CURRICULUM VITAE

Dr. Vikram Singh
Scientist D & Assistant Professor (AcSIR)

Analytical Sciences Group, ASSIST Division,
CSIR- Indian Institute of Toxicology Research Lucknow
31 MG Marg, Lucknow, 226001
E-mail: vikram.singh25@csir.res.in; vikku.010@gmail.com
Mobile: +919452369265
Web: https://sites.google.com/view/vikkunano/home

Research Interest

- Development of functionalized fluorescent carbon dots and silica-based nanomaterials for environmental, biomedical, and solar energy applications
- Engineering of carbon dots for CO_2 capture and conversion into value-added materials
- Fluorescence sensing/chemical sensing of toxic analytes in environmental samples
- Design and synthesis of activated carbon for the remediation of water pollutants
- Fabrication of white light-emitting materials for optoelectronic applications

Academic Details

Thesis Awarded in Chemistry: Indian Institute of Technology Madras, Chennai, India: 2016

PhD Supervisor: Professor Ashok Kumar Mishra

Title of PhD Thesis: White Light Emitting Vegetable Cocktail, Glucose Derived Carbon Nanoparticles and Isobenzotriazolophane as Novel Fluorescent Sensors for Analytical Applications: 2016

M.Sc. (Chemistry): University of Lucknow, India: 2010

B.Sc. (Chem, Phy): University of Allahabad, India: 2008

Research Experiences

(1) Scientist, Environment, Emissions and CRM Section, CSIR-Central Institute of Mining and Fuel Research, Dhanbad, India: **15th Jul 2021** to **31st Dec 2024**

(2) Senior Project Scientist, Department of Materials Science & Engineering, Indian Institute of Technology Kanpur, India: **10th Mar 2021** to **14th Jul 2021**

(3) Institute Postdoctoral Fellow, Department of Materials Science & Engineering, Indian Institute of Technology Kanpur, India: **30th Aug 2018** to **28th Feb 2021**

(4) National Postdoctoral Fellow (SERB), Medicinal and Process Chemistry Division, CSIR-Central Drug Research Institute, Lucknow, India: **11th Aug 2016** to **10th Aug 2018**

(5) Research Associate, Department of Biotechnology, Indian Institute of Technology Madras, India: **19th May 2016** to **05th Aug 2016**

(6) Predoctoral Fellow, Department of Chemistry, Indian Institute of Technology Madras, India: **08th Oct 2015** to **07th Apr 2016**

List of Publications/Patents

Research Articles

1. T. Mandal, R. Senapati, A. K. Ghosh, R. E. Masto and **V. Singh***, Kitchen waste-derived oxygen-doped fluorescent carbon quantum dots for ultra-trace detection of chromium (VI) in environmental water matrices, *ACS Sustainable Resource Management*, **2025**, 2, 1786.
https://pubs.acs.org/doi/10.1021/acssusresmgt.5c00310

2. S. R. Mishra, T. Mandal, A. K. Ghosh, and **V. Singh***, Development of Cost-effective Fluorescent Carbon Nanoparticles as Security Ink for Anticounterfeiting and Fingerprint Visualization, *Nanoscale Advances*, **2025**, 7, 4591.
https://pubs.rsc.org/en/content/articlehtml/2025/na/d5na00370a

3. S. R. Mishra, T. Mandal, P. Kumar, V. Verma, R. N. Senapati, M. Kumar and **V. Singh***, Microporous Activated Carbon from Madhuca Longifolia Flower for Efficient Methylene Blue Dye Removal in Wastewater Treatment, *Surfaces and Interfaces,* **2025**, 69, 106770.
https://www.sciencedirect.com/science/article/pii/S2468023025010272

4. K. Singh, T. Mandal, U. P. Pandey, and **V. Singh***, Emergence of Fluorescent Glycodots for Biomedical Applications, *ACS Biomaterials Science & Engineering*, **2025**, 11, 742.
https://pubs.acs.org/doi/full/10.1021/acsbiomaterials.4c02018

