

Curriculum vitae

Piya Roychoudhury

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Research Interest:

- **Microalgae cultivation and Mass production**
- **Metal particle production exploiting Cyanobacteria and Algae**
- **Photothermal therapy utilizing alga mediated biosynthesized metal nanoparticle**

Education		
University level	Degree	PhD.
(Doctoral)	University name	University of Calcutta
	Name of supervisor(s)	Prof. Ruma Pal
	Date (degree was obtained)	06 September 2017
	Grade	N.A
	Country	India
University level	Degree	Master of Science
(Masters)	University name	University of Calcutta
	Date (degree was obtained)	02 August 2010
	Grade	A+
	Country	India

Current Employment	
Position	Assistant Professor
Department	Department of Botany and Microbiology
Employers' name/Institution	Hemvati Nandan Bahuguna Garhwal University, Uttarakhand, India
Period of employment	18 th July, 2023-till date

Former Employment	
Title	Post-doctoral fellow
Employers' name/Institution	University of Szczecin, Poland
Period of employment	28 December 2020 - 29 December 2022
Responsibilities, tasks and skills	<ul style="list-style-type: none">✓ Mass cultivation of diatom✓ Doping of diatom frustules with various nanoparticles✓ Application of metal doped frustules in catalysis, filtration, as matrix in MALDI

Former Employment	
Title	Assistant Professor
Employers' name/Institution	Karnatak Arts, Science and Commerce College, Bidar, Karnataka, India
Period of employment	18 January 2017 - 20 October 2020
Responsibilities, tasks and skills	<ul style="list-style-type: none"> ✓ Teaching graduate students (Botany and Environmental science) ✓ Established Phycology Laboratory ✓ Principal Investigator of Foldscope Project funded by DBT, Govt. of India ✓ Guided Graduate Students to complete their project work
Former Employment	
Title	Research Fellow
Employers' name/Institution	University of Calcutta, India
Period of employment	18 January 2012 - 17 January 2017
Responsibilities, tasks and skills	Biogenic Production of metal Nanoparticles using algae
Former Employment	
Title	Research Scholar
Employers' name/Institution	West Bengal Fisheries, Kolkata, India
Period of employment	01 September 2010 - 31 December 2011
Responsibilities, tasks and skills	Fish Feed Preparation using Algae

Teaching experience		
Organization/school	Subject	Description
Karnatak Arts Science and Commerce College, Bidar, Karnataka (18 th January, 2017- 20 October 2020)	Environmental science (B.Sc.)	Theoretical course (lecture) for 250 students
	Botany (B.Sc.)	Theoretical course (lecture) and practical (Demonstration) for 50 students
Hemvati Nandan Bahuguna Garhwal University, Uttarakhand, India	Botany (B.Sc. &M.Sc.)	Theoretical and practical courses

Mentoring/Leadership experience

Organization	Description
University of Calcutta	During Doctoral study guided five Masters student (2012-2016) in their Project work related to Algae based nanoparticle production.
Karnatak Arts Science and Commerce College, Bidar, Karnataka	Organized National Workshop on “Foldscope utilization to explore algal biodiversity” on 10 th January, 2019

