

LIST OF PUBLICATIONS

Dr. UMAKANTA TRIPATHY

Journal Articles:

1. Nandeshwar, *Umakanta Tripathy*, “Diosgenin Reduces β -sheet Content in Mutated α -Syn Aggregation: Insights from Conformational Dynamics at Intracellular and Extracellular Neuronal Salt Concentrations,” **Journal of Molecular Graphics and Modelling**, 142, 109160 (2026).
2. Abhipsa Shekhar Biswal, Nandeshwar, *Umakanta Tripathy*, Soumit Chatterjee, “Restoring epigenetic balance for glioma: Targeting IDH1_R132H with phytocompounds and tracking their efficacy under various pH conditions,” **International Journal of Biological Macromolecules**, 333, 148571 (2025).
3. Nitesh Kumar Pathak, Nandeshwar, Priyadarshi Sahoo, Amit K. Pradhan, Tara Singha, Prasanta K. Datta, *Umakanta Tripathy*, “A novel insight into the femtosecond induced nonlinear response of monoamine neurotransmitters through experimental and in silico approaches,” **Scientific Reports**, 15, 34240 (2025).
4. Priyadarshi Sahoo, Nitesh Kumar Pathak, Sunil Kumar Verma, *Umakanta Tripathy*, “Z-scan as a hemoglobin sensor: A simple and sensitive optical tool for measuring hemoglobin concentration in human blood,” **Journal of Applied Physics**, 138, 074701-1-074701-12 (2025).
5. Debasish Paul, Priyadarshi Sahoo, Amit K. Pradhan, Prasanta K. Datta, Arunava Sengupta, *Umakanta Tripathy*, Soumit Chatterjee, “Revealing the Importance of the C(1) Position to Modulate the Photophysics and Z-Scan Responses of *o*-Locked GFP Chromophores,” **Journal of Chemical Physics**, 162, 234308-1-234308-24 (2025).
6. Mohd Mehkoom, Farman Ali, Amit K. Pradhan, Prasanta K. Datta, *Umakanta Tripathy*, “Enhanced ultrafast cubic nonlinearity in the carbazole-picric acid complex for potential applications in photonic devices: Kerr nonlinearity with two-photon absorption,” **Physical Chemistry Chemical Physics**, 27, 12331 (2025).
7. Rajat Kumar, Nitesh Kumar Pathak, Jayanta Kumar Sarkar, *Umakanta Tripathy*, Prasanta Kumar Datta, “Vibrational spectra of serotonin by terahertz time domain spectroscopy and DFT simulations,” **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 329, 125541 (2025).
8. Jyotsna Patra, Poulami Das, Subhankar Nanda, Manika Dandapat, *Umakanta Tripathy*, and Amitava Adak, “Nonclassical plasmonic response of laser-plasma-engineered ultrasmall nearly-monodispersed clean copper nanoparticles,” **Optics & Laser Technology**, 180, 111444 (2025).

9. Smita Manjari Panda, Nandeshwar, and *Umakanta Tripathy*, “In silico screening and identifying phytoconstituents of *Withania somnifera* as potent inhibitors of BRCA1 mutants: A therapeutic against breast cancer,” **International Journal of Biological Macromolecules**, 282, 136977 (2024).
10. Debasish Paul, Priyadarshi Sahoo, Arunava Sengupta, *Umakanta Tripathy*, and Soumit Chatterjee, “Revealing the Role of Electronic Effect to Modulate the Photophysics and Z-Scan Responses of *o*-Locked GFP Chromophores,” **Journal of Physical Chemistry B**, 129(2), 692-711 (2024).
11. Kavyashree Nagappa Kummur, Smita Manjari Panda, Mahantesh Basangouda Patil, *Umakanta Tripathy*, Ashok H Sidarai, “Revealing the interaction mechanism between bovine serum albumin (BSA) and a fluorescent coumarin derivative: A multispectroscopic and in silico approach,” **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 318, 124466 (2024).
12. Kanchan Negi, Nitesh Kumar Pathak, *Umakanta Tripathy*, Sourav Kumar Dey, and Sumanta Kumar Sahu, “Two-photon NIR-responsive carbon dots incorporated into NMOFs for targeted photodynamic therapy,” **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 694, 134163 (2024).
13. Indrajit Pal, Nitesh Kumar Pathak, Santanu Majumdar, Gerald Lepcha, Amiya Dey, Suresh Kumar Yatirajula, *Umakanta Tripathy*, and Biswajit Dey, “Comparative Vision of Nonlinear Thermo-Optical Features and Third-Order Susceptibility of Mechanically Flexible Metallosupramolecular Self-Repairing Networks with Isomeric Organic Acids,” **Inorganic Chemistry**, 63(26), 12003-12016 (2024).
14. Nitesh Kumar Pathak, Priyadarshi Sahoo, and *Umakanta Tripathy*, “Nonlinear study of indolamines: A hidden property that might have possible implications in neurodegeneration,” **Talanta**, 272, 125808 (2024).
15. Priyadarshi Sahoo, Nitesh Kumar Pathak, D. Scott Bohle, Erin L. Dodd, and *Umakanta Tripathy*, “Hematin anhydride (β -hematin): An analogue to malaria pigment hemozoin possesses nonlinearity,” **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 310, 123902 (2024).
16. Nandeshwar, Janmejaya Rout, Smita Manjari Panda, and *Umakanta Tripathy*, “Phytoconstituents of Ashwagandha as potential inhibitors of human islet amyloid polypeptide (hIAPP): An in-silico investigation”, **Journal of Biomolecular Structure and Dynamics**, 42, 11020-11036, (2024).
17. Indrajit Pal, Nitesh Kumar Pathak, Santanu Majumdar, Gerald Lepcha, Amiya Dey, Suresh Kumar Yatirajula, *Umakanta Tripathy*, and Biswajit Dey, “Solvent-driven variations of third-

