

Dr. Sonali Suryawanshi

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EDUCATION

- ⇔ Ph.D. (Chemistry) from Shivaji University Kolhapur, Maharashtra, India in 2018.
- ⇔ Master of Science with First Class in Applied Chemistry from Shivaji University Kolhapur, Maharashtra India in 2013.
- ⇔ Bachelor of Science with First Class in Chemistry from Krishna Mahavidyalay Rethare, Maharashtra, India in 2011.

SUMMARY OF RESEARCH

I have dedicated the past five years to the synthesis of fluorescent nanoprobe for real sample analysis. At present, my focus lies in the synthesis and characterization of carbon dots derived from bio-waste, with applications in chemical sensing, cell imaging, and supercapacitor devices. In addition to this, I have been taking the lead on independent projects, developing experimental protocols, troubleshooting challenges, and providing training to both graduate and master's students.

CAREER RECITAL

January 2014 – December 2018

Ph.D. in Chemistry

2014-2018 **Doctoral thesis: Preparation and Characterization of Fluorescent Organic Nanoparticles for Photophysical Studies and Analytical Applications.** Under the supervision of Prof. Shivajirao Patil, Department of Chemistry, Shivaji University, Kolhapur, MS, India and Prof. A.J. Bodake, Rajaram College Kolhapur, MS, India in 2018.

I have done the research work on the preparation and characterization of nanoparticles of surface modified polynuclear aromatic hydrocarbon (PAHs) and functionalized fluorescent organic probe for photophysical studies and analytical applications. The selective sensing of organic nanoparticles (ONPs) towards the specific analyte by either fluorescence quenching or fluorescence enhancement approach have been done. Further the developed fluorimetric method was successfully applied for the quantitative analysis of specific analyte results lower value of LOD. The analyte species for which method has been developed are MnO_4^- , Al^{3+} , Cr (VI), Fe^{3+} , Adenine and Human Serum Albumin which are of health and environmental concerns.

June 2011 – April 2013

Master of Science

2011- 2013 **M.Sc. in Applied Chemistry (April-2013)** From Department of Applied Chemistry, Shivaji University, Kolhapur. Pin: 416004 (M.S.) India
Title of project completed for the partial fulfillment of M.Sc. degree: "Drug Analysis in Quality Control" at SDS Nutraceuticals Ltd", Karad (India) in May 2012.

Description: The Project included experimental analysis of raw materials & final product by characterization techniques in quality control department of SDS Nutraceuticals. (**Recipient of B. N. Kulkarni Charitable Trust Scholarship, Sangli during M.Sc.**)

AREAS OF INTEREST

- Fluorescence Spectroscopy
- Nanotechnology
- Organic fluorophores Synthesis
- fluorescent organic nanosensor
- Carbon dots
- Cell Imaging
- Analytical Applications
- Supercapacitor

TECHNICAL SKILLS:

1. UV-Visible Spectrophotometer (Specord 210 plus Analytical Jena)
2. Time-Correlated Single Photon Counting [TCSPC] spectrometer
3. Spectrofluorometer (Jasco-8300, Japan).
4. Computer Knowledge: Precise knowledge and experience of working on various computer software viz. MS-Excel, MS-Word, MS-PowerPoint, MS-Publisher.
5. Origin 8.5/2013, Chemdraw
6. Possesses knowledge of basic instrumentation like IR, UV, FE-SEM and DLS. Good knowledge of Analytical Techniques: e.g. HPLC, TLC, GC-MS.

TEACHING EXPERIENCE:

1. **Assistant Professor**, (Adhoc) S.G.M. College, Karad. **(July, 2013 to April, 2014)**.
2. **Contributory teacher** in Department of Applied Chemistry, Shivaji University, Kolhapur. **(July, 2014 to April, 2016)**.
3. **Teaching Assistant**, Department of Chemistry, Shivaji University, Kolhapur. **(July, 2016 to April, 2018)**.
4. **Assistant Professor** (Adhoc) in Department of Chemistry, DKTE Textile and Engineering Institute, Ichalkaranji **(July 2018 to 31 July 2019)**.
5. **Assistant Professor** (Regular) in Department of Chemistry, Sanjay Ghodawat University, Kolhapur **(August 2019 to till today)**.

EXPERTISED

Nano-material preparation and characterizations

1. Synthesis of fluorescent organic nanoparticles by Reprecipitation method.
2. Synthesis of Carbon Dots by Hydrothermal method.
3. Optical evaluation of synthesized nanoparticles.
4. Characterization methods: FTIR, TEM, SEM, FE-SEM, DLS, UV-vis.

