# DR. PALLABI GOSWAMI

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*Date of Birth: 1 August 1974*

## PROFESSIONAL SUMMARY

Accomplished inorganic chemist with over 23 years of teaching, research, and academic leadership experience at higher education institutions in India. Research focuses on semiconductor photocatalysis, nanoscience, and green chemistry, with emphasis on the synthesis and characterisation of metal oxide and carbon-based nanocomposite materials for environmental remediation and sustainable applications. Authored 12 peer-reviewed journal articles (11 in Scopus- and Web of Science-indexed journals and 1 in a UGC-listed journal), contributed book chapters in internationally published volumes (total citations: 228; h-index: 10; i10-index: 10), supervised over 200 student research projects and demonstrated sustained institutional leadership and academic governance. Recipient of the IASc–INSA Summer Research Fellowship at IISc Bengaluru (2019) and the Elsevier Certificate of Outstanding Contribution in Reviewing (2018).

## RESEARCH INTERESTS

- Semiconductor Photocatalysis: $TiO_2$, ZnO, and rGO-based heterojunction nanocomposites
- Nanocatalysis: Synthesis and characterisation of doped metal oxides and bimetallic composites
- Environmental Remediation: Degradation of organic pollutants, pesticides, and pharmaceutical residues
- Nanomedicine: Antibacterial and anti-inflammatory applications of biosynthesised metal nanoparticles
- Green Chemical Technology: Bio-based synthesis of graphene oxide (GO) and rGO nanocomposites
- Separation sciences; surface characterisation; band-gap engineering
- Sustainable materials chemistry and green chemical technology

## EDUCATION

**Doctor of Philosophy — Inorganic Chemistry** *2009–2012*
*Gauhati University, Guwahati, Assam, India*
Thesis: "A Study of Photocatalysis on Nanosized Ti(IV) Oxide"
Advisor: Prof. Jatindra Nath Ganguli | Coursework GPA: 8.67 / 10.0

**Master of Science — Chemistry (Inorganic Specialisation)** *1995–1997*
*Gauhati University, Assam, India*
First Class

**Bachelor of Science — Chemistry (Hons.), Physics & Mathematics** *1992–1995*
*Gauhati University, Guwahati, Assam, India*
First Class with Distinction — 6th Rank in University

**Bachelor of Education — Mathematics & Science** *1999–2000*
*Gauhati University, Assam, India*
First Class — 3rd Rank in University

## PROFESSIONAL APPOINTMENTS

**Associate Professor** *2017 – Present*
*Department of Chemistry, Nowgong College (Autonomous) / Nagaon University, Nagaon, Assam*

**Head, Department of Chemistry** *2018 – 2022*
*Nowgong College (Autonomous) / Nagaon University, Nagaon, Assam*
Full departmental authority: faculty coordination, curriculum governance, budget oversight, examination management, laboratory administration, and student welfare.

**Assistant Professor (Selection Grade)** *2014 – 2017*
*Department of Chemistry, Nowgong College, Nagaon, Assam*

**Assistant Professor** *January 2003 – 2014*
*Department of Chemistry, Nowgong College, Nagaon, Assam*

**Lecturer** *1999 – 2002*
*Department of Chemistry, D.K. College, Mirza, Assam*

## FELLOWSHIPS AND AWARDS

- IASc–INSA Summer Research Fellowship, Indian Institute of Science (IISc), Bengaluru (2019) — Host: Prof. Partha Sarathi Mukherjee, Dept. of Inorganic and Physical Chemistry
- Elsevier Certificate of Outstanding Contribution in Reviewing, Materials Chemistry and Physics (May 2018)
- CSIR–UGC National Eligibility Test (NET) in Chemical Sciences — qualified twice (2001 & 2002)

## EDITORIAL AND PEER REVIEW ACTIVITIES

- Reviewer — Journal of Materials Chemistry A (Royal Society of Chemistry)
- Reviewer — RSC Advances (Royal Society of Chemistry)
- Reviewer — Materials Chemistry and Physics (Elsevier)

## FUNDED RESEARCH

**Principal Investigator — UGC Minor Research Project** *2014 – 2015*
*University Grants Commission (UGC-NERO) | Grant No. F.5-89-2014-15/MRP/NERO/1814 | Funding: ₹3,25,000 | Status: Completed*
"Synthesis and Characterisation of N-Doped Titania for Enhanced Photocatalytic Reactions"

## RESEARCH SUPERVISION

- Ph.D. Supervisor: Faculty of Science, Gauhati University (approved 2018); Nagaon University (approved 2020)
- Ph.D. Awarded: 1 | Ph.D. Ongoing: 3
- M.Sc. & B.Sc. (Honours) Chemistry Research Projects Supervised: 20+
- B.Sc. Environmental Science Research Projects Supervised: 180+