- order nonlinear thermo-optical features of glutaric acid-directed self-healing supramolecular Ni(II)-metallogels”, **Langmuir**, 39, 16584-16595 (2023).
18. Nitesh Kumar Pathak, Sunil Kumar Verma, and **Umakanta Tripathy**, “Effect of hemoglobin in the nonlinearity of O⁺ blood group”, **Asian Journal of Physics**, 31(1), 123-128 (2022).
 19. Nitesh Kumar Pathak, Lata Sharma, Sakshi, Bijayalaxmi Panda, and **Umakanta Tripathy**, “Synthesis, characterization, and investigation of nonlinear property of fly ash-red mud-Ag: A low-cost sustainable nanocomposite”, **Optical Materials**, 126, 112230 (2022).
 20. Sakshi, Bikash Chandra Swain, Anand Kant Das, Nitesh Kumar Pathak, and **Umakanta Tripathy**, “Z-scan analysis and theoretical studies of dopamine under physiological conditions”, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 271, 120890 (2022).
 21. Bikash Chandra Swain, Janmejaya Rout, and **Umakanta Tripathy**, “Interaction of vitamin B12 with β -lactoglobulin: A computational study”, **Journal of Biomolecular Structure and Dynamics**, 40(5), 2146-2155 (2022).
 22. Janmejaya Rout, Bikash Chandra Swain, and **Umakanta Tripathy**, “In Silico Investigation of Spice Molecules as Potent Inhibitor of SARS-CoV-2”, **Journal of Biomolecular Structure and Dynamics**, 40(2), 860-874 (2022).
 23. Sakshi, Bikash Chandra Swain, Anand Kant Das, Nitesh Kumar Pathak, and **Umakanta Tripathy**, “Norepinephrine exhibits thermo-optical nonlinearity under physiological conditions”, **Physical Chemistry Chemical Physics**, 23, 23473-23477 (2021).
 24. Janmejaya Rout, Bikash Chandra Swain, Suchismita Subadini, Padmaja Prasad Mishra, Harekrushna Sahoo, and **Umakanta Tripathy**, “Conformational dynamics of myoglobin in the presence of vitamin B12: A spectroscopic and in silico investigation,” **International Journal of Biological Macromolecules**, 192, 564-573 (2021).
 25. Janmejaya Rout, Bikash Chandra Swain, Suchismita Subadini, Padmaja Prasad Mishra, Harekrushna Sahoo, and **Umakanta Tripathy**, “Spectroscopic and computational insight into the conformational dynamics of hemoglobin in the presence of vitamin B12”, **International Journal of Biological Macromolecules**, 189, 306-315 (2021).
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 27. Sabera Millan, Bikash Chandra Swain, **Umakanta Tripathy**, Padmaja Prasad Mishra, and Harekrushna Sahoo, “Effect of micro-environment on protein conformation studied by fluorescence-based techniques,” **Journal of Molecular Liquids**, 320, 114489 (2020).

28. Sumanta Ghosh, Sakshi, Bikash Chandra Swain, Ritobrita Chakraborty, *Umakanta Tripathy*, and Krishnananda Chattopadhyay, “A novel tool to investigate the early and late-stages of alpha-synuclein aggregation”, **ACS Chemical Neuroscience**, 11, 1610-1619 (2020).
29. Bikash Chandra Swain, Sandip Kumar Mukherjee, Janmejaya Rout, Sakshi, Padmaja Prasad Mishra, Mandira Mukherjee and *Umakanta Tripathy*, “A Spectroscopic and Computational Intervention of Interaction of Lysozyme with 6-Mercaptopurine”, **Analytical and Bioanalytical Chemistry**, 412, 2565-2577 (2020).
30. Janmejaya Rout, Bikash Chandra Swain, Padmaja Prasad Mishra, and *Umakanta Tripathy*, “Spectroscopic insight into the interaction of dopamine with spherical gold nanoparticles”, **Journal of Photochemistry and Photobiology B: Biology**, 203, 111770 (2020).
31. Bikash Chandra Swain, Suchismita Subadini, Janmejaya Rout, Sakshi, Padmaja Prasad Mishra, Harekrushna Sahoo and *Umakanta Tripathy*, “Biophysical study on complex formation between β -Lactoglobulin and Vitamin B12”, **Food Chemistry**, 312, 126064 (2020).
32. Janmejaya Rout, Bikash Chandra Swain, Sakshi, Shrutidhara Biswas, Anand Kant Das and *Umakanta Tripathy*, “A simulation study on the influence of energy migration and relative interaction strengths of homo- and hetero-FRET on the net FRET efficiency”, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 226, 117599 (2020).
33. Sakshi, Nitesh Kumar Pathak, Bikash Chandra Swain and *Umakanta Tripathy*, “Analyzing nonlinear trends in curcumin: A comparative study”, **Optics & Laser Technology**, 121, 105822 (2020).
34. Sakshi, Bikash Chandra Swain, Anand Kant Das and *Umakanta Tripathy*, “Probing third-order nonlinearity in serotonin: A Z-scan study”, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 223, 117319 (2019).
35. Srabani Karmakar, Shrutidhara Biswas, Kali. P. Das and *Umakanta Tripathy*, “Surface plasmon resonance study of the interaction of 4,4'-Dianilino-1,1'-binaphthyl-5,5'-disulfonic acid dipotassium salt (bis-ANS) and adenosine triphosphate (ATP) with oligomeric recombinant human lens α A-crystallin”, **Canadian Journal of Chemistry**, 97, 504-511 (2019).
36. Navin Chandra, Shrutidhara Biswas, Janmejaya Rout, Gautam Basu, and *Umakanta Tripathy*, “Stability of β -turn in LaR2C-N7 peptide for its translation-inhibitory activity against hepatitis C viral infection: A molecular dynamics study”, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 211, 26–33 (2019).
37. Bikash Chandra Swain, Padmaja P. Mishra, Hirdyesh Mishra, and *Umakanta Tripathy*, “Monitoring the binding of Serotonin to Silver nanoparticles: A Fluorescence Spectroscopic investigation”, **Journal of Photochemistry and Photobiology A: Chemistry**, 367, 219-225 (2018).

