Education, National Research Fund of Ukraine.

Member of the Ph.D. Advisory Committees at the Molecular and Cellular Biophysics and Biochemistry Program, Roswell Park Graduate Division, SUNY at Buffalo.

Consultant at Photolitec, LLC (USA); Advanced Cytometry Instrumentation Systems, LLC (USA).

Member of the International Society for Optics and Photonics (SPIE), the American Chemical Society, Materials Research Society, American Society for Photobiology.

PUBLICATIONS

187 peer-reviewed articles, total number of citations is around **21000**, h-index is **65** (according to Google Scholar), including citations in *Science*, *Nature*, *Nature Medicine*, *Nature Chemistry*, *Nature Materials*, *Nature Nanotechnology*, *Nature Photonics*, *Nature Reviews Cancer*, *Nature Reviews Materials*, *Nature Reviews Chemistry*, *Nature Protocols*, etc.

List of publications

1. K. Arshad, I. Golovynska, S. Golovynskyi, J. Qu, T. Y. **Ohulchanskyy**. Integration of Photobiomodulation and Nanomedicine: Recent Advances and Possible Mechanisms for Non-Photoactive Nanoparticles. *PhotonIX Life*, *accepted*.
2. I. Golovynska, B. Li, Q. Chen, S. Golovynskyi, H. Xu, Y. V. Stepanov, L. I. Stepanova, F. Lin, J. Qu, T. Y. **Ohulchanskyy**. Photobiomodulation with 808 nm Laser light repairs mitochondrial integrity and normalizes ROS, ATP, and membrane depolarization in A β -exposed primary neurons in Alzheimer's disease model. *Int. J. Mol. Sci.* 2026, 27, 7834.
3. I. Golovynska, S. Wei, K. Liu, A. Golovynska, Q. Lin, A. U. Haq, S. Golovynskyi, T. Y. **Ohulchanskyy**, J. Qu. Protein corona influences cellular uptake and exocytosis of luminescent nanoparticles at various serum concentrations in culture medium. *J. Nanopart. Res.* 2026, 28, 230.
4. R. Z. A. Bari, I. Golovynska, S. Golovynskyi, J. Liu, Y. V. Stepanov, S. Gao, H. Xu, L. I. Stepanova, L. O. Vretik, T. Y. **Ohulchanskyy***, J. Qu. Human stem cells loaded with visible and near-infrared fluorescent core-shell polymeric nanoparticles and revealing tropism toward inflammatory stimuli: in vitro evaluation, *Stem Cell Research and Therapy* 2025, 17, 28.
5. K. Arshad, M. H. Eisa, M. H. Bhatti, A. Zia, S. Saeed, T. Y. **Ohulchanskyy**, R. Nasir. Electro-Tunable Optical Cavity Filters in the Mid-Infrared Regime: A Polarization-Independent Solution for Hyperspectral Imaging, *Spectrosc. J.* 2025, 3(4), 26.
6. S. Gao, J. Liu, I. Golovynska, Z. Huang, Y. Wang, H. Xie, R. Z. A. Bari, H. Xu, J. Qu, T. Y. **Ohulchanskyy***. Magnetic field-induced plasmonic enhancement of near infrared fluorescence from a magnetoplasmonic nanopatform for bioimaging applications, *J. Nanobiotechnol.* 2025, 23, 616.
7. R. Zhou, X. Lu, X. Zhou, X. Liu, S. Wang, T. Y. **Ohulchanskyy***, D. Yin, J. Qu. Cross-linked protein crystals with an intense nonconventional full-color photoluminescence originating from through-space intermolecular interaction, *Aggregate* 2025, 6, e70070.
8. P. Fałat, A. Chwirot, P. Kuich, M. Nyk, T. Y. **Ohulchanskyy**, B. Bażanów, D. Wawrzyńczyk. VIS-to-UVC Upconversion of Pr³⁺-Doped Fluoride Nano- and Microcrystals for Inactivation of Human Viruses, *Rare Met.* 2025, 44, 4881.
9. O. Chepurna, A. Yakovliev, R. Ziniuk, A. Grebinyk, H. Xu, O. A. Nikolaeva, A. I. Marynin, L. O. Vretik, J. Qu, T. Y. **Ohulchanskyy***. Polymeric nanoparticles with thermoresponsive shell loaded with fluorescent molecules allow for thermally enhanced fluorescence imaging and singlet oxygen generation, *Nanoscale Advances* 2025, 7, 1946.
10. T. Zhou, R. Zhang, T. Y. **Ohulchanskyy***, J. Qu. Monitoring photobiomodulation of Amyloid- β aggregation in 3D cultured cells using label-free nonlinear optical imaging, *Biomed. Opt. Express* 2025, 16, 1143.