5. S. R. Mishra, T. Mandal, R. N. Senapati, and **V. Singh***, White-Light Emitting Self-Assembled Graphene Quantum Dots from Coal Soot, *Carbon Letters*, **2025**, 35, 1067.
https://link.springer.com/article/10.1007/s42823-025-00860-3

6. T. Mandal, S. R. Mishra, M. Kumar, and **V. Singh***, Emergence of Carbon Dots as Luminescent Solar Concentrator for Building Integrated Photovoltaics, *Sustainable Energy & Fuels*, **2024**, 8, 5638. (Published with outside back cover).
https://pubs.rsc.org/en/content/articlelanding/2024/se/d4se00806e

7. S. R. Mishra, T. Mandal, S. Sahu, M. Mishra, R. N. Senapati and **V. Singh***, Biocompatible Fluorescent Graphene Oxide Quantum Dots for Imaging of Drosophila Melanogaster, *ACS Omega*, **2024**, 9, 38916.
https://pubs.acs.org/doi/10.1021/acsomega.4c05244

8. T. Mandal, S. R. Mishra, A. Banerjee, G. Firoz, R. Poddar and **V. Singh***, Low-quality Indian Coal Derived Fluorescent Carbon Nano-onions for Tissue Imaging, *ChemistrySelect*, **2024**, 9, e202402666.
https://chemistry-europe.onlinelibrary.wiley.com/doi/abs/10.1002/slct.202402666

9. **V. Singh***, T. Mandal, S. R. Mishra, A. Singh and P. Khare, Development of amine-functionalized fluorescent silica nanoparticles from coal fly ash as a sustainable source for nanofertilizer, *Scientific Reports*, **2024**, 14, 3069.
https://www.nature.com/articles/s41598-024-53122-z

10. T. Mandal, S. R. Mishra, **V. Singh***, Comprehensive Advances in Synthesis, Fluorescence Mechanism and Multifunctional Applications of Red-emitting Carbon Nanomaterials, *Nanoscale Advances*, **2023**, 5, 5717.
https://pubs.rsc.org/en/content/articlelanding/2023/na/d3na00447c

11. T. Mandal, A. K. Ghosh, S. R. Mishra, S. K. Pandey, **V. Singh***, Development of Fluorescent Carbon Nanoparticles from Madhuca Longifolia Flower for Sensitive and Selective Detection of Cr^{6+}: A Collective Experimental-Computational Approach,

Nanoscale Advances, **2023**, 5, 4269. *Featured in special regional spotlight collection highlighting top quality papers from India*
https://pubs.rsc.org/en/content/articlelanding/2023/na/d3na00289f

12. T. Mandal, S. R. Mishra, K. Singh, H. Agarwalla, R. E. Masto, M. Kumar, **V. Singh***, Fluorescent carbon nanomaterials from coal and its derivatives: structure, properties, and applications, *Journal of Nanoparticle Research*, **2023**, 25, 125.
https://link.springer.com/article/10.1007/s11051-023-05780-9

13. H. Agarwalla, T. B. Das, R. N. Senapati, M. Gangopadhyay, R. E. Masto, M. Kumar, **V. Singh**, Mercury in coal from southeastern coalfield and mercury partitioning at sub-critical coal-fired power plant, *Journal of Material Cycles and Waste Management*, **2023**, 25, 2632.
https://link.springer.com/article/10.1007/s10163-023-01679-8#citeas

14. K. Jahana, **V. Singh**, N. Mehrotra, K. Rathore and V. Verma, Development of Activated Carbon from KOH Activation of Pre-carbonized Chickpea Peel Residue and its Performance for Removal of Synthetic Dye from Drinking Water, *Biomass Conversion and Biorefinery*, **2023,** 13, 6913.
https://link.springer.com/article/10.1007/s13399-021-01938-4#citeas