Fellowships, awards and research grants

Date	Fellowship
18 January, 2012 -17 January, 2014	Junior Research Fellowship, University Grant Commission
18 January, 2014- 17 January, 2017	Senior Research Fellowship, University Grant Commission
Date	Awards
22-26 March, 2021	Financial Support from International Phycological Society for presenting a paper at the “12th International Phycological Congress” held in Chile, South America
28-29 January, 2021	Best paper award in international e-conference organized by Probir Chatterjee Research Foundation and University of Calcutta, Kolkata, India
23-24 February, 2018	Awarded Second prize for Poster Presentation in national conference on ‘Science and Technology for Rural development’ organised by Karnataka Science and Technology Academy at Koppal, Karnataka, India
13-19 August, 2017	Paul C Silva Student grant award for presenting paper at the “11th International Phycological Congress” held in Szczecin, Poland.
13-19 August, 2017	Papenfuss Poster Award for Best poster presentation in “11th International Phycological Congress” held in Szczecin, Poland
13-19 August, 2017	Financial support from International Phycological Society for presenting a paper at the “11th International Phycological Congress” held in Szczecin, Poland
15-18 November, 2016	Foreign travel grant awarded by “The Endowment Foreign Travel Scholarship” for presenting a paper at the “9th Asia Pacific Conference on Algal Biotechnology (APCAB 2016)” held in Bangkok, Thailand
26-28 October, 2015	Foreign travel grant awarded by “Science and Engineering Research Board (SERB)” for presenting a paper at the “2nd International conference on Nanomaterials-fundamental and applications” held in Kosice, Slovakia
27-29 August, 2014	Foreign travel grant awarded by “Indian Council of Medical Research” for presenting a paper at the “2nd International conference on algal biorefinery: a potential source of food, feed, biochemicals, biofuels and biofertilizers” held in Technical University of Denmark (DTU), Lyngby, Denmark

Date	Grant
May, 2018- September, 2019	“Study of algal biodiversity in Bidar District (Karnataka) and screening their efficacy in synthesizing iron nanoparticles” funded by Department of Biotechnology, Ministry of Science and Technology, Govt. of India, INR 8 lakhs.
February, 2025- January, 2027	“Study of Iron oxide nanoparticles doped with locally available lichen in removal of cationic and anionic azo dyes from water” funded by ‘Research and Development cell’ of H. N. B. Garhwal University, Srinagar, Uttarakhand, INR 180000.

Conferences	
Date	Activity
27-30 September, 2021	39 th Polish Phycological Congress by Polish Phycological Society, Leba, Poland; presented paper on “Diatom assisted biofabrication of gold-silica and silver silica nanohybrid-A green chemistry approach”
22-26 March, 2021	12 th International Phycological Congress (Virtual) by Polish Phycological Society; presented paper on “Screening of diatoms for
28-29 January, 2021	Phycology Webinar by Probir Chatterjee Research Foundation and University of Calcutta; presented paper on “Cyanobacteria and algae based production of gold and silver nanoparticles-characterization and application”
5-8 October, 2018	India International Science Festival, Lucknow, India; Presented paper on “Algal diversity of Bidar District, Karnataka with special reference to metal ion reduction ability of potential strain”
6-7 March, 2018	Science and Development for Inclusive Development, Gulbarga, India; Presented paper on “Biogenesis of silver nanoparticles using fractionated cellular components of Eukaryotic algae and cyanobacteria”
23 -24 February, 2018	Role of science and Technology in Rural Development, Koppal, India; Presented paper on “Algicidal effect and DNA binding affinity of silver nanoparticle- biofabricated by green alga, <i>Rhizoclonium riparium</i> ”
13-19 August, 2017	11th International Phycological Congress, Szczecin, Poland; Presented paper on “Biofabrication of gold and silver nanoparticle using fractionated cellular components of eukaryotic algae and cyanobacteria”
21-23 December, 2016	International conference on “Green Planet: Past, Present and Future, Kolkata, India; Presented paper on “Microalgae and Cyanobacteria as silver nanofactories”
15-18 November, 2016	9th Asia Pacific Conference on Algal Biotechnology (APCAB 2016), Bangkok, Thailand; Presented paper on “Biofabrication of gold and silver nanoparticle using Eukaryotic algae and Cyanobacteria”
26-28 October, 2015	2nd International conference on Nanomaterials-fundamental and applications Kosice, Slovakia; Presented paper on “Biogenic