11. S. Gao, I. Golovynska, J. Liu, Z. Huang, H. Xu, J. Qu, F. Lin, G. Ostrovska, J. Qu, T.Y. **Ohulchanskyy***. Magnetic field-induced synergistic therapy of cancer using magnetoplasmonic nanoplatform, *Mater.Today Bio* 2025, 30, 101393.
12. R. Zhou, J. Qu, X. Liu, T. Y. **Ohulchanskyy**, D. Yin, Junle Qu. Delivery of biopharmaceutical drugs and phototherapy using protein crystals, *Advanced Drug Delivery Reviews* 2025, 216, 115480.
13. L.O. Vretik, O.M. Chepurna, A.I. Marynin, O.A. Nikolaeva, T.Y. **Ohulchanskyy**. PS@poly(NIPAM-co-AA) core@shell nanoparticles: size control and tuning of LCST, *Molecular Crystals and Liquid Crystals* 2024, 768, 451.
14. A. Grebinyk O. Chepurna, M. Frohme, J. Qu, R. Patil, L.O.Vretik, T. Y. **Ohulchanskyy***. Molecular and nanoparticulate agents for photodynamic therapy guided by near infrared imaging. *J. Photochem. Photobiol. C: Photochemistry reviews* 2024, 58, 100652.
15. J.Liu, H. Xu, S. Gao, L.Liu, J.Qu, T. Y. **Ohulchanskyy***, Combining near infrared fluorescence and laser speckle imaging with optical tissue clearing for in vivo transcranial monitoring of cerebral blood vessels damaged by photodynamic nanoformulation. *Biomed. Opt. Express* 2024, 15 (2), 924.
16. Y. V. Stepanov, I.Golovynska, G. Ostrovska, L. Pylyp, T. Dovbynychuk, L. I. Stepanova, O. Gorbach, V. Shablil, H.Xu, L. V. Garmanchuk, T. Y. **Ohulchanskyy**, J. Qu, G. I. Solyanik. Human mesenchymal stem cells increase LLC metastasis and stimulate or decelerate tumor development depending on injection method and cell amount. *Cytometry A* 2024, 105, 252.
17. H. Xu, Z. Luo, R. Zhang, I. Golovynska, Y. Huang, S. Samanta, T. Zhou, S. Li, B. Guo, L. Liu, X. Weng, J.He, C. Liao, Y. Wang, T. Y. **Ohulchanskyy***, J. Qu. Exploring the effect of photobiomodulation and gamma visual stimulation induced by 808 nm and visible LED in Alzheimer's disease mouse model, *J. Photochem. Photobiol. B: Biology* 2024, 250, 112816.
18. L. O. Vretik, Y. V. Noskov, O. M. Chepurna, N. A. Ogurtsov, O. A. Nikolaeva, A. I. Marynin, T.Y. **Ohulchanskyy**, A.A. Pud. Dual Stimuli-Responsive Ternary Core-Shell Polystyrene@Pnipam-Pedot Latexes, *Part. Part. Syst. Charact.* 2024, 41, 2300096.
19. T. Jia, J. Du, J. Yang, Y. Li, T. Y. **Ohulchanskyy**, X. Fang, G. Chen. Metalloporphyrin MOFs-Based Nanoagent Enabling Tumor Microenvironment Responsive Sonodynamic Therapy of Intracranial Glioma Signaled by NIR-IIb Luminescence Imaging, *Advanced Functional Materials* 2024, 34, 2307816.
20. P. Fałat, M. Y. Tsang, I. Maliszewska, S.J. Zelewski, B. Cichy, T. Y. **Ohulchanskyy**, M. Samoć, M. Nyk, D.Wawrzyńczyk. Enhanced biocidal activity of Pr³⁺ doped yttrium silicates by Tm³⁺ and Yb³⁺ co-doping, *Materials Advances* 2023, 4, 5827.
21. S. Golovynskyi, I.Golovynska, O. Roganova, A. Golovynskyi, J. Qu, T. Y. **Ohulchanskyy***. Hyperspectral imaging of lipids in biological tissues using near-infrared- and shortwave infrared transmission mode: A pilot study, *Journal of Biophotonics* 2023, e202300018.
22. S. Gao, R. Zhou, S. Samanta, J. Qu, T. Y. **Ohulchanskyy***. Recent advances in plasmon-enhanced luminescence for biosensing and bioimaging, *Analytica Chimica Acta* 2023, 1254, 341086.
23. M. Malekzadeh, V. V. Mane, Z. Xuan, T. Y. **Ohulchanskyy**, M. T. Swihart. Laser pyrolysis synthesis of upconverting lanthanide-doped NaYF₄ Nanocrystals for anticounterfeiting applications, *ACS Appl. Nano Mat.* 2023, 6, 3704.
24. R. Zhou, H. Xu, J. Qu, T. Y. **Ohulchanskyy***. Hemoglobin nanocrystals for drug free, synergistic theranostics of colon tumor, *Small* 2023, 19, 2205165. *Selected for the Frontispiece* (<https://doi.org/10.1002/sml.202370048>)