15. K. S. Rawat, **V. Singh** (equal first-author contribution), C. P. Sharma, A. Vyas, P. Pandey, J. Singh, N. M. Gupta, M. Sachdev and A. Goel, Picomolar Detection of Pb^{2+} by Functionally Modified Fluorescent Carbon Quantum Dots from Watermelon Juice and Their Imaging in Cancer Cells, *Journal of Imaging*, **2023**, 9, 19.
https://www.mdpi.com/2313-433X/9/1/19

16. C. M. Pawar, S. Sreenath, V. Dave, P. P. Bavdane, **V. Singh**, V. Verma and R. K. Nagarale, Chemically stable and high acid recovery anion exchange membrane, *Polymer*, **2022**, 251, 124915.
https://www.sciencedirect.com/science/article/abs/pii/S0032386122004037

17. N. M. Chola, **V. Singh**, V. Verma and R. K. Nagarale, Green Synthesis and Thermal Encapsulation of Organic Cathode for Aqueous Zn Battery, *Journal of Electrochemical Society*, **2022**, 169, 020503.
https://iopscience.iop.org/article/10.1149/1945-7111/ac4b85

18. V. Singh*, B. Gorbel, S. Chatterjee, P. Sen and V. Verma, Green, Economical Synthesis of Nitrogen Enriched Carbon Nanoparticles from Seaweed Extract and Their Application as Invisible Ink and Fluorescent Film, *Materials Letters*, **2022**, 309, 131446.
https://www.sciencedirect.com/science/article/abs/pii/S0167577X21021455

19. V. Singh*, S. Chatterjee, M. Palecha, P. Sen, B. Ateeq and V. Verma, Chickpea Peel Waste as Sustainable Precursor for Synthesis of Fluorescent Multiwalled Carbon Nanotubes for Bio-imaging Application, *Carbon Letters*, **2021**, 31, 117.
https://link.springer.com/article/10.1007/s42823-020-00156-8

20. V. Singh, K. S. Rawat, S. Mishra, T. Baghel, S. Fatima, A. A. John, N. Kalleti, D. Singh, A. Nazir, S. K. Rath and A. Goel, Biocompatible Fluorescent Carbon Quantum Dots from Beetroot Extract for in vivo Live Imaging in *C. elegans* and BALB/c Mice, *Journal of Materials Chemistry B*, **2018**, 6, 3366.
http://pubs.rsc.org/en/content/articlelanding/2018/tb/c8tb00503f#!divAbstract

21. V. Singh and A. K. Mishra, White Light Emission from Mixture of Pomegranate Juice and Carbon Nanoparticles Obtained from the Extract, *Journal of Materials Chemistry C*, **2016**, 4, 3131.
https://pubs.rsc.org/en/content/articlelanding/2016/tc/c6tc00480f#!divAbstract

22. **V. Singh** and A. K. Mishra, Green and Cost-effective Fluorescent Carbon Nanoparticles for the Selective and Sensitive Detection of Iron (III) Ions in Aqueous Solution: Mechanistic Insights and Cell Line Imaging Studies, *Sensors and Actuators B: Chemical,* **2016,** 227, 467. https://www.sciencedirect.com/science/article/pii/S0925400515307929

23. **V. Singh** and A. K. Mishra, White Light Emission from an Aqueous Vegetable Cocktail: Application Towards pH Sensing*, Dyes and Pigments*, **2016,** 125, 362. https://www.sciencedirect.com/science/article/pii/S0143720815004003

24. **V. Singh** and A. K. Mishra, White Light Emission from Vegetable Extracts, *Scientific Reports,* **2015**, 5, 11118. https://www.nature.com/articles/srep11118

25. K. Kundu, A. P. Singh, S. Panda, **V. Singh**, R. L. Gardas, and S. Senapati, Study on the Conformation of Entrapped Protein Inside the Reverse Micellar Confinement Based on the Amino Acid Derived Ionic Liquid, *Chemistry Select*, **2018**, 3, 4768. https://onlinelibrary.wiley.com/doi/abs/10.1002/slct.201800918

