Faculty Details proforma for DU Web-site

Title	Dr.	First Name	Indrajit	Last Name	Roy	Photograph
Designation		Associate Professor				
Address		Department of Chemistry, University of Delhi, Delhi-110007.				
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Educational Qualifications		
Degree	Institution	Year
Ph.D.	Department of Chemistry, University of Delhi	2002
PG	Physical Chemistry, Hindu College, University of Delhi	1997
UG	Chemistry (Hons), Hindu College, University of Delhi	1995

Career Profile

30/12/2009 onwards: Associate Professor, Department of Chemistry, University of Delhi, Delhi.

July, 2005-Dec, 2009: Research Assistant Professor, Institute for Lasers, Photonics and Biophotonics, Department of Chemistry, State University of New York, Buffalo, New York.

July 2003-June 2005: Post Doctoral Fellow, Department of Pathology, Johns Hopkins University: Medicine, Baltimore, MD.

July 2001-June 2003: Post Doctoral Research Assistant, Department of Chemistry, State University of New York, Buffalo, New York.

Administrative Assignments

July, 2008-Dec, 2009: Deputy Director (Biophotonics), Institute for Lasers, Photonics and Biophotonics, State University of New York, Buffalo, New York, USA.

Areas of Interest / Specialization

Nanomedicine: Diagnostic imaging, drug and gene delivery, Multimodal nanoparticles, In vitro diagnostics.

Subjects Taught

'Statistical Thermodynamics': Taught M.Sc. students (in 2010, 2011, 2012, and 2014) at the Department of Chemistry, University of Delhi.

'Advanced Nanobiotechnology': Taught M.Tech. (NSNT) students (in 2010 and 2011) at the University of Delhi.

'Spectroscopy and diffraction methods': Taught M.Sc. students (in 2013, 2015, 2016 and 2017) at the Department of Chemistry, University of Delhi.

'Irreversible Thermodynamics, Transport Phenomena, Surface Phenomena and fast Reactions': Taught M.Sc. students (in 2018 and 2019) at the Department of Chemistry, University of Delhi.

Research Guidance

Dr. Pramod Kumar Gangwar (PhD degree awarded)
Dr. Anuradha Bhardwaj (PhD degree awarded)
Dr. Ridhima Juneja (PhD degree awarded)
Dr. Komal Sethi (PhD degree awarded)
Dr. Shrish Agnihotri (PhD degree awarded)
Dr. Shalini Sharma (PhD degree awarded)
Parul Singh (Research scholar; PhD Thesis submitted)
Balram Rathi (Research scholar; PhD Thesis submitted)
Tarun Mohan, Sona Gandhi, Jitender Kumar and Nayanika Chakraborty (Current research scholars)

Publications Profile

Research papers published in Refereed/Peer Reviewed Journals
Selected Recent Publications (in last 3 years):

1. Sharma S, Sethi K, **Roy I**. Magnetic nanoscale metal–organic frameworks for magnetically aided drug delivery and photodynamic therapy. New J. Chem. 2017, 41: 11860-11866. **Royal Society of Chemistry (RSC), UK. Impact Factor: 3.277. ISSN 1369-9261.**
2. Juneja R, **Roy I**. Iron oxide-doped niosomes as drug carriers for magnetically targeted drug delivery. *International Journal of Nanomedicine* 2018:13, 7-9. **Dove Press. Impact Factor: 4.320. ISSN: 1178-2013.**
3. Kumar P, Agnihotri S, **Roy I**. Preparation and characterization of superparamagnetic iron oxide nanoparticles for magnetically guided drug delivery. *International Journal of Nanomedicine* 2018:13, 43-46. **Dove Press. Impact Factor: 4.320. ISSN: 1178-2013.**
4. Gandhi S, **Roy I**. Doxorubicin-loaded casein nanoparticles for drug delivery: Preparation, characterization and in vitro evaluation. *Int. J. Biol. Macromol.* 2019, 121:6-12. **Elsevier Press. Impact Factor: 3.909. ISSN: 1879-0003.**
5. Pliss A, Levchenko SM, Liu L, Peng X, Ohulchanskyy TY, **Roy I**, Kuzmin AN, Qu J, Prasad PN. Cycles of protein condensation and discharge in nuclear organelles studied by fluorescence lifetime imaging. *Nature Commun.* 2019, 10(1):455. **Nature Publishing Group. Impact Factor: 12.353. ISSN: 2041-1723.**
6. Parul, **Roy I**. Gold Nanoparticle-Enhanced Photodynamic Therapy from Photosensitiser-Entrapped Ormosil Nanoparticles. *Journal of Nanoscience and Nanotechnology*. 2019, 19 (11) 6942-6948.
7. Sharma S, Mittal D, Verma AK, **Roy I**. Copper-Gallic Acid Nanoscale Metal–Organic Framework for Combined Drug Delivery and Photodynamic Therapy. *ACS Applied Biomaterials.* April 11, 2019. *DOI: 10.1021/acsabm.9b00116.* **ACS Publications. Impact Factor: Not assigned yet. ISSN: 2576-6422.**
8. Gandhi S, **Roy I**. Methylene blue loaded, silica coated cobalt ferrite nanoparticles with potential

for combination therapy. *Mater. Res. Express.* 2019, 6, 074005. **IOPscience Publications. Impact Factor: 1.151. ISSN: 2053-1591.**

