

## P. Iyanu DIRIWARI

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Google Scholar | LinkedIn | ResearchGate

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### SUMMARY

Bioanalytical chemist specialising in luminescent nanomaterials, resonance energy transfer mechanisms, and diagnostic biosensors. Postdoctoral experience in assay development, PAT-aligned optical characterisation, and validation (IQ/OQ/PQ), following a PhD on resonance energy transfer in optical nanoparticles. Record of peer-reviewed publications, international conference presentations, and cross-functional collaboration across nanotechnology, chemistry, and biomedical imaging.

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### RESEARCH INTERESTS

Bioanalytical Chemistry; Biomedical Imaging; In Vitro Diagnostics; Nanotechnology; Optical Materials for Health and Environment

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### SKILLS

**Bioanalytical & Diagnostics:** FRET/TR-FRET/NSET assays; ELISA; immunofluorescence; cytotoxicity assays; PAT integration; IVD assay development.

**Molecular & Cell Biology:** PCR; gene sequencing; mammalian cell culture; flow cytometry (FACS); Western blotting; protein purification; gel electrophoresis (SDS-PAGE, agarose).

**Optical & Imaging:** UV/Vis; steady-state & time-resolved fluorescence; NIR/NIR-II; quantum-yield determination; confocal microscopy.

**Nanomaterials & Bioconjugation:** Gold nanoclusters; lanthanides; quantum dots; probe synthesis; surface chemistry & bioconjugation.

**Analytical & Structural Chemistry:** NMR (1D/2D; exposure to 3D NMR); HPLC; mass spectrometry; X-ray (fundamentals); spectrophotometry.

**Computational & Data:** Python; Go (Zone01 Piscine); Git & version control; Docker; MATLAB; OriginPro; L<sup>A</sup>T<sub>E</sub>X; BioRender.

**Validation & QA:** IQ/OQ/PQ protocols; GLP/ISO mindset; instrumentation calibration & troubleshooting; reproducibility & documentation.

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### EDUCATION

**PhD, Chemistry** — Université de Rouen Normandie, France Jan 2021 – Mar 2024  
*Thesis: Resonance Energy Transfer within and to Optical Nanoparticles for Bioimaging and Biosensing Applications*

**Master 2, Chemistry for Life Sciences** — Université Grenoble Alpes, France 2019 – 2020  
*Scholarship: Petroleum Technology Development Fund (PTDF) Overseas Award*

**Master 1, Chemistry** — Université Grenoble Alpes, France 2018 – 2019  
*Scholarship:* Petroleum Technology Development Fund (PTDF) Overseas Award

**MSc, Biochemistry** — University of Lagos, Nigeria 2016 – 2017

**BSc, Biochemistry** — University of Lagos, Nigeria 2009 – 2013

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## PROFESSIONAL & RESEARCH EXPERIENCE

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**Postdoctoral Researcher** — Institut de Chimie Analytique et Réactivité Moléculaire en Normandie (CARMEN), France Apr 2024 – Nov 2024

- PAT-aligned optical characterisation (UV/Vis, fluorescence) for assay reproducibility and material qualification.
- Authored IQ/OQ/PQ validation protocols; trained early-career scientists; supported technology transfer.
- Engineered NIR-II gold nanocluster probes, achieving +42% imaging signal enhancement.

**Doctoral Researcher** — nanoFRET, Université de Rouen Normandie, France Jan 2021 – Mar 2024

- Designed and validated luminescent FRET-based biosensors (lanthanides, dyes, nanoclusters) for IVD.
- Reduced reagent use by 35% via miniaturisation; improved reproducibility by ~30%.
- Co-authored peer-reviewed publications; presented at international conferences.

**Graduate Research Intern — Cancer Diagnostics & Quality Control** — Université Grenoble Alpes, France Apr 2019 – Jul 2020

- Conducted QC and analytical testing on oncology samples (UV/Vis, FACS, microscopy) under GLP standards.
- Designed and executed cytotoxicity assays and >30 flow-cytometry (FACS) runs across cancer cell lines.
- Synthesised and characterised theranostic cancer-targeting peptides; contributed to a publication on glycodendrimer-mediated cancer therapy.
- Bridged QC workflows and research assay development.

**STEM Instructor** — Queen's College, Lagos, Nigeria Feb 2016 – Aug 2018

- Biology/Chemistry instruction; laboratory practicals; exam preparation and mentoring.