38. **Umakanta Tripathy**, S. Rallabandi, P. B. Bisht, “Switching the sign of nonlinear refraction in N, N’-Bis (2, 5,-di-tert-butylphenyl)-3, 4, 9, 10-perylenedicarboximide (DBPI),” **Optics & Laser Technology**, 99, 411-414 (2018).
39. A. K. Das, B. K. Maity, D. Surendran, **Umakanta Tripathy**, S. Maiti, “Label-Free Ratiometric Imaging of Serotonin in Live Cells,” **ACS Chemical Neuroscience**, 8 (11), 2369-2373 (2017).
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43. Amir K. Miri, Hossein K. Heris, **Umakanta Tripathy**, Paul W. Wiseman, and Luc Mongeau, “Microstructural characterization of vocal folds toward a strain energy-model of collagen remodeling,” **Acta Biomaterialia**, 9(8), 7957-7967 (2013).
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45. Amir K. Miri, **Umakanta Tripathy**, Luc Mongeau, and Paul W. Wiseman, “Nonlinear Laser Scanning Microscopy of Human Vocal Folds,” **The Laryngoscope**, 122(2), 356-363 (2012).
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47. Sunish K. Sugunan, **Umakanta Tripathy**, Sophie M. K. Brunet, Matthew F. Paige, and Ronald P. Steer, “Mechanisms of low-power Noncoherent Photon Upconversion in Metalloporphyrin-Organic Blue Emitter Systems in solution,” **Journal of Physical Chemistry A**, 113(30), 8548-8556 (2009).
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50. Xia Liu, *Umakanta Tripathy*, Sheshanath V. Bhosale, Steven J. Langford, and Ronald P. Steer, "Photophysics of Soret-Excited Tetrapyrroles in Solution. II. Effects of Perdeuteration, Substituent Nature and Position, and Macrocycle Structure and Confirmation in Zinc (II) Porphyrins," **Journal of Physical Chemistry A**, 112(38), 8986-8998 (2008).
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55. *Umakanta Tripathy*, and Prem B. Bisht, "Simultaneous estimation of optical nonlinear refractive and absorptive parameters by solvent induced changes in optical density," **Optics Communications**, 261(2), 353-358 (2006).
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Review Articles:

1. Smita M. Panda, Hossein Goodarzi Hosseinabadi, Hoda Fattel, **Umakanta Tripathy**, Amir K. Miri, “Ink Formulation and Selection for Biological Applications of Two-Photon Polymerization”, **ACS Applied Optical Materials**, 1 (9), 501-512 (2023).
2. Sakshi Choudhary, Bikash Chandra Swain, and **Umakanta Tripathy**, “Applications of lasers in biophotonics”, **Materials Focus**, 5, 496-510 (2016).
3. **Umakanta Tripathy** and Ronald P. Steer, “The photophysics of metalloporphyrins excited in their Soret and higher energy uv absorption bands,” **Journal of Porphyrins and Phthalocyanines**, 11(3-4), 228-243 (2007).

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1. **Umakanta Tripathy** (Editor), Biochemical and Biophysical Methods in Molecular and Cellular Biology. Springer, Singapore (2025). DOI: <https://doi.org/10.1007/978-981-96-2088-3>.
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5. **Umakanta Tripathy**, “Energy migration and transfer in dye-pairs and their nonlinear photophysics”, **Lambert Academic Publishing**, ISBN No. 978-3-659-89946-1 (2016).

Patents:

1. Priyadarshi Sahoo, **Umakanta Tripathy**, “A method of detection and quantification of myoglobin in urine by negative Kerr nonlinearity effect”, Indian Patent Application No. **202531046002** dated **13.05.2025**.
2. Manika Dandapat, Priyadarshi Sahoo, **Umakanta Tripathy**, “A method based on self-focusing and self-defocusing effects to monitor protein aggregation in real-time”, Indian Patent Application No. **202531021632** dated **11.03.2025**.

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1. Sakshi and *Umakanta Tripathy*, “Nonlinear property of neurotransmitter dopamine probed by Z-scan technique”, **Proc. SPIE 11205**, Seventh International Conference on Optical and Photonic Engineering (icOPEN 2019), 112052L (16 October 2019); <https://doi.org/10.1117/12.2542163>.
2. Bikash Chandra Swain, Padmaja P. Mishra and *Umakanta Tripathy*, “Binding interaction Study of Lysozyme with 6-Mercaptopurine by Spectroscopic Tools”, **Proceedings of International Conference on Fiber Optics and Photonics**, IIT, Delhi, 12- 15 December, **2018**, SP007.
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5. Sakshi and *Umakanta Tripathy*, “Nonlinearity study of Curcumin by Z-scan technique”, **Proceedings of 26th DAE-BRNS National Laser Symposium (NLS-26)**, BARC, Mumbai, 20 - 23 December, **2017**, CP-04-43, P-57.
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List of papers presented at various scientific conferences