25. M.Y. Tsang, P. Fałat, M. Antoniuk, R. Ziniuk, S. J. Zelewski, M. Samoc, M. Nyk, J. Qu, T. Y. **Ohulchanskyy**,* D. Wawrzynczyk. Pr³⁺ doped NaYF₄ and LiYF₄ nanocrystals combining Visible-to-UVC upconversion and NIR-to-NIR-II downconversion luminescence emissions for biomedical applications, *Nanoscale* 2022, 14, 14770.
26. Y.V. Stepanov, I. Golovynska, R. Zhang, S. Golovynskyi, L. I. Stepanova, O. Gorbach, T. Dovbynchuk, L. V. Garmanchuk, T. Y. **Ohulchanskyy**, J. Qu. Near-infrared light reduces β -amyloid-stimulated microglial toxicity and enhances survival of neurons: Mechanisms of light therapy for Alzheimer's disease. *Alzheimer's Research and Therapy* 2022, 14, 84.
27. R. Zhou, T.Y. **Ohulchanskyy**, Y. Xu, R. Ziniuk, H.Xu, L. Liu, J. Qu. Tumor-Microenvironment-Activated NIR-II Nanotheranostic Platform for Precise Diagnosis and Treatment of Colon Cancer, *ACS Applied Materials & Interfaces* 2022, 14, 23206.
28. Y.V.Stepanov, I. Golovynska, S. Golovynskyi, L. V. Garmanchuk, O. Gorbach, L. I.Stepanova, N. Khranovska, L. I. Ostapchenko, T. Y.**Ohulchanskyy**,* J.Qu*. Red and near infrared light-stimulated angiogenesis mediated via Ca²⁺ influx, VEGF production and NO synthesis in endothelial cells in macrophage or malignant environments, *J. Photochem. Photobiol. B: Biology* 2022, 227, 112388.
29. Y. V. Stepanov, I. Golovynska, N. V. Dziubenko, H. M. Kuznietsova, N. Petriv, I. Skrypkinska, S. Golovynskyi, L. I. Stepanova, Y. Stohnii, L. V. Garmanchuk, L. I. Ostapchenko, T. Yevsa, J. Qu, T. Y. **Ohulchanskyy***. NMDA receptor expression during cell transformation process at early stages of liver cancer in rodent models, *American Journal of Physiology-Gastrointestinal and Liver Physiology* 2022, 322, G142.
30. C. Saenz, M. Ethirajan, E. C Tracy, M.J. Bowman, J. Cacaccio, T.Y. **Ohulchanskyy**, H. Baumann, R. K. Pandey. Charged groups on pyropheophorbide-based photosensitizers dictate uptake by tumor cells and photodynamic therapy efficacy, *J. Photochem. Photobiol. B: Biology* 2022, 227, 112375.
31. T. Zhou, T. Y. **Ohulchanskyy***, J. Qu. Effect of NIR light on the permeability of the blood-brain barriers in in vitro models, *Biomed. Opt. Express* 2021, 12, 7544.
32. I. Golovynska, Y.V. Stepanov, S. Golovynskyi, T. Zhou, L.I. Stepanova, L.V. Garmanchuk, T.Y. **Ohulchanskyy***, J. Qu. Macrophages modulated by red/NIR light: phagocytosis, cytokines, mitochondrial activity, Ca²⁺ influx, membrane depolarization and viability, *Photochemistry and Photobiology* 2021, 98, 484.