26. D. Bharathi, B. Siddlingeshwar, R. H. Krishna, **V. Singh**, N. Kottam, D. D. Divakar and A. A. Alkheraif, Green and Cost-effective Synthesis of Fluorescent Carbon Quantum Dots for Dopamine Detection, *Journal of Fluorescence,* **2018**, 28, 573. https://link.springer.com/article/10.1007/s10895-018-2218-3

27. S. Mishra, P. Awasthi, J. Singh, R. K Gupta, **V. Singh**, R. Kant, R. Jeet, D. Goswami and A. Goel, White Light Induced E/Z-Photoisomerization of Diphenylamine-tethered Fluorescent Stilbene Derivatives: Synthesis, Photophysical and Electrochemical Investigation, *Journal of Organic Chemistry*, **2018**, 83, 3669. https://pubs.acs.org/doi/abs/10.1021/acs.joc.8b00033

28. A. P. Singh, K. Kundu, **V. Singh**, R. L. Gardas and S. Senapati, Enhanced Stability and Water Solubilizing Capacity of Water-in-Oil Microemulsions by Protic Ionic Liquids, *Physical Chemistry Chemical Physics*, **2017**, 19, 26132. http://pubs.rsc.org/en/content/articlelanding/2017/cp/c7cp04313a#!divAbstract

29. D. Bharathi, R. H. Krishna, **V. Singh**, N. Kottam and B. Siddlingeshwar, One-pot Synthesis of C-dots and Study on its Interaction with Nano ZnO Through Fluorescence Quenching, *Journal of Luminescence,* **2017**, 190, 328. https://www.sciencedirect.com/science/article/pii/S0022231316316532

30. N. Venkatesan, **V. Singh**, P. Rajakumar and A. K. Mishra, Isobenzotriazolophanes: A new Class of Fluorescent Cyclophanes as Sensors for Aromatic Nitro Explosives – Picric Acid, *RSC Advances,* **2014**, 4, 53484. http://pubs.rsc.org/en/content/articlelanding/2014/ra/c4ra06320a#!divAbstract

Patents

1. A Novel Process for the Synthesis of Fluorescent Silica Nanoparticles from Fly Ash, **V. Singh**, H. Agarwalla, R. E. Masto and M. Kumar: *Application No. 202211039599*, Date: 08/07/2022 (Indian Patent)
2. A one-pot, single-step ultrasonication method for preparation of white-light-emitting graphene quantum dots from coal soot, **V. Singh**, S. R. Mishra, T. Mandal: *Application No. 202411019849*, Date: 18/03/2024 (Indian Patent)

S&T Projects as Project Leader

Sr. No.	Project Title	Role	Funding Agency	Tenure	Cost (INR)
1.	Applications of Common Vegetables Derived Fluorescent Carbon Nanoparticles in in-vivo Multianalyte Sensing	PI	SERB (DST, India)	11-08-16 to 10-08-18; Completed	19,20,000/-
2.	RGB Emitting Carbon Quantum Dots from Vegetables/Fruits Extract and their Applications	PI	BIRAC-SRISTI	17-07-17 to 25-08-18; Completed	15,00,000/-
3.	Development of Functionalized Carbon-Based Fluorescent Nanomaterials from Coal	PI	In-house (CSIR-CIMFR) Project	05-11-2021 to 04-11-2024; Completed	62,77,920/-
4.	Development of Coal and Biomass-derived Nanosensor for the Selective and Sensitive Detection of Mercury in Water Samples	PI	In-house (CSIR-CIMFR)	09-05-2024 to 30-12-2024	19,77,920/-
5.	Recovery of Scandium and REEs from Indian Bituminous and Lignite Coal Fly Ash	PI	CSIR (Mission mode in critical minerals)	23-07-2024 to 30-12-2024	26,00,000/-
6.	Development of cost-effective fluorescent carbon quantum dots for the rapid detection of melamine in real samples	PI	In-house (CSIR-IITR) Project	01-04-2025 to Continue	62,50,000