1. Smita Manjari Panda, Kalpanarani Dash, Devi Prashanna Behera, Monalisa Mishra, Harekrushna Sahoo, and **Umakanta Tripathy**, “Withanolide A Mitigates Amylin Aggregation: A Multiscale Computational and Experimental Study”, National Workshop on Fluorescence and Raman Spectroscopy (FCS XVI) and Conference, SINP, Kolkata, 06-10 December **2025**, PP58.
2. Smita Manjari Panda, Nandeshwar, and **Umakanta Tripathy**, “Computational Screening and Identifying Potent Inhibitors of BRCA1 Mutants: A Therapeutic Against Breast Cancer”, Interdisciplinary Approach in Chemical and Biological Sciences (IACBS-2025), IIT (ISM) Dhanbad, 01-02 December **2025**, P36. [Received Best Poster Award]
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4. Tusar Kanti Rout, Abhipsha Biswal, Nandeshwar Bharti, Subodh Kumar Sahu and **Umakanta Tripathy**, “Drug candidates Targeting Tau Tubulin Kinase1 (TTBK1) in Tauopathy” Interdisciplinary Approach in Chemical and Biological Sciences (IACBS-2025), IIT (ISM) Dhanbad, Jharkhand, December 1-2, **2025**, PC-37.
5. Subodha Kumar Sahu, Tusar Kanti Rout, Priyadarshi Sahoo, Soumit Chatterjee, and **Umakanta Tripathy**, “Linear and Nonlinear Photophysical Study of Bilirubin: Towards Optical Diagnostic Applications”, Recent Advances and New Challenges in Physics (RANCP-2025), RIHS, Bhograi, Odisha, 5th – 6th September **2025**, OP-3.
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10. Mohd Mehkoom, Amit K. Pradhan, S. M. Afzal, Prasanta K. Datta, ***Umakanta Tripathy***, "Third-order optical Nonlinearities of A Novel Schiff Base System With Thermal And Electronic Responses For Photonic Applications", 1st International Conference on Emerging Trends in Optical Technologies (ETOT-I), SRM University AP, Amaravati India, 02-04 January, **2025**.
11. Mohd Mehkoom, ***Umakanta Tripathy*** "Ultrafast optical nonlinear quest in a carbazole-picric acid complex for photonic applications" Two Days National Workshop on Green Steel Production via Decarbonization for Sustainable and Circular Economy, IIT (ISM) Dhanbad, Dhanbad India, 16 – 17 December, **2024**, OP03.
12. Nandeshwar and ***Umakanta Tripathy***, "Molecular Dynamics Simulations Reveal Inhibitory Effects On α -Synuclein Aggregation", Optics Within Life Sciences (OWLS-17), Indian Institute of Technology Bombay Powai, Victor Menezes Convention Centre (VMCC), 18-21 November, **2024**, PC-78.
13. Mohd Mehkoom, ***Umakanta Tripathy***, Amit K. Pradhan, Farman Ali, Prasanta K. Datta, "Femtosecond pulse intensity impact on optical nonlinearity of a carbazole-picric acid complex for photonic applications", International Conference on Optics Within Life Sciences (OWLS-17), IIT Bombay, Mumbai India, 18-21 November, **2024**, P75.
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16. Priyadarshi Sahoo, Manika Dandapat, and ***Umakanta Tripathy***, "Nonlinear photophysics of Polydopamine Nanoparticles (PDANPs): A bio-inspired polymer", *International Conference*

On Advances In Spectroscopic Techniques And Materials (ASTM 2024), IIT(ISM) Dhanbad, India, 18-20 January, 2024, PP-32.

17. Smita Manjari Panda, and **Umakanta Tripathy**, "Phytoconstituents of Withania Somnifera as multi-target inhibitors for the cancer-associated receptors: An in-silico investigation", *International Conference On Advances In Spectroscopic Techniques And Materials (ASTM 2024)*, IIT (ISM), Dhanbad, 18-20 January 2024, PP-50.
18. Priyadarshi Sahoo, and **Umakanta Tripathy**, "Application of z-scan tool to investigate the nonlinear properties of myoglobin", *Physical Chemistry Symposium - 2023 (SoPhyC - 2023)*, IIT Kanpur, Kanpur, 29-31 October, 2023, CP-44.
19. Smita Manjari Panda, Nandeshwar and **Umakanta Tripathy**, "An in-silico approach to finding a potent inhibitor against mutated BRCA1", *Structure and Dynamics of Chemical and Biomolecular Systems (SDCBS23)*, IIT Kanpur, Kanpur, 26-28 October, **2023**, PC-9.
20. Nandeshwar, Janmejaya Rout, Smita Manjari Panda and **Umakanta Tripathy**, "Phytoconstituents of Ashwagandha as potential inhibitors of human islet amyloid polypeptide (hIAPP): An in-silico investigation", *Structure and Dynamics of Chemical and Biomolecular Systems (SDCBS23)*, IIT Kanpur, 26-28 October, **2023**, PC-7.
21. Nitesh Kumar Pathak, Amit Kumar Pradhan, Prasanta Kumar Datta and **Umakanta Tripathy**, "Swapping the sign of nonlinearity in epinephrine: a monoamine neurotransmitter", *Photonics*, J. N. TATA Auditorium, IISc Bengaluru, 5-8 July, **2023**, P198.
22. Nitesh Kumar Pathak and **Umakanta Tripathy**, "Nonlinear study of epinephrine under pulsed laser excitation", 15th *National Symposium on Radiation & Photochemistry (NSRP-2023)*, Birla Institute of Technology & Science, Pilani, K K Birla Goa Campus, Goa, 5-7 January, **2023**, PC-46.
23. Priyadarshi Sahoo and **Umakanta Tripathy**, "Investigation of nonlinear properties of β -hematin using Z-Scan technique", 15th *National Symposium on Radiation & Photochemistry (NSRP-2023)*, Birla Institute of Technology & Science, Pilani, K K Birla Goa Campus, Goa, 5-7 January, **2023**, PC-82.
24. Janmejaya Rout, Bikash Chandra Swain, Suchismita Subadini, Sakshi, Padmaja Prasad Mishra, Harekrushna Sahoo and **Umakanta Tripathy**, "Investigating the binding interaction between β -Lactoglobulin and Vitamin B12: A Spectroscopic and Computational approach", 65th *Biophysical Society Annual Meeting 2021 (BPS2021)*, 22-26 February, **2021**, 995-Pos. [Biophysical Journal, volume 120, issue 3, supplement 1, page 205a, February 12, 2021. DOI: <https://doi.org/10.1016/j.bpj.2020.11.1399>].