	Synthesis of Silver and Silver-Gold Alloy Nanoparticle using Cyanobacteria as Bioreagent”
28 February- 1 March, 2015	22nd West Bengal State Science & Technology Congress, North Bengal University, Darjeeling, India; presented paper on “Nanoparticle synthesis and toxic metal removal – An algae based technology”
18 -19 December, 2014	Conference on Cryptogamic Botany in University of Kalyani, West Bengal, India
27-29 August, 2014	2nd International conference on algal biorefinery: a potential source of food, feed, biochemicals, biofuels and biofertilizers” ,Technical University of Denmark (DTU), Lyngby, Denmark; Presented paper on “Microalgae as silver and gold nanofactory - screening and characterization”
19 November, 2013	Cryptogamic Botany-Curriculum to application in University of Calcutta, India
11 -12 January, 2013	1st International Conference on Algal Biorefinery: A potential source of food, feed, biochemicals, biofuels and biofertilizers, Indian Institute of Technology, India; Presented paper on “Micro algae based silver nanoparticles production and characterization”

Professional memberships	
Organization	Status (member, fellow etc.)
Probir Chatterjee Research Foundation, University of Calcutta, India	Life member
International Phycological Society (USA)	Student Member (2017-2018)

Additional Information
<p>✓ I designed a device using algae silver biomass to control rotting of fruits by maintaining redox balance which increased its shelf-life by inhibiting oxidation and microbial contamination. Fruits can be stored within this device upto one month. This device is very simple, easy to handle and reusable. Within this newly designed device fruits can be stored without refrigeration. In this newly developed system no contact occurred between fruits and chemicals which ensured that the preserved fruits are healthy and free from any metal contamination.</p> <p>✓ Production of biogenic monodisperse (particle with controlled shape and size) nanoparticle has been a challenge in the field of nanobiotechnology. I used various cellular components like carotenoids, polysaccharides, proteins and intact pigment bearing chloroplasts/thylakoids individually as reducing agents in biosynthesis of metal nanoparticles extracted from prokaryotic and eukaryotic algal cell systems. It was confirmed that synthesis of monodisperse gold nanoparticle is always possible at pH 9 by extracted chloroplasts and thylakoids from green alga <i>C. infusionum</i> and cyanobacterium, <i>A. sphaerica</i>, respectively.</p> <p>✓ Leukemia is one of the major causes of mortality globally, and there has been a need to identify new therapeutic avenues for its treatment. I observed that cyanobacteria mediated biogenic silver nanoparticle showed appreciable anti-proliferative effect on leukemic cells K562, MOLT-3 and especially on REH cell line. Notable nuclear</p>

fragmentation of REH cells appeared as a hallmark event of the programmed cell death. However biosynthesised nanoparticle showed no cytotoxicity on normal cells.

Researcher identification

Orcid iD <https://orcid.org/0000-0002-6368-5428>

Publications:

1. **Roychoudhury P**, Golubeva A, Railean V, Robotnik K, Pomastowski P, Dąbek P. Fabrication of silver nanoparticles doped siliceous frustules of *Phaeodactylum tricornutum*—an efficient catalyst for methylene blue removal from water. *Nova Hedwigia*. 2025.
2. Upasna, Yadav AK, Bose R, **Roychoudhury P**. Removal Of crystal violet from water by iron oxide nanoparticles loaded green alga. *Ind J of Appl res*. 2024; 14:1-3.
3. Yadav AK and **Roychoudhury P**. Effect of copper and zinc on the photosynthetic pigments of *Oedogonium capillare*. *Global J Res Anal*. 2024; 13:1-3.
4. Golubeva A, **Roychoudhury P**, Dąbek P, Pryshchepa O, Pomastowski P, Pałczyńska J, Piszczek P, Gloc M, Dobrucka R, Feliczyk-Guzik A, et al. Removal of the Basic and Diazo Dyes from Aqueous Solution by the Frustules of *Halamphora cf. salinicola* (Bacillariophyta). *Marine Drugs*. 2023; 21(5):312. **IF: 6.085**
5. Golubeva, A., **Roychoudhury, P.**, Dąbek, P. *et al.* A novel effective bio-originated methylene blue adsorbent: the porous biosilica from three marine diatom strains of *Nanofrustulum* spp. (Bacillariophyta). *Sci Rep* **13**, 9168 (2023). **IF:4.99**
6. **Roychoudhury P**, Golubeva A, Dąbek P, Pryshchepa O, Sagandykova G, Pomastowski P, Gloc M, Dobrucka R, Kurzydłowski K, Buszewski B, Witkowski A. Study on Biogenic Spindle-Shaped Iron-Oxide Nanoparticles by *Pseudostaurosira trainorii* in Field of Laser Desorption/Ionization Applications. *International Journal of Molecular Sciences*. 2022; 23(19):11713. <https://doi.org/10.3390/ijms231911713>. **IF:6.208**
7. **Roychoudhury P**, Bose R, Dąbek P, Witkowski A. Photonic Nano-/Microstructured Diatom Based Biosilica in Metal Modification and Removal—A Review. *Materials*. 2022; 15(19):6597. <https://doi.org/10.3390/ma15196597>. **IF:3.623**
8. **Roychoudhury P**, Dąbek P, Gloc M, Golubeva A, Dobrucka R, Kurzydłowski K, Witkowski A. 2021. Diatom Mediated Production of Fluorescent Flower Shaped Silver-Silica Nanohybrid. *Materials*. 14:7284. **IF:3.623**
9. **Roychoudhury P**, Dąbek P, Gloc M, Golubeva A, Dobrucka R, Kurzydłowski K, Witkowski A. 2021. Reducing Efficiency of Fucoxanthin in Diatom Mediated Biofabrication of Gold Nanoparticles. *Materials*. 14(15):4094. **IF:3.623**
10. Banerjee S, Bhattacharya A, **Roychoudhury P**, Dasgupta AK, Dutta M, Pal R. 2021. *Arthrospira platensis* (Cyanobacteria) – a potential biofactory for fluoromagnetic nanoiron production. *Phycologia*. 60(1):62-72. **IF 2.857**
11. Bose R, **Roychoudhury P**, Pal R. 2021. In-situ green synthesis of fluorescent silica–silver conjugate nanodendrites using nanoporous frustules of diatoms: an unprecedented approach. *Bioprocess Biosyst Eng*. 44:1263–1273. **IF: 3.210**
12. **Roychoudhury P**, Bose R, Pal R. 2018. Algicidal activity and DNA binding affinity of silver nanoparticle-biofabricated by green alga, *Rhizoclonium riparium*. *J Algal Biomass Utiln*. 9(1):67-77

13. Bhattacharya A, Kar P, Biswas P, Roychoudhury P, Basu S, Ghosh S, Panda K, Pal R, Dasgupta AK. 2017. Nitric oxide sensing by chlorophyll a. *Anal Chim Acta*. 985:101-113. **IF: 6.558**
14. **Roychoudhury P**, Bhattacharya A, Dasgupta A, Pal R. 2016. Biogenic synthesis of gold nanoparticle using fractionated cellular components from eukaryotic algae and cyanobacteria. *Phycol Res*. 64(3):133-140. **IF:1.675**
15. **Roychoudhury P**, Ghosh S, Pal R. 2015. Cyanobacteria mediated green synthesis of gold-silver nano alloy. *J Plant Biochem. Biotechnol*. 25(1):73-78. **IF:1.175**
16. **Roychoudhury P** and Pal R. 2014. Synthesis and characterization of nanosilver- a blue green approach. *Ind J of Appl Res*. 4(1):54-56.
17. **Roychoudhury P** and Pal R. 2014. Spirogyra submaxima- a Green Alga for Nanogold Production. *J Algal Biomass Utiln*. 5(1):15–19.
18. **Roychoudhury P** and Mukherjee M. 2013. Role of algal mixture in food intake of *Macrobrachium rosenbergii* during larval development. *Indian Journal of Geo-Marine Sciences*. 42(5):647-652.
19. Parial D, Patra HK, **Roychoudhury P**, Dasgupta AK, Pal R. 2010. Gold nanorod production by cyanobacteria- a green chemistry approach. *J of Appl Phycol*. 21:145-152. **IF:3.215**