Ph.D. Theses Advising

- **Completed: 01**
  - Shiv Rag Mishra (AcSIR); Development of Novel Fluorescent Nanomaterials from Coal and Biomass for Multifunctional Application (Aug 2022- Aug 2025)
- **Ongoing Students: 03**
  - Tuhin Mandal (AcSIR); Development of multicolour emitting carbon dots for optoelectronic and sensing applications
  - Gayatri Prasad (AcSIR): Development of carbon dots for theranostics applications
  - Ankit Gupta (AcSIR): Development of activated carbon from biomass sources for the efficient adsorptive removal of heavy metals in dye and wastewater systems.

M.Sc. Theses Advising

- **Completed**
  - Ajitabh Kumar (Binod Bihari Mahto Koyalanchal University, Dhanbad); Exploration of Economically Important Elements from Coal Mine Waste Rocks: Apr 2022

- Maher Fatmi (Shyama Prasad Mukherjee University, Ranchi); Development of activated carbon from sweet potato with the help of KOH activation: Dec 2022
- Yashomati Kumari (Shyama Prasad Mukherjee University, Ranchi); Development of activated carbon from mahua with the help of KOH activation: Dec 2022
- Nistha Mondal (Visva-Bharati, Santiniketan); Synthesis of biomass-derived fluorescent carbon nanomaterials for toxic metal ion detection: May 2024
- Irfan Noor (Lucknow University); Synthesis of nitrogen-doped fluorescent carbon nanomaterials from citric acid: May 2025
- Saurabh Verma (Lucknow Christian Degree College); Understanding the basics of analytical techniques: Aug 2025
- Meet Sahini (Lucknow University); Synthesis of fluorescent carbon dots for forensic application: Sep 2025
- Deepanjali Bisht (IT College, Lucknow); Principle and Application of Basic Analytical Techniques: Dec 2025
- Smriti Srivastava (IT College, Lucknow); Role of Optical Techniques in Modern Analytical Chemistry: Dec 2025

- **Ongoing**

Fellowships and Awards

1. **Best Oral Presentation Award**, at National Seminar on Paradigm Shift in Chemical Sciences, Lucknow Christian Degree College, Lucknow: **Nov 2017**
2. **Gandhian Young Technological Innovation Award** (GYTI) at ***Rastrapati Bhawan,*** New Delhi, by National Innovation Foundation (NIF), Govt. of India and SRISTI: **Mar 2017**
3. **National Postdoctoral Fellowship** (N-PDF) by DST-SERB, Govt. of India: **Jul 2016**
4. **Langmuir Best Ph.D. Thesis Award in Physical & Theoretical Chemistry** by Indian Institute of Technology Madras, Chennai: **Jul 2016**
5. Institute Pre- and Post-doctoral Fellow at Department of Chemistry, IIT Madras Chennai**: 08/10/15 - 07/04/16 (In recognition of early thesis submission)**
6. **Best Poster Award**, at Trombay Symposium on Radiation & Photochemistry Conference **(TSRP)**, BARC Mumbai: **Jan 2016**
7. **Best Poster Award**, at Chemistry in House Symposium **(CiHS)**, IIT Madras, Chennai: **Aug 2015**
8. **Junior and Senior Research Fellow of Council for Scientific and Industrial Research (CSIR/UGC exam)** in Chemical Science: **May 2011**
9. **Graduate Aptitude Test in Engineering (GATE**) Fellowship in Chemistry, **All India Rank-247: Mar 2011**
10. **Gold Medal in Master of Science** (M. Sc.), **Nov 2010**, Department of Chemistry, Lucknow Christian Degree College (University of Lucknow).