25. Janmejaya Rout, Bikash Chandra Swain and **Umakanta Tripathy**, "Investigation of binding interaction of Vitamin B12 with Hemoglobin", *Trombay Symposium on Radiation & Photochemistry (TSRP)*, BARC, Mumbai, 5-9 January, **2020**, PC-070.
26. Nitesh Kumar Pathak, Sakshi, Bijayalaxmi Panda, and **Umakanta Tripathy**, "Nonlinear study of silver-coated fly ash/red mud composite (FA/RM-Ag) by Z-scan Technique", *National Symposium on Light - Matter Interactions (NSLIMI-2019)*, IIT Madras, 26 December, **2019**, NLO-9.
27. Sakshi, and **Umakanta Tripathy**, "Thermally-induced nonlinear property of Norepinephrine by a single closed-aperture (CA) Z-scan technique", *National Symposium on Light - Matter Interactions (NSLIMI-2019)*, IIT Madras, 26 December, **2019**, NLO-6.
28. Bikash Chandra Swain, Janmejaya Rout, and **Umakanta Tripathy**, "Investigation of inhibition property of Vitamin B12 with β -Lactoglobulin Fibrils", *National Symposium on Light - Matter Interactions (NSLIMI-2019)*, IIT Madras, 26 December, **2019**, SP-7.
29. Janmejaya Rout, Bikash Chandra Swain and **Umakanta Tripathy**, "Unveiling the interaction between Amyloid Beta (1-40) with Cuminaldehyde: A Molecular Dynamics Study", *National Symposium on Light-Matter Interactions (NSLIMI-2019)*, IIT, Madras, 26 December, **2019**, SP-5.
30. Bikash Chandra Swain, Janmejaya Rout, Padmaja P. Mishra, and **Umakanta Tripathy**, "Spectroscopic and computational investigation of the interaction of Vitamin B12 with Myoglobin", *National workshop on fluorescence and Raman Spectroscopy (FCS-2019)*, TIFR, Hyderabad, 16-21 December, **2019**, P-9.
31. Sakshi and **Umakanta Tripathy**, "Nonlinear property of neurotransmitter dopamine probed by Z-scan technique", *Seventh International conference on optical and photonics engineering (icOPEN-2019)*, Phuket, Thailand, 16 - 20 July, **2019**, PE0055.
32. Bikash Chandra Swain, Padmaja P. Mishra, Hirdyesh Mishra and **Umakanta Tripathy**, "Interaction Study of Serotonin and Silver Nanoparticles by Spectroscopic tools", *13th National Symposium on Radiation and Photochemistry*, Visva-Bharati Santiniketan, West Bengal, 7 - 9 February, **2019**, PC-03.
33. Bikash Chandra Swain, Padmaja P. Mishra and **Umakanta Tripathy**, "Binding interaction Study of Lysozyme with 6-Mercaptopurine by Spectroscopic Tools", *International Conference on Fiber Optics and Photonics*, IIT, Delhi, 12 - 15 December, **2018**, SP007.
34. Sakshi and **Umakanta Tripathy**, "Nonlinear Study of Serotonin by a Single Closed Aperture Z-Scan Technique", *International Conference on Fiber Optics and Photonics*, IIT, Delhi, 12 - 15 December, **2018**, TP022.
35. Janmejaya Rout, Bikash Chandra Swain, Padmaja P. Mishra and **Umakanta Tripathy**, "Spectroscopic Investigation of Interaction between Dopamine and Gold nanoparticles",

International Conference on Fiber Optics and Photonics, IIT, Delhi, 12 - 15 December, **2018**, Session- G, TG1.

36. Janmejaya Rout and **Umakanta Tripathy**, “Study of Stuructural and Optical properties of Epinephrine by using Density Functional Theory”, *National workshop on fluorescence and Raman Spectroscopy (FCS-2018)*, JNU and IIT, Delhi, 12 - 17 November, **2018**, P-42.
37. Bikash Chandra Swain, Padmaja P. Mishra and **Umakanta Tripathy**, “Interaction of β -Lactoglobulin with Vitamin B12: A Biophysical Study”, *National workshop on fluorescence and Raman Spectroscopy (FCS-2018)*, JNU and IIT, Delhi, 12 - 17 November, **2018**, P-25.
38. Janmejaya Rout and **Umakanta Tripathy**, “Structural and Optical properties of a monoamine Neurotransmitter: A DFT Study”, *Evolution of Electronic Structure Theory and Experimental Realisation (EESTER)*, SRM Institute of Science and Technology and IIT, Madras, 11 - 15 September, **2018**, P-093.
39. Sakshi and **Umakanta Tripathy**, “Nonlinearity study of Curcumin by Z-scan technique”, *26th DAE-BRNS National Laser Symposium (NLS-26)*, BARC, Mumbai, 20 - 23 December, **2017**, CP-04-43, P-57.
40. Bikash Chandra Swain and **Umakanta Tripathy**, “Interaction of fluorescent carbon dots with Bovine Serum Albumin (BSA)”, *FCS 2017, National workshop on fluorescence and Raman techniques*, IIT Guwahati, 17 - 21 December, **2017**, P023, P-66.
41. Bikash Chandra Swain and **Umakanta Tripathy**, “Interaction study of Serotonin with Silver nanoparticles by using Fluorescence Spectroscopy”, *4th International conference on Nanoscience and nanotechnology (ICONN-2017)*, SRM University, Kattankulathur, Chennai, 9 - 11 August, **2017**, P-204-205.
42. Bikash Chandra Swain and **Umakanta Tripathy**, “Study of Biophysical Parameters Under Physiological Conditions”, *National conference on liquid crystals (NCLC)*, IIT(ISM) Dhanbad, 7 - 9 December, **2016**, P-58.
43. Sakshi Choudhary and **Umakanta Tripathy**, “Estimation of Effective Pixel Size in Image Correlation Spectroscopy”, *National conference on liquid crystals (NCLC)*, IIT(ISM) Dhanbad, 7 - 9 December, **2016**, P-60.
44. Sakshi Choudhary and **Umakanta Tripathy**, “Aggregation state study by Image Correlation Spectroscopy”, *IONS, International OSA Network of Students*, IIT(ISM) Dhanbad, 7 - 10 September, **2016**, IONS-DHN/2K16/122.
45. Bikash Chandra Swain and **Umakanta Tripathy**, “Fluorescence Correlation Spectroscopy: An innovative tool for single molecule study”, *IONS, International OSA Network of Students*, IIT(ISM) Dhanbad, 7 - 10 September, **2016**, IONS-DHN/2K16/104.
46. **Umakanta Tripathy**, Parul Sood, Sandhya Koushika, and Sudipta Maiti, “Label-free imaging of Serotonin in live *C. elegans*”, *Optics Within Life Sciences (OWLS) 2016*, Tata Institute of

Fundamental Research (TIFR) & Indian Institute of Technology (IIT) Bombay, Mumbai, March 16 – 19, IL91 (BIC) **2016**.