33. R. Zhou, T. Y. **Ohulchanskyy***, H. Xu, R. Ziniuk, J. Qu. Catalase nanocrystals loaded with methylene blue as oxygen self-supplied, imaging guided platform for photodynamic therapy of hypoxic tumors, *Small* 2021, 17 (41), 2103569. Selected for the Back Cover (<https://doi.org/10.1002/smll.202170216>)
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- T.Y.**Ohulchanskyy**, I.Roy, I., R. Pandey, L. Goswami, E. Bergey, J. Morgan, P. N. Prasad, A. Oseroff, Novel Cancer Nanotechnology Platforms for Photodynamic Therapy and Imaging: Organically Modified Silica (ORMOSIL) Nanoparticles for Delivery Photosensitizers for Photodynamic Therapy (PDT) and Tumor Imaging, NCI Alliance for Nanotechnology in Cancer Investigators Meeting, San-Diego, CA, Oct.24-26, 2006.
- T.Y.**Ohulchanskyy**, R.Kumar, S.Kim, M.Nyk, S.K.Gupta, K.-T.Yong, I.Roy, E.J.Bergey, R.K.Pandey, J.Morgan, A.R.Oseroff, P.N.Prasad. Organically Modified Silica based Nanoparticles for Two-photon Induced Photodynamic Therapy, NCI Alliance for Nanotechnology in Cancer Investigators Meeting, Chapen Hill, NC, Oct.16-18, 2007.
- T. Y. **Ohulchanskyy**, S.K.Gupta, S.Kim, R.Kumar, Y. Chen, R.K.Pandey, A.R.Oseroff, P.N.Prasad. Controlling Excitation Dynamics within Organically Modified Silica-Based Nanoparticles for Advanced Photodynamic Therapy and Imaging, NCI Alliance for Nanotechnology in Cancer Investigators Meeting, Chicago, IL, Sept.7-10, 2008.
- T. Y. **Ohulchanskyy**, P. N. Prasad. Nanostructured Molecular and Hybrid Materials for Energy Harvesting: Meeting the Energy and Healthcare Challenges of 21st Century, 2008 MRS Fall Meeting, Boston, MA, Dec. 1-5, 2008.
- P. N. Prasad[#], A. N. Kuzmin, A. Pliss, A. V. Kachynski, T.Y.**Ohulchanskyy**. Nonlinear optical processes for bioimaging and light activation in biophotonics, 238th ACS National Meeting, Washington, DC, United States, August 16-20, 2009.
- T. Y. **Ohulchanskyy**, A. Kopwitthaya, R. Kumar, I.Roy, E. J. Bergey, P. N. Prasad. Organically modified silica nanoparticles as PDT drug delivery vehicles: effect of particle size on cellular uptake of the drug and its distribution in vivo, NCI Alliance for Nanotechnology in Cancer Investigators Meeting, Manhattan Beach, CA, Oct. 20-22, 2009.
- P.N.Prasad, A.M.Pliss, A.V.Kachynski, A.N.Kuzmin, T. Y. **Ohulchanskyy**. Multiphoton microscopy and multiplex, multimodal imaging: Impact on 21st century healthcare, 242nd ACS National Meeting, Denver, CO, August 28 -