Invited Talks

Sr. No.	Title of Presentation	Conference/Symposium	Venue and Date
1	Fabrication of High-value Fluorescent Nanomaterials from Coal and its Byproducts for Versatile Applications: Waste-to-Wealth Approach	International Conference on Chemistry for Sustainability	IIT Hyderabad, 13-16 Jul 2025
2	Bioimaging Applications of Fluorescent Carbon Dots	National Workshop on "Cell Imaging and Sorting" (ANRF Sponsored)	Sharda University, Greater Noida 21-22 May 2025
3	Development of Biocompatible Fluorescent Carbon Dots for Biomedical Applications	National Symposium on Next Generation Drug Delivery Systems	Sharda University, Greater Noida 26-27 Dec 2024
4	Development of White-light Emitting Materials	Multifaceted Applications of Chemical Sciences	MLK PG College Balrampur, UP: 31 Mar 2024
5	Development of Amine-functionalized Fluorescent Silica Nanoparticles from Coal Fly Ash as a Sustainable Source for Nanofertilizer	Recent Trends in Chemical Sciences	Sambalpur University: 01 Mar 2024
6	Multifunctional Application of Fluorescent Carbon Nanomaterials	International Conference on Polymer Science and Technology	IIT Guwahati: 11 Dec 2023
7	Fluorescent Carbon Quantum Dots: An Emerging Smart Material for Versatile Applications	Guest Lecture	Shri Ramswaroop Memorial University, Lucknow: 02 Nov 2023
8	Fluorescent Carbon Nanomaterials: Synthesis, Properties and Applications	International Seminar on New Frontiers in Chemical Sciences	C. M. Science College Darbhanga: 30 Jul 2022
9	Biocompatible Carbon Quantum Dots from Natural Resources: Application to White Light Emission, Sensing & Bioimaging	International Symposium on Advances in Functional & Biological Materials	Department of Physics, University of Lucknow: 28/02/2019
10	An Introduction to Fluorescence Spectroscopy and its Applications	Inaugural Lecture	Isabella Thoburn (IT) College Lucknow: 09/09/2017
	Development of White Light Emitting Materials	Guest Lecture	Ewing Christian College, Allahabad:19/09/15

Administrative Experience

- Member, Local Grievance Committee, CSIR-IITR Lucknow: 2025-26
- Convenor of various conferences/workshops organised by the institute

Conferences (Poster/Oral)