## PUBLICATIONS

### A. Peer-Reviewed Journal Articles (Scopus / Web of Science Indexed unless noted)

*Total Citations: 228 • h-index: 10 • i10-index: 10 (Google Scholar, verified 2024) | Full record: scholar.google.com/citations?user=gq4ugLQAAAAJ*

1. Goswami, P., et al. (2024). Fluorescence Resonance Energy Transfer study between ZnS Quantum Dots and Fluoranthene. ChemistrySelect, 9(5), e202303460. DOI: 10.1002/slct.202303460 [Scopus]
2. Goswami, P., et al. (2023). Enhancing anti-inflammatory and antibacterial activity of curcumin by nanocomposing with curcumin-reduced copper nanoparticles for treatment of bacterial infection. Materials Science and Engineering: B, 292, 116416. DOI: 10.1016/j.mseb.2023.116416 [Scopus]
3. Goswami, P., et al. (2022). Synchronising charge-carrier capacity and interfacial morphology of green rGO-modified ZnO and $TiO_2$ heterojunctions and study of photocatalytic behaviour towards UV and visible-light-active drug and dye degradation. Materials Science and Engineering: B, 287, 116094. DOI: 10.1016/j.mseb.2022.116094 [Scopus]
4. Goswami, P., et al. (2021). Plant-based natural dye-stimulated visible-light reduction of GO and physicochemical factors influencing the production of oxidising species by a synthesised (rGO)/$TiO_2$ nanocomposite for environmental remediation. ACS Omega, 6(4), 2686–2698. DOI: 10.1021/acsomega.0c04889 [Scopus]
5. Rajkumari, N.P., Saikia, G., Goswami, P., et al. (2020). Physicochemical studies of ZnO and $TiO_2$ semiconductors and their photocatalytic behaviour towards UV and visible-light-active drug and dye degradation. Advanced NanoMaterials and Technologies for Energy Sector, 4(3), 308–319. ISSN: 2559-138X [Web of Science]
6. Goswami, P. (2018). Biosynthesis of Cu nanoparticles from Cassia fistula flower and its characterisation. Delve: A Research Journal of Nowgong College, VI, 44–48. [UGC-listed journal; not Scopus/WoS-indexed]
7. Goswami, P. (2017). A novel approach to develop highly active N-doped $TiO_2$ photocatalyst based on properties of nitrogen precursor. Advanced NanoMaterials and Technologies for Energy Sector, 1(1), 55–72. ISSN: 2559-138X [Web of Science]
8. Goswami, P., et al. (2013). Photophysical and photochemical properties of nanosized cobalt-doped $TiO_2$ photocatalyst. Asian Journal of Chemistry, 25(13), 7118–7124. DOI: 10.14233/ajchem.2013.14458 [Scopus]
9. Goswami, P., et al. (2013). Tuning the band gap of mesoporous Zr-doped $TiO_2$ for effective degradation of pesticide quinalphos. Dalton Transactions, 42(40), 14718–14727. DOI: 10.1039/C3DT51891D [Scopus]
10. Goswami, P., et al. (2013). A novel synthetic approach for the preparation of sulfated titania with enhanced photocatalytic activity. RSC Advances, 3(23), 8907–8917. DOI: 10.1039/C3RA23451G [Scopus]
11. Goswami, P., et al. (2012). Synthesis, characterisation and photocatalytic reactions of phosphated mesoporous titania. Bulletin of Materials Science, 35(5), 889–896. [Scopus]
12. Goswami, P., et al. (2012). Evaluating the potential of a new titania precursor for the synthesis of mesoporous Fe-doped titania with enhanced photocatalytic activity. Materials Research Bulletin, 47(8), 2077–2084. DOI: 10.1016/j.materresbull.2012.03.037 [Scopus]

### B. Book Chapters

- Goswami, P. (2023). Recent advances in green-synthesised rGO/$TiO_2$-based bimetallic heterojunctions for organic pollutant degradation. In S. Sagadevan & W.-C. Oh (Eds.), Functional Nanomaterials for Sensors. CRC Press (Taylor & Francis Group). ISBN: 9781032204963
- Rajkumari, N.P., Adhikary, K., Siddika, S., Goswami, P. (2023). Functional Nanomaterials as Sensors. In Electronic Devices, Nanotechnology and Nanoscience for Sustainability (Chapter 64). Global Net Publication. ISBN: 978-81-977688-5-9

### C. Books and Editorial Volumes

- Goswami, P. Chemistry for Degree Students, Semester I (Generic Elective). Assam Book Depot, 2019. ISBN: 978-93-87797-49-9
- Goswami, P. Chemistry for Degree Students, Semester II (Generic Elective). Assam Book Depot, 2019. ISBN: 978-93-87797-50-5
- Goswami, P. (Ed.). Coproduction of Science with Social Order. Global Printing Press, Nagaon, 2018. ISBN: 978-81-924066-7-1
- Goswami, P. Papu Mamar Soite Gyan Bigyanor Kahini [Popular Science in Assamese]. Bandhab Prakashan, 2024
- Goswami, P. Sourabh Kumar Chaliha: Sristi aru Srosta. Krantikal Prakashan, 2024
- Goswami, P. Short Story Collection. Papyrus, 2024

