

ELENA A. ROZHKOVA

Scientist, Nanoscience

Nanophotonics and Biofunctional Structures Group
(nPBS)

Center for Nanoscale Materials
Building 440, Room A228
Phone: 630-252-2863
Fax: 630-252-4646
E-mail: rozhkova@anl.gov

Argonne National Laboratory
9700 S Cass Ave., Argonne, IL 60439



Education

Ph. D. in Chemistry: Moscow State Institute of Fine Chemical Technology, Moscow, Russia

Postdoctoral Training: JSPS fellow at Tohoku University, Sendai, Japan; Princeton University, USA

The Prof. M. J. Nanjan Fourth Endowment Lecture Award "For outstanding contributions in the field of nano-biotechnology", the University of Madras in Chennai, India **(2018)**

The University of Chicago Argonne LLC Board of Governors Distinguished Performance Award and a medal "In recognition of pioneering interdisciplinary cancer treatment research via bio-functionalized vortex structures" **(2013)**

Brain Research Foundation Fay/Frank Women's Council Award **(2007)**

Japan Society for Promotion of Science (JSPS) Fellowship **(2000-2002)**

Grants-in-Aid from the Ministry of Education, Culture, Sports, Science and Technology of Japan **(2000-2002)**

Russian National Academy of Science Early Career Award **(1998-2000)**

The Open Society Institute awards "In recognition and appreciation of outstanding achievements in the study of science" **(1996 and 1997)**

Awards and honors

- Design and development of functional nano-bio hybrids using synthesis, microfabrication and synthetic biology approaches
- Bio-inspired assemblies for clean energy production
- Signal-transduction at the interface of engineered materials and living systems
- Synchrotron X-ray imaging of cellular bioenergetic processes at nanoscale

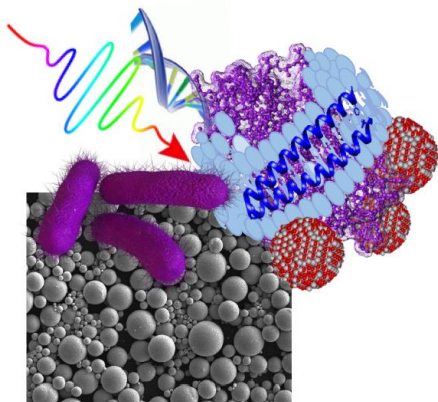
Research interests

Professional Experience

Argonne National Laboratory - Center for Nanoscale Materials (CNM) Scientist	2012-present
Argonne National Laboratory - Center for Nanoscale Materials (CNM) Assistant Scientist	2007-2012
University of Chicago, Biological Science Division Research associate	2003-2007
Princeton University, Department of Chemistry Research Staff Member	2002-2003
Tohoku University, Institute of Multidisciplinary Research for Advanced Materials JSPS Postdoctoral Fellow	2000-2002

Selected Publications

Manipulating nanoscale interactions/Nanoscale Dynamics for catalysis and energy conversion:



Light-Gated Synthetic Protocells for Plasmon-Enhanced Chemiosmotic Gradient Generation and ATP Synthesis, Z. Chen, G. De Queiros Silveira, X. Ma, Y. Xie, Y. A. Wu, E. Barry, T. Rajh, H. C. Fry, P. D. Laible, & **E. A. Rozhkova***, *Angewandte Chemie Int. Ed.*, 58,4896–4900 (2019)

Intracellular gold nanoclusters boost energy conversion, Z. Chen & **E.A. Rozhkova***, *Nature Nanotechnology*, 13, 880-881 (2018)

Cell-Free Synthetic Biology Chassis for Nanocatalytic Photon-to-Hydrogen Conversion, P Wang, A Y Chang, V Novosad, V V Chupin, R D Schaller & **E A Rozhkova***, *ACS Nano*, 11 (7), pp 6739–6745 (2017)

Photoinduced Electron Transfer Pathways in Hydrogen-Evolving Reduced Graphene Oxide-Boosted Hybrid Nano-Bio Catalyst, Wang, Peng; Dimitrijevic, Nada M.; Chang, Angela Y., Schaller, RD, Liu, YZ, Rajh T, & **Rozhkova E.A.***, *ACS Nano*, 8(8), 7995-8002 (2014)