September 1, 2011.

- T.Y.**Ohulchanskyy**. Up- and down- conversion nanoparticles for biomedical applications, **invited presentation** at the Department of Theoretical Chemistry and Biology, Royal Institute of Technology, Stockholm, Sweden, December 2, 2015
- T. Y. **Ohulchanskyy**. Multifunctional Nanoparticles in Diagnosis and Therapy of Pancreatic Cancer, **invited presentation** at the Department of Clinical Science, Intervention and Technology, Karolinska University, Stockholm, Sweden, December 4, 2015
- T. Y. **Ohulchanskyy**. Developing applications of biophotonics: advanced bioimaging, in situ photoactivation and light induced therapy, **invited presentation** at the College of Optoelectronic Engineering of the Shenzhen University, Shenzhen, Guangdong, China, April 27th, 2016
- T. Y. **Ohulchanskyy**. Applications of Biophotonics: aspects of research at the State University of New York at Buffalo and College of Optoelectronic Engineering of the Shenzhen University, **invited lecture** at the Faculty of Physics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine, June 14th, 2016
- T. Y. **Ohulchanskyy**. Emerging Applications of Biophotonics: Optical Biomaging and Light Enacted Therapy, **invited lecture** at the Xidian University, Xi'an, Shaanxi, China, July 1st, 2016.
- T. Y. **Ohulchanskyy**. Optical imaging and light induced therapy with molecular and nanoparticulate agents. 8th International Conference on Information Optics and Photonics (CIOP2016), Shanghai, China, July 17-20, 2016 (**invited**).
- T. Y. **Ohulchanskyy**. Optical imaging probes to guide light activated therapy. Optoelectronic Global Conference, Shenzhen, China, September 5-7, 2016 (**invited**).
- T. Y. **Ohulchanskyy**, J.Qu. Nanoprobes for optical biomaging and light enacted therapy, SPIE Photonics Asia, Beijing, China, October 12- 14, 2016 (**invited**).
- T. Y. **Ohulchanskyy**. Molecular and nanoparticulate agents to deliver optical imaging guided phototherapy, Asia Communications and Photonics conference, Wuhan, China, November 2-5, 2016 (**invited**).
- T. Y. **Ohulchanskyy**, J. Qu, R. K. Pandey. Near-infrared imaging guided nanoparticles delivering photoactivated therapeutics. SPIE Photonics West, San Francisco, California, United States, January 28- February 2, 2017.
- T. Y. **Ohulchanskyy**. Nonlinear upconversion of near-infrared light to enable cancer therapy. 2nd Sino-German Symposium on Singlet Molecular Oxygen and Photodynamic Effects, Berlin, Germany, May 29 - June 3, 2017 (**invited**).
- T. Y. **Ohulchanskyy**. Nonlinear optical interactions for phototheranostics. 9th International Conference on Information Optics and Photonics (CIOP2017), Harbin, China, July 17-20, 2017 (**invited**).
- T. Y. **Ohulchanskyy**. Applied aspects of biophotonics: heterogeneous nanoparticles for phototheranostics, **invited lecture** at the Xidian University, Xi'an, Shaanxi, China, July 21st, 2017.
- T. Y. **Ohulchanskyy**. Towards optical bioimaging in near and short-wave infrared regions: Contrast agents and tissue optical properties. 14th International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2017), Suzhou China, September 26–28, 2017 (**invited**).
- T. Y. **Ohulchanskyy**. Near-infrared imaging guided nanoparticles delivering photoactivated therapeutics. SPIE Photonics West, San Francisco, California, United States, January 27- February 2, 2018.
- T. Y. **Ohulchanskyy**. Photoluminescent nanoprobes for optical bioimaging in near and short-wave infrared