47. Rucha Pandit, Anand Kant Das, **Umakanta Tripathy**, and Sudipta Maiti, “Measuring intravesicular serotonin concentration changes by ratiometric intrinsic fluorescence imaging”, *FCS 2014, National workshop on fluorescence and Raman techniques*, IISER, Pune, Maharashtra, India, December 15 - 19, **2014**, P-13.
48. Bidyut Sarkar, Arkarup Banerjee, Anand Kant Das, Suman Nag, Sanjeev Kumar Kaushalya, **Umakanta Tripathy**, Mohammed Shameem, Shubha Shukla, and Sudipta Maiti, “Label-free dopamine imaging using two-photon ultraviolet microscopy”, *6th Special Conference of the International Society of Neurochemistry (INS)*, Tokyo, Japan, September 20 - 22, **2014**, PS5-06.
49. **Umakanta Tripathy**, Ananya Rakshit, Rucha Pandit, Anand Kant Das, Bidyut Sarkar, Parul Sood, Sandhya Kaushika, and Sudipta Maiti, “Label free imaging of neurotransmitters *in vivo*”, *Biophysics Paschim 2014*, Indian Institute of Science Education and Research (IISER) Pune, Maharashtra, India, March 1, **2014**.
50. Ananya Rakshit, Anand Kant Das, **Umakanta Tripathy**, and Sudipta Maiti, “In vivo monoamine imaging in live Zebrafish”, *FCS 2013, National fluorescence workshop, Fluorescence methods in single molecule spectroscopy*, Indian Institute of Science and Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India, November 24 - 28, **2013**, P-67.
51. **Umakanta Tripathy**, Amir K. Miri, Luc Mongeau, and Paul W. Wiseman, “Nonlinear imaging of human and porcine vocal fold tissues”, *Neurophysics Annual Meeting 2012*, La Forêt Montmorency, Quebec, Canada, June 14 - 15, **2012**.
52. Nageswara R. Ghattamaneni, **Umakanta Tripathy**, Jean-Francois Desjardins, Sonia Ines Edaye, Elias Georges, and Paul W. Wiseman, “Microfluidic and Nonlinear Optical device for Malaria Detection”, *Photonics North 2012*, Hilton Montreal Bonaventure, Montreal, Canada, June 6 - 8, **2012**, 87, BIO-MED-6-P-4. [Received best poster award]
53. Amir K. Miri, **Umakanta Tripathy**, Hossein K. Heris, Luc Mongeau and Paul W. Wiseman, “Structural Characterization of Porcine Vocal Folds using Multi-photon Microscopy”, *4th International Conference on the Mechanics of Biomaterials and Tissues 2011*, Marriott Waikoloa Beach Resort and Spa, Hawaii, USA, December 11 - 15, **2011**.
54. Amir K. Miri, **Umakanta Tripathy**, Luc Mongeau and Paul W. Wiseman, “Structural characterization of vocal fold tissues using multi-photon microscopy”, *9th Pan European Voice Conference 2011*, Marceille, France, August 31 - September 3, **2011**.
55. **Umakanta Tripathy**, Stacey L. Meadley, Richard L. Leask, and Paul W. Wiseman, “THG, SHG and TP imaging of biological samples by Nonlinear laser scanning Microscopy”, *Neurophysics Annual Meeting 2011*, La Forêt Montmorency, Quebec, Canada, June 16 - 17, **2011**.

56. Jędrzej Szmytkowski, Sophie M.K. Brunet, **Umakanta Tripathy**, Jaclyn A. O'Brien, Matthew F. Paige and Ronald P. Steer, "Influence of Halides on the fluorescence Quenching in ZnTPPS⁴⁻ aqueous solution", *Proceedings of CSC, 94th Canadian Chemistry Conference and Exhibition 2011*, Montreal, QC, Canada, June 5 - 9, **2011**, 2067, PTpos.
57. **Umakanta Tripathy**, and Paul W. Wiseman, "Third harmonic generation (THG) imaging of hemozoin: Effect of wavelength, power and polarization", *Neurophysics Annual Meeting 2010*, La Forêt Montmorency, Quebec, Canada, June 3 - 4, **2010**.
58. Stacey L. Meadley, **Umakanta Tripathy**, Paul W. Wiseman and Richard L. Leask, "Multiphoton microscopy of healthy and aneurismal human ascending aorta", *Proceedings of ASME Summer Bioengineering Conference 2009*, Resort at Squaw Creek, Lake Tahoe, CA, USA, June 17 - 21, **2009**, 29, MS37. Paper No. SBC2009-206152, pp. 803-804. [**Secured 3rd place in the student paper competition award**].
59. Ronald P. Steer, Xia Liu, Sunish K. Sugunan, **Umakanta Tripathy**, Matthew F. Paige, "Fast upper singlet state relaxation in metalloporphyrins: implications for NIR solar energy harvesting", *Proceedings of CSC, 92nd Canadian Chemistry Conference and Exhibition 2009*, Hamilton, ON, Canada, May 30 - June 3, **2009**, 745, PT13.
60. Ronald P. Steer, Xia Liu, **Umakanta Tripathy** and Dorota Kowalska, "Upper Singlet State Dynamics of Metalloporphyrins", *Proceedings of CSC, 91st Canadian Chemistry Conference and Exhibition 2008*, Edmonton, AB, Canada, May 24 - 28, **2008**, 1121, PT7.
61. **Umakanta Tripathy**, Xia Liu and Ronald P. Steer, "Photophysics of Soret-Excited Corroles in Solution", *Proceedings of CSC, 91st Canadian Chemistry Conference and Exhibition 2008*, Edmonton, AB, Canada, May 24 - 28, **2008**, 1137, PTP.
62. Sunish K. Sugunan, **Umakanta Tripathy**, Matthew F. Paige and Ronald P. Steer, "Low Power Fluorescence Upconversion in a Zinc metalloporphyrin via triplet- triplet annihilation", *Proceedings of CSC, 91st Canadian Chemistry Conference and Exhibition 2008*, Edmonton, AB, Canada, May 24 - 28, **2008**, 1139, PTP.
63. Xia Liu, **Umakanta Tripathy** and Ronald P. Steer, "Effect of substitutions on the photophysics of Soret-excited states of Metalloporphyrins", *Proceedings of CSC, 91st Canadian Chemistry Conference and Exhibition 2008*, Edmonton, AB, Canada, May 24 - 28, **2008**, 1141, PTP. [**Winner of student poster competition**].
64. Ronald P. Steer, Dorota Kowalska, Xia Liu, **Umakanta Tripathy** and Suresh Velate, "Photophysics of Soret-Excited Metalloporphyrins", *Proceedings of CSC, 90th Canadian Chemistry Conference and Exhibition 2007*, Winnipeg Convention Centre, Manitoba, Canada, May 26 - 30, **2007**, 488, IN4.
65. **Umakanta Tripathy** and Prem B. Bisht, "Study of nonlinear optical parameters by solvent induced changes in the optical density", *Proceedings of PHOTONICS 2004*, CUSAT, Cochin, Dec. 9 - 11, **2004**, nlo3.7.