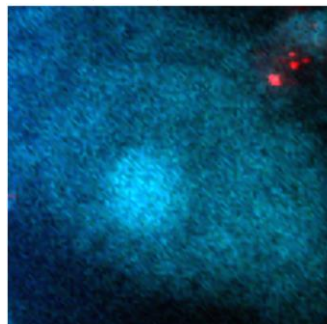
High-Performance Bio-assisted Nanophotocatalyst for Hydrogen Production, S. Balasubramanian, P. Wang, R. D. Schaller, T. Rajh, & **E. A. Rozhkova***, *Nano Letters*13, 3365–3371 (2013)

Functionalization of Nanostructured Hematite Thin Film Electrodes with the Light Harvesting Membrane Protein C-Phycocyanin yields Enhanced Photocurrent, D. K. Bora, **E. A. Rozhkova**, K. Schrantz, P. Wyss, A. Braun, T. Graule, E. C. Constable, *Adv Functional Materials*, 22, 490–502 (2012)

E. A. Rozhkova, K. Ariga (Eds.) "From Molecules to Materials—Pathway to Artificial Photosynthesis" (321 pp. Springer-Nature International Publishing, (2015)

Manipulating nanoscale interactions: for signal transduction, sensing and imaging:

Ultrasensitive detection enabled by nonlinear magnetization of nanomagnetic labels, M. P. Nikitin, A. V. Orlov, I. L. Sokolov, A. A. Minakov, P. I. Nikitin, J. Ding, S. D. Bader, **E. A. Rozhkova**, & V. Novosad, *Nanoscale*, 10(24), p 11642–11650 (2018)



Targeted multimodal nano-reporters for pre-procedural MRI and intra-operative image-guidance, J. Lee, A C Gordon, H Kim, W Park, S Cho, B Lee, A C Larson, **E A Rozhkova***, D-H Kim*, *Biomaterials*, 109, 69-77 (2016)

Ratiometric FRET from Quantum Dot Conjugated Stabilized Single Chain Variable Fragments for Quantitative Botulinum Neurotoxin Sensing, J. Lee, M. Asplund, R. Wilton, C. Rowland, **E.A. Rozhkova**, S. Forrester, D. Hannah, J. Carlson, E. Shevchenko, D. Schabacker, R. Schaller, *Nano Letters*, Nano Letters, 15(10):7161-7167 (2015)

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Efficient Cisplatin Pro-Drug Delivery Visualized with Sub-100 nm Resolution: Interfacing Engineered Thermosensitive Magnetomicelles With a Living System, E. A. Vitol, **E. A. Rozhkova***, V. Rose, B. D. Stripe, N. R. Young, E. E. W. Cohen, L. Leoni, V. Novosad, *Adv. Mater. Interfaces*, 1400182 (2014)

Stimuli-responsive magnetic nanomicelles as multifunctional heat and cargo delivery vehicles, D.-H. Kim, E. A. Vitol, J. Liu, S. Balasubramanian, D. J. Gosztola, E. Cohen, V. Novosad, & **E. A. Rozhkova***, *Langmuir*, 29, 7425–7432 (2013)

Microfabricated magnetic structures for future medicine: from sensors to cell actuators, E.A. Vitol, V. Novosad, & **E.A. Rozhkova***, *Nanomedicine*, 7(10), 1611-1624 (2012)

Multifunctional Ferromagnetic Disks for Modulating Cell Function, E.A. Vitol, V. Novosad, & **E.A. Rozhkova***, *IEEE TRANS MAGNETICS*, VOL. 48, NO. 11, (2012)

Nanoscale Materials for Tackling Brain Cancer: Recent Progress and Outlook, **E. A. Rozhkova**, *Advanced Materials*, 23, H136–H150 (2011)

Biofunctionalized magnetic-vortex microdiscs for targeted cancer-cell destruction, D-H Kim, **E. A. Rozhkova***, I. V. Ulasov, S. D. Bader, T. Rajh, M. S. Lesniak, & V. Novosad*, *Nature Materials* 9 (2): 165-171 (2010)

A High-Performance Nanobio Photocatalyst for Targeted Brain Cancer Therapy, **E. A. Rozhkova***, I. Ulasov, B. Lai, N. Dimitrijevic, M. S. Lesniak, T. Rajh, *Nano Letters* 9 (9): 3337-3342 (2009)

Dynamics of Localized Charges in Dopamine-Modified TiO₂ and their Effect on the Formation of Reactive Oxygen Species, N. M. Dimitrijevic, E. A. Rozhkova, T. Rajh, *JACS*, 131 (8): 2893-2899 (2009)