### D. Popular Science Articles (Assamese)

- 10+ articles in Assamese science magazines: Prantik, Bigyan Jeuti, Gariyoshi, and Baro Othoro

## TEACHING

- Postgraduate (M.Sc.): Core Inorganic Chemistry (Semesters I–IV); Advanced Nanochemistry (Semester IV)
- Undergraduate (B.Sc.): Inorganic Chemistry (Semesters I–VI, Honours and Generic Elective)
- Teaching Experience: 23+ years (1999–present)

## INSTITUTIONAL GOVERNANCE AND ACADEMIC SERVICE

### Leadership Roles

- Head, Department of Chemistry, Nowgong College / Nagaon University (2018–2022)
- Coordinator, Institute Innovation Council (IIC), Nowgong College (ongoing)
- Coordinator, IQAC Best Practices & Research Cell, Nowgong College (2012–present)
- Director, Vocational Certificate Course: “Chemistry Behind Cosmetics,” Centre for Vocational Studies (2021–present)
- In-charge, Departmental Library, Department of Chemistry (2017–2022)
- Assistant Officer-in-Charge (AOC), University Examinations (multiple occasions)

### Committee Memberships

- Member, Syllabus Review Committee, Department of Chemistry, Gauhati University
- Member, Board of Studies (Chemistry & Vocational Studies), Nagaon University
- Member, University Research Committee, Nagaon University
- Member, DBT Star College Scheme Execution Board (2013–present)
- Member, Departmental Postgraduate Committee (2013–present)

## CONFERENCE LEADERSHIP

### Conferences Convened and Organised

- Convener, 1st International e-Conference on Current Trends in Chemical Research, Nowgong College (August 22, 2020)
- Convener, International e-Conference on Nutrients Acquisition by Plant-Based Remedies Against Viral Diseases (August 7–8, 2020)
- Convener, Two-Day National Seminar on Co-production of Science with Social Science (ICSSR-sponsored), 2017

- Coordinator, Online Faculty Development Programme on Mentoring Pedagogy and Teaching for Higher Education, IIT Guwahati (June 8–15, 2020)
- Organizing Committee Member, International Conference on Recent Advances in Agricultural, Biological and Applied Sciences Research, SBER, Tripura (August 2022)

### Selected Conference Presentations

- Invited Speaker & Session Chair: "Wealth of Titania–Graphene Composites in Photocatalysis: Challenges and Opportunities." ICN 2022, Mahatma Gandhi University, Kerala / Gdańsk University of Technology, Poland / University of Lorraine, France (August 2022)
- Preparation of Metal Nano-Therapeutics for Treatment of Bacterial Diseases. North East Research Conclave, IIT Guwahati (May 2022)
- Chemical Literacy: Boons or Bans. ICHR-sponsored National Seminar, Dhing College (April 2022)
- International Conference on Emerging Trends in Chemical Sciences, Gauhati University (February 2020)
- National Workshop on Catalysis, Catalysis Society of India / Tezpur University (March 2009)

## TECHNICAL EXPERTISE

**Characterisation:** XRD, SEM, TEM, FTIR, UV-Vis Spectrophotometry (JASCO V-550/660; Shimadzu UV-160A), Spectrofluorimetry (FluoroLog FL-3.21; Perkin Elmer LF-55), GC-MS, LC-MS, HPLC, XPS, TGA-DSC, DRS, BET Surface Area Analysis

**Synthesis:** Sol-gel synthesis of mesoporous metal oxide photocatalysts; green synthesis of graphene-based heterojunctions; biosynthesis of Cu, Ag, and Au metallic nanoparticles; band-gap engineering

## PROFESSIONAL MEMBERSHIPS

- Life Member, American Chemical Society (ACS)
- Life Member, Chemical Research Society of India (CRSI)
- Life Member, Association of Chemistry Teachers (ACT), India
- Life Member, Assam Science Society
- Life Member, Assam College Teachers' Association
- Life Member, Ellora Vigyan Mancha (Science Popularisation Forum), Assam

## COMMUNITY OUTREACH AND PUBLIC SERVICE

- Executive Board Member, Assam Science Society, Nowgong Kolongpar Branch (2020–present) — organises regional scientific awareness programmes, World Environment Day events, and National Science Day celebrations for public schools
- COVID-19 Response (2020): synthesised and distributed WHO-protocol hand sanitiser to students and underserved communities in Nagaon; initiative received national and regional television and print media coverage
- Presiding Officer, Election Commission of India — Panchayat Election (2012); Lok Sabha Elections (2014, 2019); Legislative Assembly Elections (2015, 2021)
- Authored 10+ popular science articles in regional publications (Prantik, Bigyan Jeuti, Gariyoshi, Baro Othoro); committed to regional-language science communication and public scientific literacy