66. **Umakanta Tripathy** and Prem B. Bisht, “Separation of contributions of optical and thermal nonlinearity by ps and cw Z-scan measurements”, *Proceedings of 59th International Symposium on Molecular Spectroscopy*, Ohio State University Columbus, Ohio, USA, June 21 - 25, **2004**, pp. 229 (RG02).
67. **Umakanta Tripathy** and Prem B. Bisht, “Experimental and theoretical simulations on Z-scan profile under ps time scale”, *Proceedings of International Conference on Optoelectronics and Technology*, North Maharashtra University Jalgaon, Jan. 12 - 14, **2004**, pp. 30-35. [Received best paper award].
68. **Umakanta Tripathy** and Prem B. Bisht, “Energy transfer efficiency of dipole-dipole interaction in a dye pair in polymer medium”, *Proceedings of Trombay Symposium on Radiation and Photochemistry*, BARC Mumbai, Jan. 8 - 12, **2004**, pp. 149-150. [Received best poster award].
69. **Umakanta Tripathy** and Prem B. Bisht, “Evaluation of excited singlet state absorption cross sections by ps pulse transmission technique”, *Proceedings of National Laser Symposium*, IIT Kharagpur, Dec. 22 - 23, **2003**, pp. 441-442.
70. **Umakanta Tripathy**, Prem B. Bisht and A. Subrahmanyam, “Energy and wavelength dependence of pico second laser pumped Z-scan profiles”, *National Symposium on Mathematical Methods and Applications*, IIT Madras, Dec. 21, **2002**, pp. 30-31.
71. **Umakanta Tripathy** and Prem B. Bisht, “Simultaneous calculation of nonlinear absorption and refraction parameters by using a single closed-aperture Z-scan technique”, *Proceedings of PHOTONICS 2002*, TIFR Mumbai, Dec. 16 - 18, **2002**, NLOP28.
72. **Umakanta Tripathy**, R. Justin Rajesh, Prem B. Bisht and A. Subrahmanyam, “Optical nonlinearity of organic dyes as studied by Z-scan and transient grating techniques”, *Proceedings of Third Asian Photochemistry Conference (APC-3)*, BARC Mumbai, Jan. 6 - 11, **2002**, pp. 157.
73. **Umakanta Tripathy**, Prem B. Bisht and A. Subrahmanyam, “Calculations on excited state absorption cross section of laser dyes”, *National Symposium on Mathematical Methods and Applications*, IIT Madras, Dec. 22, **2001**, pp. 14-15.

INVITED TALKS

1. **Umakanta Tripathy**, “Inhibition of hIAPP Aggregation by Natural Molecules: Integrated In-Silico, In-Vivo, and Multi-Spectroscopic Approach”, National workshop of fluorescence, and Raman spectroscopy (FCS XVI), A workshop-cum international conference, SINP, Kolkata, West Bengal, 6th – 10th December **2025**.
2. **Umakanta Tripathy**, “Sensing heme proteins in real time through the Z-scan technique”, International Workshop on Lasers and Z-scan Experiments (LAZE-2025), Bharathidasan University, Tiruchirappalli, Tamil Nadu, 5th – 6th December **2025**.

3. **Umakanta Tripathy**, “Z-scan as a novel tool to sense heme proteins in real time”, National Seminar on Recent Advances and New Challenges in Physics (RANCP-2025), RIHS, Bhograi, Odisha, 5th – 6th September **2025**.
4. **Umakanta Tripathy**, “Z-scan as a Biomolecular Sensor for Disease Diagnosis”, Refresher Course on Physics, MMTTC, IIT(ISM), Dhanbad, Jharkhand, 1st – 12th August **2025**.
5. **Umakanta Tripathy**, “Phytoconstituents of Natural Products as Potent Inhibitors of Mutated Proteins: An In Silico Study”, Refresher Course on Physics, MMTTC, IIT(ISM), Dhanbad, Jharkhand, 1st – 12th August **2025**.
6. **Umakanta Tripathy**, “Sensing biomolecules for disease diagnosis through a novel optical device”, 1st International Conference on Emerging Trends in Optical Technologies (ETOT-I), SRM University, Amaravati, Andhra Pradesh, 2nd – 4th January **2025**.
7. **Umakanta Tripathy**, “Introducing a novel optical device to study protein aggregation in real-time”, International Conference on Optics Within Life Sciences (OWLS-2024), Indian Institute of Technology Bombay (IITB), Mumbai, Maharashtra, 18th – 21th November **2024**.
8. **Umakanta Tripathy**, “Presenting A Nonlinear Switch To Identify The Toxic Species In Parkinson’s Disease”, International Conference on Smart Materials for Sustainable Technology (SMST-2024) Institute of Nano Science and Technology (INST), Mohali, Punjab, 24th – 27th October **2024**.
9. **Umakanta Tripathy**, “Nonlinear Magic in Soft Matter Physics”, Refresher Course on Advanced Concepts in Biophysics and Soft Matter: Foundations and Frontiers, IIT (ISM) Dhanbad, Jharkhand, 18th – 29th October **2024**.
10. **Umakanta Tripathy**, “Phytoconstituents of Ashwagandha as potent inhibitors of BRCA1 Mutants: A Therapeutic against Breast Cancer”, Refresher Course on Advanced Concepts in Biophysics and Soft Matter: Foundations and Frontiers, IIT (ISM) Dhanbad, Jharkhand, 18th – 29th October **2024**.
11. **Umakanta Tripathy**, “A Potential Therapeutic Against Breast Cancer From Natural Resources”, International Conference on Recent Developments in Functional Materials for Sustainable Applications (RDFMSA-2024), GIET University, Gunupur, Odisha, 20th – 21st April **2024**.
12. **Umakanta Tripathy**, “A Novel Approach For Disease Diagnosis Through Nonlinear Magic”, National Conference on Recent Trends in Chemical Sciences (RETICS-2024), Sambalpur University, Sambalpur, Odisha, 1st – 3rd March **2024**.
13. **Umakanta Tripathy**, “Applications of Nonlinear Optics in Biophysics”, Dept. of Physics, Mahila Maha Vidyalaya (MMV), BHU, Varanasi, Uttar Pradesh, 3rd February **2024**.
14. **Umakanta Tripathy**, “Withania somnifera as a potent inhibitor of mutant BRCA1: A therapeutic against breast cancer”, International Conference on Translational Materials for