regions. 1st Macau-Mainland Symposium on Biophotonics, Macau, China, May 1-3, 2018 **(invited)**.

- T. Y. **Ohulchanskyy**. Near-infrared imaging guided nanoparticles delivering photoactivated therapeutics. XI International Conference "Electronic Processes in Organic and Inorganic Materials" (ICEPOM-11), Ivano-Frankivsk, Ukraine, May 21-25, 2018 **(invited)**.
- T.Y.**Ohulchanskyy**. Nanoprobes for Optical Imaging and Sensing in Near and Short-wave Infrared Regions. 11th International Conference on Nanophotonics (ICNP 2018), Wroclaw, Poland, July 2-6, 2018 **(invited)**.
- T.Y.**Ohulchanskyy**. Near and short wave infrared spectral regions for biomedical applications: tissue optical properties and agents for optical imaging and phototherapy. The 10th International Conference on Information Optics and Photonics (CIOP 2018), Beijing, China, July 8-11, 2018 **(invited)**.
- T.Y.**Ohulchanskyy**. Dye-sensitized rare-earth doped nanoparticles as up- and downconversion photoluminescence bioimaging agents. 6th International Conference "Nanotechnologies and Nanomaterials" (NANO-2018), Kyiv, Ukraine, August 27-30, 2018 **(invited)**.
- T.Y.**Ohulchanskyy**. Phototheranostic nanoagents active in near and short-wave infrared spectral ranges. The Optoelectronics Global Conference 2018 (OGC2018), Shenzhen, China, September 4-7, 2018 **(invited)**.
- T.Y.**Ohulchanskyy**. Near and short wave infrared spectral regions for biomedical applications: optical imaging and light induced therapy, **invited lecture** at the Department of Chemistry, Wroclaw University of Science and Technology, Wroclaw, Poland, January 17, 2019.
- T. Y. **Ohulchanskyy**. Phototheranostics in near and short wave infrared spectral regions: optically based imaging and light induced therapy. SPIE Photonics West, San Francisco, CA, United States, February 2-7, 2019.
- T. Y. **Ohulchanskyy**. Nanoparticles with controlled excitation dynamics to enhance photodynamic therapy, 3rd Sino-German Symposium on Singlet Molecular Oxygen and Photodynamic Effects, Fuzhou, Fujian, China, April 8-10, 2019 **(invited)**.
- T.Y.**Ohulchanskyy**. Biomedical applications of nanophotonics, **invited lecture** in the Faculty of Physics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine, May 15th, 2019
- T. Y. **Ohulchanskyy**. Heterogeneous nanoparticles for phototheranostics, **invited lecture** in the Faculty of Chemistry, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine, May 16th, 2019
- T. Y. **Ohulchanskyy**, H. Xu, O. M. Chepurna, A. Yakovliev, L. O. Vretik, Y. L. Slominskii, J. Qu Liposomal and polymeric nanoformulations for imaging guided photodynamic therapy, oral presentation at the 17th International Photodynamic Association World Congress, Boston, MA, United States, June 28-July 4, 2019.
- T. Y. **Ohulchanskyy**, O. M. Chepurna, H. Xu, R. Ziniuk, L.O. Vretik, Y.L. Slominskii, J. Qu. Imaging guided nanoformulations with controlled excitation dynamics to enhance photodynamic therapy, oral presentation at the World Congress on Light and Life (17th Congress of the International Union of Photobiology and 18th Congress of the European Society for Photobiology), Barcelona, Spain, August 25-30, 2019.
- T.Y.**Ohulchanskyy**. Near-infrared phototheranostics: optical imaging and light induced therapy. SPIE Photonics Europe 2020, France, online only, **invited** (April 10, 2020).
- T.Y.**Ohulchanskyy**. Infrared emitting nanoparticles as agents for biomedical imaging, optical sensing and therapy. VIII International Conference "Nanotechnologies and Nanomaterials" (NANO-2020), Lviv, Ukraine August 26 - 27, 2020, **invited** (presented online on August 26, 2020).
- T.Y.**Ohulchanskyy**. Near and short wave infrared emitting nanoformulations for imaging guided drug delivery. XXIX International Materials Research Congress, Cancun, Mexico August 16 - 20, 2021, **invited** (presented online on