1. **V. Singh**, J. Prakash and A. K. Mishra (2013), Determination of Absolute Fluorescence Quantum Yield Using a Homemade Fiber Optic Spectrometer: ***Chemistry in House Symposium,*** **IIT Madras, Chennai.**
2. **V. Singh** and A. K. Mishra (2013), Selective and Sensitive Detection of Iron (III) by Water-Soluble Fluorescent Carbon Nanoparticle: ***International Conference on Nanoscience and Nanotechnology,*** **BBAU, Lucknow.**
3. **V. Singh** and A. K. Mishra (2013), Selective and Sensitive Detection of Iron (III) by Water Soluble Fluorescent Carbon Soot: ***National Fluorescence Workshop FCS,*** **IISc and JNCSR, Bangalore.**
4. **V. Singh** and A. K. Mishra (2014), Selective Detection of Picric Acid Using a Carbazoloisobenzotriazolophane as a Fluorescent Sensor: ***IUPAC / Photochemistry Conference,*** **University of Bordeaux, France.**
5. **V. Singh** and A. K. Mishra (2014) Green and Cost-effective Turn-off Fluorescence Detection of Ferric Ion by Water Soluble Carbon Nanoparticle: ***Asian Photochemistry Conference,*** **IISER and NIIST Thiruvananthapuram.**
6. **V. Singh** and A. K. Mishra (2015) FRET Mediated Cool White Light Emission from a Mixture of Pomegranate Juice and Turmeric Extract: ***Chemistry in House Symposium,*** **IIT Madras, Chennai.**
7. **V. Singh** and A. K. Mishra (2015), White Light Emission from Natural Plant Extracts: ***14th Conference on Methods and Applications in Fluorescence,*** **University of Wurzburg, Germany.**
8. **V. Singh** and A. K. Mishra (2016) Vegetable Cocktail a Green and Sustainable Source of White Light Emission, *at* ***Trombay Symposium on Radiation & Photochemistry,*** **BARC Mumbai.**
9. **V. Singh** and A. K. Mishra (2016) Development of Green and Cost-effective Novel Fluorescent Sensors for Analytical Applications, *at* ***Recent Advances in Analytical Science,*** **IIT (BHU) Varanasi.**
10. **V. Singh** and A. K. Mishra (2017) White Light Emitting Materials, *at* ***National Seminar on Paradigm Shift in Chemical Sciences,*** **Lucknow Christian Degree College, Lucknow.**
11. **V. Singh** and Atul Goel (2018) One-pot Synthesis of Biocompatible Fluorescent Carbon Quantum Dots from Beetroot Extract for Non-invasive *in vivo* Live Animal Imaging, *at* ***Chemical Research Society of India-NSC,*** **IISER Bhopal.**
12. **V. Singh** (2018) Sustainable Carbon Quantum Dots from Natural Sources: Applications for White Light Emission, Sensing and Bio-imaging: **International Conference on Chemical Sciences: National and Global Prospective at Lucknow Christian Degree College (University of Lucknow)**
13. **V. Singh** (2019) Biocompatible Carbon Quantum Dots from Natural Sources: Applications for White Light Emission, Sensing and Bio-imaging: **International Symposium on Advances in Functional and Biological Materials at University of Lucknow, Lucknow**
14. **V. Singh** (2019), Development of Biocompatible Fluorescent Carbon Quantum Dots for Non-Invasive Live Animal Imaging and Therapeutics Application: **India International Science Festival at Biswa Bangla Convention Centre Kolkata**

15. **V. Singh** (2020), Fluorescent Carbon Quantum Dots: Synthesis, Properties and Applications: **International Conference on Frontier Areas of Chemistry at Mahatma Gandhi Central University, Motihari.**

Workshops/Training

1. **Introduction of Gaussian: Theory and Practice,** Central Leather Research Institute, Chennai & Indian Institute of Technology Madras, 2012.
2. **Colloids and Interfaces with Polymers and Surfactants,** Department of Chemical Engineering, Indian Institute of Technology Madras, 2014.
3. **Laboratory Quality Management System & Internal Audit as per IS/ISO/IEC 17025:2017,** National Institute of Training for Standardization, Bureau of Indian Standards, 20-23 Sept 2021 (online).
4. **General Requirements for the competence of reference material producers as per ISO 17034:2016,** by National Accreditation Board for Testing and Calibration Laboratories (NABL), Quality Council of India, 26-27 Nov 2024, Pune.
5. **Reference Materials- Guidance for Characterization and Assessment of Homogeneity and Stability as per ISO Guide 35: 2017,** by National Accreditation Board for Testing and Calibration Laboratories (NABL), Quality Council of India, 28-29 Nov 2024, Pune

Reviewer of reputed international journals

1. Institute of Physics	**2.** American Chemical Society
3. Elsevier	**4.** Royal Society of Chemistry
5. Wiley	**6.** Springer Nature
7. MPDI	**8.** Taylor and Francis

Memberships of Academic/Research Bodies

1. Life Membership: **Chemical Research Society of India (LM 2185)**

2. Life Membership: **Materials Research Society of India (LMB 3142)**

3. Life membership: **Vijnana Bharati (VIBHA; Id: 4452)**

3. Life Membership: **Association of Food Scientists and Technologists (12519)**

5. Life membership: **Association of Toxicologists and Risk Assessors (ASLM-0141)**