9. Singh B, Kumar S, Maity J, **Roy I**, Prasad AK. Bamford-Stevens reaction assisted synthesis of styrene C-glycosides. Synthetic Commun. May 7, 2019. DOI: 10.1080/00397911.2019.1606921. **Taylor and Francis Publications. Impact Factor: 1.377. ISSN: 1532-2432.**

Selected Older Publications:

1. Yong, K T, R Hu, I Roy, H Ding, L A Vathy, E J Bergey, M Mizuma, A Maitra and P N Prasad. 2009. Tumor Targeting and Imaging in Live Animals with Functionalized Semiconductor Quantum Rods. *ACS Applied Materials & Interfaces*. 1(3): 710 - 719.
2. Bonoiu, A C, S D Mahajan, H Ding, I Roy, K T Yong, R Kumar, R Hu, E J Bergey, S A Schwartz and P N Prasad. 2009. Nanotechnology approach for drug addiction therapy: Gene silencing using delivery of gold nanorod-siRNA nanoplex in dopaminergic neurons. *Proceedings of the National Academy of Sciences*. 106(14): 5546- 5550.
3. Stachowiak, E K, I Roy, E Lee, M Cappacchietti, J M Aletta, P N Prasad and M K Stachowiak. 2009. Targeting novel integrative nuclear FGFR1 signaling by nanoparticle-mediated gene transfer stimulates neurogenesis in the adult brain. *Integrative Biology*. 1(5-6): 394 - 403.
4. Yong, K T, I Roy, M T Swihart and P N Prasad. 2009. Multifunctional Nanoparticles as Biocompatible Targeted Probes for Human Cancer Diagnosis and Therapy. *Journal of Materials Chemistry*. 19(27): 4655 - 4672.
5. Roy, I and N Vij. 2009. Nano-delivery in Airway Diseases: Challenges and Therapeutic Applications. *Nanomedicine*. (July 16, online publication).
6. Roy, I, M K Stachowiak and E J Bergey. 2008. Non viral gene transfection nanoparticles: Functions and applications in CNS. *Nanomedicine*. 4(2): 89-97.
7. Erogbogbo, F, K T Yong, I Roy, G Xu, P N Prasad and M T Swihart. 2008. Biompatible Luminescent Silicon Quantum Dots for Imaging of Cancer Cells. *ACS Nano*. 2(5): 873-876.
8. Kachynski, A V, A N Kuzmin, M Nyk, I Roy and P N Prasad. 2008. Zinc Oxide Nanocrystals for Non-resonant Nonlinear Optical Microscopy in Biology and Medicine. *Journal of Physical Chemistry C*. 112(29): 10721-10724.
9. Karikari, C A, I Roy, E Tryggestad, G Feldmann, C Pinilla, K Welsh, J C Reed, E P Armour, J Wong, J Herman, D Rakheja and A Maitra. 2007. Targeting the apoptotic machinery in pancreatic cancers using small-molecule antagonists of the X-linked inhibitor of apoptosis protein. *Molecular Cancer Therapeutics*. 6(3): 957-966.
10. Yong, K T, J Qian, I Roy, H H Lee, E J Bergey, K M Tramposch, S He, M T Swihart, A Maitra, and P N Prasad. 2007. Quantum dot bioconjugates as targeted probes for confocal and two-photon fluorescence imaging of cancer cells. *Nano Letters*. 7(3): 761 - 765.
11. Qian, J, K T Yong, I Roy, T Y Ohulchanskyy, E J Bergey, H H Lee, K M Tramposch, S He, A Maitra and P N Prasad. 2007. Imaging Pancreatic Cancer using Surface-functionalized Quantum Dots. *The Journal of Physical Chemistry B*. 111(25): 6969-6972.
12. Ding, H, K T Yong, I Roy, H E Pudavar, W C Law, E J Bergey and P N Prasad. 2007. Gold nanorods coated with multilayer polyelectrolyte as contrast agents for multimodal imaging. *The Journal of Physical Chemistry C*. 111(34): 12552-12557.
13. Ohulchanskyy, T Y, I Roy, L N Goswami, Y Chen, E J Bergey, R K Pandey, A R Oseroff and P N Prasad. 2007. Organically modified silica nanoparticles with covalently incorporated photosensitizer for photodynamic therapy of cancer. *Nano Letters*. 7(9): 2835 - 2842.
14. Law, W C, P P Markowicz, K T Yong, I Roy, A Baev, S Patskovsky, A V Kabashin, H P Ho and P N Prasad. 2007. Wide Dynamic Range Phase-sensitive Surface Plasmon Resonance Biosensor