ASSETS AND SKILLS

Communication:

- Good communication/presentation skills: presented data clearly and confidently to both small and large groups, adapting style and content to the level of knowledge and understanding of others.
- Strong synthesizing, writing, and information technology skills: wrote scientific articles in international peer-reviewed journals and funding applications.

Interpersonal skills:

- Collaborated with other scientists, outlining objectives, methodology, and conclusions, actively listening to people and stimulating interest and discussion.

- Exchanged constructive feedback and support and learned delegating responsibility.

Adaptability:

- Collaborated and communicated at all professional levels, and with people from diverse origins and cultures. Can work both independently and in team settings.

Management and organization:

- Managed several projects and collaborations in parallel, planned work to achieve goals and targets on time, set realistic objectives, developed creative solutions to problems. Attended introductory courses of management.

SUBJECT TAUGHT:	
Undergraduate:	USS 102 Chemistry – I (Basics of Inorganic Chemistry and lab), CHS 303 Inorganic Chemistry, CHS 312 Molecules of Life, Applied Chemistry and Engineering Chemistry Lab.
Postgraduate:	Fundamentals of Analytical Chemistry (CHS 623) and Analytical Chemistry Lab, (CHS 622) Pollution Monitoring and Control, CHS 304 Techniques in Analytical Chemistry and Analytical Chemistry lab.

SUPERVISED MASTERS LEVEL PROJECTS (2019-23):

Sr. No.	Name of Student	Project Title	Year of Completion
1.	Ms. Shweta R. Patil, Ms. Anjali S. Kadam	Extraction and Characterization of Pectin from Orange peel waste, SOS, SGU.	2020-21
2.	Mr. Umama A. Nasardi, Mr. Vaibhav S. Patil, Mr. Rohit P. Garad, Mr. Nilesh N. Patil	“Preparation of green light emitting carbon dots from Biowaste for photophysical studies and analytical application” SOS, SGU.	2021-22
3.	Mr. Pankaj M. Patil	Synthesis of 1, 2- disubstituted benzimidazoles using aqueous hydrotropic solution, SOS, SGU.	2021-22
4.	Ms. Nikita Dadhich,	“Green Synthesis of highly fluorescent biocompatible carbon dots (CDs) derived from sugarcane bagasse pulp by hydrothermal method for photophysical studies and environmental applications”. Received 30,000/- grant for UG project Under BASF-PKC Pune Maharashtra , SOS, SGU.	2022-23
5.	Mayur M. Patil, Prafulla R. Patil, Pratap T. Patil.	“Preparation of DPP based Carbon dots and their photophysical” SOS, SGU.	2022-23
6.	Patil parshuram Balaso, Patil Prathamesh Krushnat, Patil Rhutik Rajendra, Patil Rohit Sambhaji, Pawar Rushikesh	“Synthesis of carbon dots from almond peels and their energy storage applications” SOS, SGU.	2022-23
7.	Ms. Kirti patil Mr. Sataym Kore, Mr. Rohan Mane	“Textile Industry Waste Threads Derived Carbon Dots as a Promising Additive for Active Supercapacitor Electrode Material”. Received	2023-24

		90,000/- grant for PG project Under BASF-PKC Pune Maharashtra, SOS, SGU.	
8.	Mr. Rushikesh Rajput, Mr. Omkar Khangaokar, Mr. Omkar Ghavane	Synthesis and characterization of Carbon dots derived from Ragi Husk: Energy Application.	2023-24

SUPERVISED Ph.D. STUDENTS (2023):

Sr. No.	Name of Student	Project Title	Date of Registration	Date of Declaration
1.	Mrs. Yogita Baber	"Synthesis and Characterization of Bio-Waste Derived Carbon Dots (CDs) for Chemical Sensing and Biomedical Applications", SGU.	1 st January 2023.	(Ongoing)

CAREER ACHIVEMENTS

Research papers under communication/review

1. AIEE active SDS capped 1-N-Phenyl naphthylamine nanoprobe for Cd²⁺ ion detection: Application to environmental analysis.

Avinash A. Kamble, Prasad G. Mahajan, Netaji K. Desai, Dattatray K. Dalavi, **Sonali B. Suryawanshi**, Omkar S. Nile, Govind B. Kolekar and Shivajirao R. Patil.