Sustainable Research (TransMat 2k24), Dept. of Physics, IIT(BHU) Varanasi, Uttar Pradesh, 1st – 4th February **2024**.

15. **Umakanta Tripathy**, “Applications of the Z-scan Technique in Soft Condensed Matter Physics”, One Week Training Programme on Synthesis and Characterization of Nanomaterials for Energy, Lighting & Bio-imaging Applications under STUTI, IIT(ISM) Dhanbad, Jharkhand, 7th – 13th November **2022**.
16. **Umakanta Tripathy**, “Z-scan Technique: A Novel Tool for Biomedical Applications”, National Workshop on Lasers and Z-scan Experiments (LAZE-2022), Bharathidasan University, Tiruchirappalli, Tamil Nadu, 26th – 27th August **2022**.
17. **Umakanta Tripathy**, “Interaction Between Spice Molecules and SARS-Cov-2 Proteins: A Computational Study”, 38th Annual Convention of Odisha Physical Society and National seminar on Physics in sustainable development, GIET University, Gunupur, Odisha, 4th -5th June **2022**.
18. **Umakanta Tripathy**, “Spice molecules: Potential inhibitors of SARS-CoV-2”, One Day Seminar, Baghmara College, Baghmara, Jharkhand, 26th March **2022**.
19. **Umakanta Tripathy**, “Parkinson’s disease Pathology: Introducing a novel optical device for diagnostics”, National Science Day, GIET University, Gunupur, Odisha, 28th February **2022**.
20. **Umakanta Tripathy**, “A novel drug for covid19: an In Silico Investigation”, A Physics Refresher Course with special focus on Material Science and Biophysics under TEQIP-III, IIT(ISM) Dhanbad, 8 - 20 February **2021**.
21. **Umakanta Tripathy**, “A novel tool to study the aggregation kinetics of Alpha-Synuclein Protein”, One day national E-conference on Recent Progress in Physical Sciences, Department of Physics, Tarakeswar Degree College, West Bengal, 31 August **2020**.
22. **Umakanta Tripathy**, “A novel tool to help gain deeper insight into Parkinson’s disease”, Webinar by Society of Physics, Department of Physics, IIT(ISM) Dhanbad, 09 July **2020**.
23. **Umakanta Tripathy**, “An Overview of Nonlinear Optical Tools in Neurodegenerative Diseases”, Science Seminar, NAC Nayagarh, 12 – 13 February **2020**.
24. **Umakanta Tripathy**, “Nonlinear Magic with Monoamine Neurotransmitters”, National Symposium on light-matter interactions, IIT Madras, 26 December **2019**.
25. **Umakanta Tripathy**, “Pros and Cons in Power Point Presentation”, Induction Training / Orientation Programme for teachers, IIT(ISM) Dhanbad, 15 November – 12 December **2019**.
26. **Umakanta Tripathy**, “Nonlinear Techniques in Biomaterials”, Faculty development programme on design and development of materials for technological applications, VSSUT Burla, 21 - 26 October **2019**.

27. *Umakanta Tripathy*, “Fundamentals and Applications of Spectroscopic Tools”, Faculty development programme on design and development of materials for technological applications, VSSUT Burla, 21 - 26 October **2019**.
28. *Umakanta Tripathy*, “Nonlinear Techniques in Biophotonics”, Refresher programme in Physics (Biophotonics) for teachers, IIT(ISM) Dhanbad, 29 May – 18 June **2018**.
29. *Umakanta Tripathy*, “Art of Slide Presentation”, National Training programme on Research Methodology for research scholars, IIT(ISM) Dhanbad, 18 – 23 December **2017**.
30. *Umakanta Tripathy*, “Sensitive detection of malaria infection by using nonlinear imaging”, 22nd Biennial Indian Photobiology Society (IPS) Conference on Biomolecular Dynamics- Experimental and Theoretical Perspectives (BDETP-2017), NIT Rourkela, 18 - 20 December **2017**, IL2, P-19.
31. *Umakanta Tripathy*, “Nonlinear Laser Scanning Microscopy (NLSM) for Bio-imaging”, Refresher programme in Physics (Nano-Biotechnology) for teachers, IIT(ISM) Dhanbad, 25 May – 14 June **2017**.
32. *Umakanta Tripathy*, “Origin of Maxwell’s equations and its magic in linear media”, Refresher programme in recent trends on microwave components and Antennas for teachers, IIT(ISM) Dhanbad, 26 December **2016** – 15 January **2017**.
33. *Umakanta Tripathy*, “An Innovative Tool For Disease Diagnosis”, Orientation Programme for teachers, IIT(ISM) Dhanbad, 9 – 29 February **2016**.