August 16, 2021)

- T.Y.**Ohulchanskyy**. Nanoparticles for multimodal imaging guided photodynamic therapy of cancer. IX International Conference “Nanotechnologies and Nanomaterials” (NANO-2021), Lviv, Ukraine August 26 - 27, 2020, **invited** (presented online on August 25, 2021)
- T.Y.**Ohulchanskyy**. Merging nanotechnology and biophotonics for imaging guided photoinduced therapy of cancer. International Conference via Virtual Platform on “Nanomedicine: Biomolecules for Human Health” (NBHH-2021), Delhi, India, September 27-28, 2021. **Keynote** talk (presented online on September 28, 2021).
- T.Y.**Ohulchanskyy**. Optical imaging guided nanoformulations for cancer phototheranostics. 15th International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2021), Haikou, China, December 2-4, 2021, **invited**.
- T.Y.**Ohulchanskyy**. Imaging near-infrared luminescent nanoformulations to guide drug delivery and photoinduced therapy. SPIE Photonics Europe, Strasbourg, France, April 3-7, 2022, **invited** (presented online on April 6, 2022).
- X.Hao, J.Qu, T.Y.**Ohulchanskyy**. Optimizing photobiomodulation in animal model towards effective therapy of Alzheimer's disease, oral presentation at SPIE Photonics West, San Francisco, CA, United States, January 28 - February 2, 2023, oral presentation.
- T.Y.**Ohulchanskyy**. Revealing mechanisms of red and near infrared photobiomodulation through optical imaging of cell and animal models, **invited** talk at SPIE Photonics West, San Francisco, CA, United States, January 28 - February 2, 2023.
- T.Y.**Ohulchanskyy**. Multifunctional biocompatible nanoplatfroms for near infrared cancer theranostics, oral presentation at SPIE Photonics West, San Francisco, CA, United States, January 28 –February 2, 2023.
- T.Y.**Ohulchanskyy**. Nonlinear optical imaging to assess photobiomodulation of Alzheimer's disease in in vitro and in vivo models. **Invited** talk at the Photonics Global Conference 2023 (PGC2023), Stockholm, Sweden, August 21-23, 2023.
- T.Y.**Ohulchanskyy**. Advanced optical imaging and sensing with rare earth doped nanoparticles, **invited** presentation at the seminar in the Department of Applied Physics, Royal Institute of Technology (KTH), Stockholm, Sweden, August 21, 2023.
- T. Y. **Ohulchanskyy**. Applications of near infrared imaging and sensing using rare earth doped nanoparticles, 13th Asia Communications and Photonics Conference (ACP) and the 15th International Photonics and Optoelectronics Meeting (POEM), Wuhan, China, November 4-7, 2023 (**invited**).
- T.Y. **Ohulchanskyy**, L.O.Vretik. Core-thermoreponsive shell polymeric nanoparticles loaded with imaging and therapeutic agents for biomedical applications, **invited** talk at SPIE Photonics West 2024, San Francisco, CA, United States, January 27 -February 1, 2024.
- T.Y. **Ohulchanskyy**. Synergistically enhanced cancer phototheranostics using multifunctional nanoplatfroms, **invited** talk at SPIE Photonics West 2024, San Francisco, CA, United States, January 27 -February 1, 2024.
- T.Y. **Ohulchanskyy**. Near and short wave infrared microscopy and multimodal imaging to track biodistribution of photosensitizer nanocarriers, induce and visualize photodynamic action, **invited** talk at the Thirteen International Conference on Porphyrins and Phthalocyanines (ICPP-13), Niagara Falls, NY, United States, June 23 - June 28, 2024
- T.Y. **Ohulchanskyy**. Rare earth doped nanoparticles with near and short wave infrared photoluminescence for