Papers published in international peer-reviewed journals

1. Selective recognition of MnO₄⁻ ion in aqueous solution based on fluorescence enhancement by surfactant capped naphthalene nanoparticles: Application to ultratrace determination of KMnO₄ in treated drinking water. **S. B. Suryawanshi**, P. G. Mahajan, D. P. Bhopate, G. B. Kolekar, S. R. Patil, A. J. Bodake, *J. Photochem. Photobio. A* 329(2016) 255-261. (I.F. 5.141, Citation 17).

2. Carbazole based nanoprobe for selective recognition of Fe³⁺ ion in aqueous medium: Spectroscopic insight. **S. B. Suryawanshi**, P. G. Mahajan, A. J. Bodake, G. B. Kolekar, S. R. Patil, *Spectrochim. Acta A* 183 (2017) 232–238. (I.F. 4.831, Citation 11).

3. Selective recognition of Cr(VI) ion as Cr₂O₇²⁻ in aqueous medium using CTAB capped Anthracene based nanosensor: Application to environmental water sample. **S. B. Suryawanshi**, Prasad G. Mahajan, G. B. Kolekar, A. J. Bodake and S. R. Patil, *J Phys.Org. Chem.* 32 (4) (2019) e3923 (I.F. 2.155, Citation 3).

4. FRET between riboflavin and 9-Anthraldehyde based fluorescent organic nanoparticles possessing antibacterial activity. P. G. Mahajan, N. C. Dige, **S. B. Suryawanshi**, D. K. Dalavi, A. A. Kamble, D.P. Bhopate, A. N. Kadam, V. V. Kondalkar, G. B. Kolekar, S. R. Patil., *J. Fluoresc.* 28 (2018) 207-215. (I.F.2.525, Citation 22).

5. AIEE active SDS stabilized 2-naphthol nanoparticles as a novel fluorescent sensor for selective recognition of Crystal violet: Application to Environmental analysis. D. K. Dalavi, **S. B. Suryawanshi**, G. B. Kolekar, S. R. Patil *Anal. Methods* 10 (2018) 2360-2367. (I.F. 3.532, Citation 6)

6. Quinoxaline based nanoprobe for selective detection of Adenine in aqueous medium: Application to biological sample. **S. B. Suryawanshi**, G. R. Deshmukh, A. J. Bodake, S. R. Patil. *JETIR*, 7(2) (2020) 139. (I.F. 7.95, Citation 1)
7. AIE emission of SDS capped Diphenylanthracene nanoparticles for selective recognition and estimation of Al₃₊ ion in aqueous medium based on enhancement effect and Analytical application. **S. B. Suryawanshi**, G. R. Deshmukh, A. J. Bodake, S. R. Patil. *Macromolecular Symposia*, 392 (1), (2020) 2000082 (I.F. 1.04, Citation 1).
8. Fluorescence enhancement based qualification of human serum albumin from biological sample using indole based nanosuspension: molecular interaction and molecular docking studies. **S. B. Suryawanshi**, N. K. Desai, A. J. Bodake, S. R. Patil. *J. Fluoresc.*, 32(1), (2021) 293-305 (I.F. 2.525)
9. Bio-waste originated, heterogeneous catalysts based on pomegranate peel for Knoevenagel condensation: A green approach. *React. Kinet. Mech. and Catal* (2023), 1-14 (I.F. 1.843)
10. Book published in English, Spanish and German languages titled An Overview on Fluorescent Organic Nanoparticles (FONPs), ISBN 13: 978-620-6-14654-4, Lambert academia publisher. UK and Moldova, Europe.



Google scholar: <https://scholar.google.co.in/citations?hl=en&tzom=-330&user=689iGeMAAAAJ>
Scopus: <https://www.scopus.com/authid/detail.uri?authorId=57190306095>

Citation Indices:



Conference / Workshop/Seminar/Symposia/Webinar

1. Participated in national conference on “**Frontiers of Research in Chemistry**” (FRC 2013) organized by Department of Chemistry, Sadguru Gadage Maharaj College, Karad 26th - 27th, December, 2013.
2. Cetyltrimethylammonium bromide capped Naphthalene nanoparticles for selective recognition of MnO_4^- ion in aqueous solution based on fluorescence enhancement and ultratrace determination of $KMnO_4$ in treated drinking water." National Conference on New Horizons in Chemical Science (NHCS-2015) Satara on 22nd-23rd December, 2015 organized by Department of Chemistry. (**Best Poster presentation- First prize**)
3. Spectrofluorometric recognition of Thymine in aqueous solution based on fluorescence quenching of Triton X-100 stabilized carbazole nanoparticles, National conference on Recent Advances in Integrated Pest Management (RAIPM-2016) on 1st- 2nd March, 2016 organized by Department of Agrochemicals and Pest Management, Shivaji University, Kolhapur. (**Best Oral presentation-Third Prize**).
4. Fluorescence “Turn-on” 9,10-Diphenyl anthracene nanoprobe for the selective recognition and estimation of Al^{3+} ion in aqueous medium: Analytical application. National Conference on Innovative Research in Chemical Sciences (IRCS-2017) Kolhapur, on 1st-2nd February, 2017 organized by Department of Chemistry, Shivaji University, Kolhapur. (**Best oral presentation- Third Prize**).
5. TNPs as a novel fluorescent sensor for the selective recognition of fast green FCF: a spectrofluorimetric approach National conference on Frontiers in Chemical and Material Sciences (FCMS-2015) on 16th-17th January, 2015 organized by Department of Chemistry, Shivaji University, Kolhapur. (**Poster presentation**).
6. Quinoxaline based nanoprobe for selective detection of Adenine in aqueous medium: Application to Biological sample. National conference on Innovative Research in Science and Technology (NCIRST-2019) on 17th & 18th December, 2019 organized by Department of Chemistry, Shri Shivaji Science College, Amravati (Maharashtra). (**Poster presentation**).
7. Spectrofluorometric exploration of human serum albumin in aqueous solution by Indole based nanoprobe: Application to Biomedical Analysis. National conference on Recent Trends in Chemistry and Material Science (RTCMS-2019) on 9th Feb 2019, organized by Department of Chemistry, Shivaji University, Kolhapur, (**Poster presentation**).
8. Participated in national seminar on “Application of Chemical and Material Science for Sustainable Development” on 20th February, 2016 organized by department of chemistry, Shivaji University, Kolhapur.
9. Participated in awareness workshop of “**UGC-DAE Consortium for Scientific Research**” on 20-21st February, 2015 organized by UGC-DAE consortium for Scientific Research, Mumbai Center and Department of physics, Rajaram College, Kolhapur.
10. Participated in one day workshop on “**Recent Trends in Research Applications**” on 24th February, 2015 organized by Department of Chemistry and Economics at Rajaram College, Kolhapur.
11. Participated in “**One Day Faculty Development Program on Academics and Accreditation**” on 14th September, 2019 organized by Human Resource Development Cell, Sanjay Ghodawat University, Kolhapur.
12. Participated in two days workshop on “**Effective Teaching**” organized by Human Resource Development Cell, Sanjay Ghodawat University, Kolhapur on 27th –28th January, 2020.
13. Volunteered as **Faculty Advisor** in Umang, Annual Social Gathering 2019-20 on 2nd-3rd March, 2020 organized by Sanjay Ghodawat University, Kolhapur.
14. Participated in online webinar on “**Research publications and citations: perspective of a highly cited researcher**”, conducted by Enliven Archive on 7th May 2020.
15. Participated in five days online faculty development programme on “**Moodle-Learning Management System**” organized by IQAC, Department of Information Technology and