**Community Engagement Coordinator** — NYSC Faith-Based NGO, Nigeria Oct 2015 – Aug 2016

- Youth outreach and inter-unit communications; mentoring programmes and community education.

**Science Communication Lead** — National Youth Service, Abia, Nigeria Aug 2014 – Aug 2015

- Biology & Chemistry instruction in rural settings; founded science clubs; student mentorship.

**Analytical Support Technician (Intern)** — Nigeria Stored Product Research Institute, Lagos  
Apr 2012 – Sep 2012

- Nutritional, microbial & chemical analyses for post-harvest quality; method validation & documentation.

#### PEER-REVIEWED PUBLICATIONS

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- (1) **Diriwari, P. I.**; Payne, N. C.; Mazitschek, R.; Gallavardin, T.; Hildebrandt, N. Luminescent Terbium Probe for Time-Resolved FRET and NSET Binding Assays with Quantum Dots and Gold Nanoparticles. *Analysis & Sensing* **2025**, *5*, e202400059.
- (2) Su, R.; Francés-Soriano, L.; **Diriwari, P. I.**; Munir, M.; Haye, L.; Sørensen, T. J., et al. FRET Materials for Biosensing and Bioimaging. *Chemical Reviews* **2025**.
- (3) Haye, L.; **Diriwari, P. I.**; Alhalabi, A.; Gallavardin, T.; Combes, A.; Klymchenko, A. S., et al. Enhancing Near Infrared II Emission of Gold Nanoclusters via Encapsulation in Small Polymer Nanoparticles. *Advanced Optical Materials* **2023**, *11*, 2201474.
- (4) Goyard, D.; **Diriwari, P. I.**; Berthet, N. Metabolic Labelling of Cancer Cells with Glyco-dendrimers Stimulate Immune-Mediated Cytotoxicity. *RSC Medicinal Chemistry* **2022**, *13*, 72–78.
- (5) Babalola, M. O.; Imaga, N. A.; Samuel, T. A.; **Diriwari, P. I.**; Kolade, O.; Ezeamalu, I., et al. Genetic Polymorphisms of Glucose-6-Phosphate Dehydrogenase in Lagos, Nigeria. *Hemoglobin* **2018**, *42*, 47–50.

#### CONFERENCES & PRESENTATIONS

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##### Oral

Application of CoraFluor Tb Complex in Lanthanide-to-Quantum Dot FRET Biosensing. *ICFE-11*, Strasbourg, France — Aug 2023.

Lanthanide-to-Quantum Dot FRET Bioassays with CoraFluor Tb Complexes. *Journées Nord-Ouest Européennes des Jeunes Chercheurs*, France — Jun 2022.

##### Poster

Lanthanide-to-Quantum Dot FRET Bioassays with CoraFluor Tb Complexes. *ISBC & ISLS*, Gijón, Spain — May–Jun 2022.

Evaluation of Time-Gated FRET Biosensing of Quantum Dots with CoraFluor Tb Complexes. *Chemistry Summer School on f-elements*, Aussois, France — Jun 2022.

Lanthanide-to-Quantum Dot FRET Bioassays with CoraFluor Tb Complexes. *Journée de l'École Doctorale Normande de Chimie*, Rouen, France — Jun 2022.

#### GRANTS, SCHOLARSHIPS & AWARDS

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Petroleum Technology Development Fund (PTDF) Overseas Scholarship, 2018–2020.

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**PROFESSIONAL MEMBERSHIPS**

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American Chemical Society (ACS), 2024–Present.

American Society for Biochemistry and Molecular Biology (ASBMB), 2024–Present.

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**LANGUAGES**

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English — Bilingual/Fluent;    French — Intermediate.

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**SERVICE, LEADERSHIP & VOLUNTEERING**

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**Programmes & Communications Coordinator** — YAYA France (2023–Present)

- Co-organised Summer Camp 2024 (500+ participants)
- Coordinated 100+ delegates to YAYA Europe 2023
- Served as committee secretary

**Community Outreach & Partnerships** — Lyre & Muses, Paris (2025–Present)

- Venue prospecting
- Partner liaison
- Cultural outreach to underserved audiences

**Community Support Assistant** — Secours Catholique, Rouen (2025–Present)

- Administrative support
- Event organisation for vulnerable groups

**Course Marshal** — Le Havre Urban Trail (2025)

- Logistics and safety support for 7,000+ runners