Based on Measuring the Modulation Harmonics. *Biosensors and Bioelectronics*. 23(5): 627- 632.
15. Roy, I, T Y Ohulchansky, D J Bharali, H E Pudavar, R A Mistretta, N Kaur and P N Prasad. 2005. Optical tracking of organically modified silica nanoparticles as DNA carriers: A nonviral, nanomedicine approach for gene delivery. *Proceedings of the National Academy of Sciences*. 102(2): 279-284.
16. Bharali, D J, I Kleibor, E Stachowiak, P Dutta, I Roy, N Kaur, E J Bergey, P N Prasad and M K Stachowiak. 2005. Amino functionalized ORMOSIL nanoparticles as a non-viral vector for gene delivery in brain. *Proceedings of the National Academy of Sciences*. 102(32): 11539-11544.
17. Kuzmin, A N, A V Kachynski, T Y Ohulchansky, I Roy, P N Prasad and S Bruckenstein. 2004. Two-photon fluorescence guided laser tweezers for study of cluster growth and gelation process. *Applied Physics Letters*. 84(13): 2454 - 2456.
18. Roy, I, S Mitra, A N Maitra and S Mozumdar. 2003. Calcium phosphate nanoparticles as novel non-viral vectors for targeted gene delivery. *International Journal of* Pharmaceutics. 250(1): 25 - 33.
19. Roy, I, T Ohulchansky, H E Pudavar, E J Bergey, J Morgan, A R Oseroff, T J Dougherty and P N Prasad. 2003. Ceramic-based nanoparticles entrapping water-insoluble photosensitizing anticancer drugs: A novel drug-carrier system for Photodynamic Therapy (PDT). *Journal of the American Chemical Society. Soc.* 125(26): 7860-7865.
20. Jain, T K, I Roy, T K De and A N Maitra. 1998. Nanometer silica particles encapsulating active compounds: a novel ceramic drug carrier. *Journal of the American Chemical Society*. 120(43): 11092 - 11095.

Conference Organization/ Presentations (in the last three years)

Research Projects (Major Grants/Research Collaboration)

Completed:

1. Title: "Calcium phosphate nanoparticles encapsulating ….neurodegenerative disorders". Funding agency: DBT (RGYI). Amount: 24.28 Lakhs (June 2011 to May 2014)..

Ongoing:

1. Title "Drug-loaded magnetic-nanoscale metal organic frameworks (M-NMOFs) for applications in targeted drug delivery and light-activated therapy". PI. Nanomission, Department of Science and Technology (DST), India. Rs. 57.94 Lakhs (2017-2020).

2. Title "Multifunctional Nanoparticles in Cancer therapy". PI. UK-India Education and Research Initiative (UKIERI, UK) – University Grants Commission (UGC, India). Rs. 34.11 Lakhs (2017-2020)

3. Title "Biofunctional Theranostics Nanocomplexes for Combined Therapy of Solid Cancer". PI. BRICS-DST Project. Rs. 43.12 Lakhs (2019-2022)

Awards and Distinctions

Visionary Innovator Award, presented by the Office of Science, Technology Transfer and Economic Outreach (STOR) at the State University of New York, Buffalo, 2004.

Western New York (WNY) Inventor of the Year Award, presented by The Niagara Frontier Intellectual Property Law Association (NFIPLA), 2009.

Association With Professional Bodies

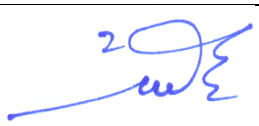
Reviewing

Reviewer of the Following Journals: *Nano Letters, Current Molecular Medicine, Molecular Cancer Therapeutics, PLoS ONE. ACS Applied materials and Interfaces. Biotechnology and Bioengineering. Wiley Interdisciplinary Reviews: Nanomedicine.*

Other Activities

Maitra, A N, S Mitra, S Mozumdar and I Roy. 2003. *Process for entrapping genetic materials in ultra-low size nanoparticles of inorganic compounds to form non-viral carriers*. Department of Chemistry, University of Delhi, Delhi, India. United States Patent Number: 6,555,376 (Awarded on April 29, 2003). Licensed to Abraxis BioSciences, Inc. (USA).

Prasad, P N, I Roy, T Y Ohulchanskyy, H E Pudavar and E J Bergey. 2008. *Ceramic based nanoparticles for entrapping therapeutic agents for photodynamic therapy and method of using same*. Department of Chemistry, State University of New York, Buffalo, New York, USA. United States Patent Number: 7,364,754 (Awarded on April 29, 2008). Licensed to Nanobiotix, Inc. (France).



Signature of Faculty Member