- Computer Science in association with IIT Bombay, Saket college of Arts, Science and commerce, Kalyan (E) on 10th – 14th May, 2020.
16. Participated in two days “**National Level Virtual Workshop on Advanced Materials Characterization Tools**” organized by SRM Research Institute of Science and Technology Kattankulathur, Chennai, Tamil Nadu, India on 20th-21st May, 2020.
 17. Participated in the webinar on “**Patent filling and prosecution**” organized by KPR Institute of Engineering and Technology Coimbatore on 23rd May 2020.
 18. Participated in online quiz on “**Fundamentals of Rechargeable Batteries**” conducted by the Department of Chemistry, organized by Rajapalayam Raju’s College, Tamilnadu on 2nd June 2020 with score 70%.
 19. Attended online webinar on “**Nanotechnology for Transforming the Future: Challenges and Opportunities**” organized by Pandit Deendayal Petroleum University on 23rd May 2020.
 20. Attended ‘**One Week Workshop Series**’ organized by Human Resource Development Cell, Sanjay Ghodawat University on 4th – 9th May 2021.
 21. Attended IQAC workshop on “**NAAC preparation**”, organized by SGU 26th April 2021 -1st May 2021.
 22. Attended Two days International Workshop on “**Research Methodology in Drug Discovery and Life-sciences**” organized by School of Pharmaceutical Sciences, SGU 7th – 8th May 2021.
 23. Attended workshop on ‘**A mini Conclave on leader’s vision 2025**’ organized by HRDC. 12th - 23rd May 2021.
 24. Attended workshop on ‘**CO, PO & PSO mapping & attainment**’ organized by HRDC, SGU. 26th – 27th May 2021.
 25. Participated in online webinar on “**True Facts about Covid-associated Mucormycosis**” organized by Department of Chemistry, Dr. Patangrao Kadam Mahavidyalaya, Sangli on 12th June 2021.
 26. Attended webinar on “**Post-Covid Complications- Mucormycosis**” organized by Human Resource Development Cell, SGU 25th June 2021.
 27. Participated & completed successfully AICTE Training And Learning (ATAL) Academy Online Elementary **FDP on "GREEN TECHNOLOGY & SUSTAINABILITY IN CHEMISTRY"** from 02nd – 06th August, 2021 at Adhiyamaan College Of Engineering (Score: 88%).
 28. Participated & completed successfully AICTE Training And Learning (ATAL) Academy Online Elementary **FDP on "Fabrication and Characterization of Thin Films for Future Technological Applications"** from 16th – 20th August 2021 at The National Institute of Engineering (Score: 60%).
 29. Participated in National Conference on “Recent Trends in Pure and Applied Sciences” (RTPAS-2023) titled “AIEE Based Quantification of HAS from Biological Sample using Indole based Nanosuspension: Application to biomedical Analysis” 17th February 2023.
 30. Participated a Two days “Mentor Development Program” Bhartiya Yuva Shakti Trust in association with SGU, 13th & 14th February 2023.
 31. National Seminar on ‘Emerging Nano Materials for renewable Energy’ SGU, 26th December 2022.
 32. Participated in one day workshop on “Standardization” Standard Club in association with bureau of Indian standards (BIS) Pune, 25th August 2022.
 33. Online Five Days FDP on "NEP 2020 - A paradigm shift to Asynchronous Learning and Industry Academic Research and Collaborations", Faculty of Commerce and Management, SGU, Kolhapur, 12-16th May 2023.
 34. Green Synthesis of Carbon dots based on sugarcane bagasse pulp for photophysical investigation and antimicrobial application, Indian Conference on Carbon Materials, (ICCM, 2023) 30th Nov–2nd Dec. 2023, organized by Indian Carbon Society BARC, Mumbai. (**Poster presentation**)

COLLABORATIONS

Sr. No	Collabration	Year
1.	QUT, Australia, Prof. Deepak Dubal	2014 till today
2.	NCL Pune, Dr. Niraj Meitram	2018 till today
3.	Shivaji Univeristy Kolhapur, Prof. G.B. Kolekar	2018 till today
4.	Oak Ridge National Laboratory, USA, Xiao-Ying Yu	2022 till today
5.	ICT , Mumbai, Dr. Manish Kumar Yadav	2022 till today

OTHERS ACHIVEMENTS

- Best Poster Presentation 1st Prize, YC Institute of Science, Satara, 2015, National Conference.
- Best Oral Presentation 3rd Prize, Shivaji University Kolhapur, 2016 National Conference.
- Best Oral Presentation 3rd Prize, Shivaji University Kolhapur, 2017, National Conference.
- Best Poster Presentation 2nd Prize, Department of Chemistry, Shivaji University Kolhapur, National Conference.
- DKTE, TEI, Ichalkaranji (2019) Academic award for earning Ph.D.
- Selected for Postdoctoral study in Central China Normal University, Wuhan, China (2020). Graphical presentation selected for cover picture from article **2000082**, Volume 392, Issue 1 Special Issue: Advances in Material Science-ICAMS 2020 (Part I&II) Macromolecular Symposia, Wiley.
- Recipient of 'InSc Young Researcher Award' December 2021.

MEMBERSHIP

➤ ACS (American Chemical Society) chemistry for life community member (Membership number: 32691583) 2021.
➤ The Indian Carbon Society, Life membership (LM 659)
➤ Institute of Scholar (InSc.) Bengaluru 2021.

MEMBER OF VARIOUS COMMITTEES:

- Member and Secretary, Women Empowerment cell, Sanjay Ghodawat University Kolhapur.
- Faculty Cultural Coordinator, Sanjay Ghodawat University Kolhapur.
- Member of Innovation and Incubation Centre, Sanjay Ghodawat University Kolhapur.

Reviewer for professional journals: Reviewed scientific research papers and books:

- International journal of Basic and Applied Sciences, **ISSN:2227-5053**
- Editorial Board Member of "Iterative International Publisher" (IIP) Id: IIPER1681718727 "Futuristic Trends in Chemical, Material Sciences & Nanotechnology Editor Book Series.