sensing, imaging and imaging guided photoactivation in biomedical applications, **invited** talk at the Photonics Global Conference (PGC 2024), Wroclaw, Poland, August 26 - August 29, 2024.

- T.Y. **Ohulchanskyy**, L.O.Vretik. Cancer phototheranostics using polymeric nanoparticles with thermoresponsive shell, **invited** talk at the 12th International Conference on Nanophotonics (ICNP), Shenzhen, China, September 8 - September 11, 2024.
- T.Y. **Ohulchanskyy**, I. Golovynska, Y. V. Stepanov, L. O. Vretik, J. Qu. Optical imaging guided targeting of cancer and other diseases using human mesenchymal stem cells loaded with thermoresponsive polymeric nanoparticles, **invited** talk at SPIE Photonics West 2025, San Francisco, CA, United States, January 25 - January 30, 2025.
- T.Y. **Ohulchanskyy**. Magnetoplasmonic nanoplatform for magnetic field-induced optical imaging and synergistic therapy, **invited** talk at SPIE Photonics West 2025, San Francisco, CA, United States, January 25-January 30, 2025.
- T.Y. **Ohulchanskyy**. Biocompatible heterogeneous nanocarriers for phototheranostics of cancer and other diseases, **invited** presentation at the seminar of Department of Chemical and Biological Engineering, University at Buffalo, Buffalo, NY, USA, February 5, 2025.
- T.Y. **Ohulchanskyy**. Protein crystals as functional nanovehicles for imaging guided phototherapeutics, **invited** talk at Zakopane School of Physics 2025. Breaking Frontiers: Submicron Structures in Physics and Biology, Zakopane, Poland, May 20- May 24, 2025.
- T.Y. **Ohulchanskyy**. Utilizing electronic transitions in lanthanide ions for photoluminescence imaging and photoactivation in biomedical and materials science applications, **invited** lecture at the Institute of Nuclear Physics Polish Academy of Sciences, Krakow, Poland, May 27, 2025.
- T.Y. **Ohulchanskyy**. Multimodal imaging and near infrared optical microscopy to monitor biodistribution of nanophotosensitizers and locally induce and evaluate the photodynamic action, **invited** talk at the 18th IEEE International Conference on Nano/Molecular Medicine & Engineering (IEEE-NANOMED 2025), Hong Kong, China, December 1- December 4, 2025.
- T.Y. **Ohulchanskyy**. Cross-linked protein crystals as novel luminescent biomaterials, **invited** talk at the Photonics Global Conference (PGC 2025), Sanya, China, December 5- December 8, 2025.
- T.Y. **Ohulchanskyy**. Composite nanoparticles for phototheranostics, **keynote** talk at the International Conference on Materials Science, Engineering, and Technology, "Ovation of the Seas", Singapore, December 15- December 18, 2025.