

# Joseph Adebajo, Ph.D., PMP, PMI-ACP

## Senior Scientist | Advanced Materials Characterization & Synthesis

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### SUMMARY

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Ph.D. chemist specializing in advanced materials and surface characterization, paired with hands-on synthesis of luminescent and optoelectronic materials (OLED emitters, phosphors, black absorbers) across transition-metal and lanthanide systems. Expert across SEM/EDX, powder XRD, XPS, NMR, and steady-state and time-resolved photophysics, with DFT/TD-DFT modeling on HPC clusters, backed by seven peer-reviewed works. Certified project leader (PMP, PMI-ACP) who delivers R&D programs on time, in compliance, and audit-ready.

### CORE COMPETENCIES

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**Advanced Materials & Surface Characterization:** SEM with EDX; powder XRD (PXRD); XPS; solid-state diffuse-reflectance IR; NMR; HPLC; structure-composition-property correlation

**Spectroscopy & Photophysics:** Steady-state and time-resolved fluorescence (lifetimes, quantum yields) at room and cryogenic temperatures; UV-Vis absorption

**Luminescent & Optoelectronic Materials:** OLED emitter chemistry; phosphors and black absorbers; transition-metal and lanthanide luminophores; metal-organic frameworks (MOFs)

**Synthesis:** Multi-step inorganic, coordination and organometallic synthesis; transition-metal and lanthanide complexes; lanthanide and Zn MOFs; air-free Schlenk and glove-box technique; C-H functionalization and nitrene-transfer catalysis

**Computational:** DFT, TD-DFT, NEB-TS (Gaussian, ORCA, VASP); Linux/UNIX HPC; Python, Bash, SQL; ChemDraw, ELN, LIMS, Origin, Minitab

**Quality & Program Delivery:** PMP, PMI-ACP; Lean Six Sigma (DMAIC); FMEA, CAPA; GLP/GMP/GxP; Jira, Confluence, MS Project

### PROFESSIONAL EXPERIENCE

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#### Graduate Research Scientist & Laboratory Safety Officer

Jan 2021 - Present

*University of North Texas - Omary Lab, Denton, TX*

- Ran end-to-end materials and surface characterization workflows (SEM/EDX, powder XRD, XPS, NMR, UV-Vis, solid-state diffuse-reflectance IR, HPLC), correlating composition, structure, and optical behavior.
- Measured and interpreted steady-state and time-resolved fluorescence (emission lifetimes, quantum yields) at room and cryogenic temperatures to establish the structure-property relationships that drive emitter performance.
- Designed and synthesized luminescent and optoelectronic transition-metal and lanthanide materials (Pt, Au, Ag, Cu, Zn, Ln) for display and photonic applications, including OLED-relevant emitters, lanthanide and Zn metal-organic frameworks (MOFs), and an oxidative-addition gold-trimer black absorber, across four research programs.
- Performed DFT, TD-DFT, and NEB-TS modeling (Gaussian, ORCA, VASP) on Linux/UNIX HPC clusters; built Python and Bash pipelines that cut large-dataset analysis time by ~40%.
- Developed C-H amination and nitrene-transfer catalysis on trinuclear coinage-metal platforms; published in *Organometallics* and *Dalton Transactions*.
- Led a 6-member research team to milestones 15% ahead of schedule and mentored 8+ researchers; as Safety Officer, authored SOPs for SEM and XPS with a 100% external-audit pass rate and zero incidents.

#### Graduate Teaching Assistant

Jan 2021 - Spring 2026

*University of North Texas - Department of Chemistry, Denton, TX*

- Led laboratory and recitation sections for General Chemistry I & II and Organic Chemistry I & II, coaching students in experimental technique, data analysis, and lab safety.
- Instructed the Advanced Inorganic Chemistry laboratory, teaching advanced synthetic methods and advanced materials characterization to inorganic and organic lab students.

- Mentored students hands-on in synthesis, spectroscopy, and characterization; developed and graded assessments.

### Newsletter Director (Volunteer)

Jun 2025 - Present

PMI Dallas Chapter

- Own chapter-wide newsletter strategy, editorial calendar, and end-to-end monthly production using Agile workflows in Jira; analyze engagement metrics to grow reach.

## EDUCATION

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### Ph.D., Inorganic & Materials Chemistry

May 2026

University of North Texas - Advisor: Prof. Mohammad A. Omary; GPA 3.85/4.0

- Dissertation: Synthesis, Supramolecular Assembly, and Photophysical Properties of Luminescent Transition Metal Coordination Compounds.

### M.Sc., Organic Chemistry

Dec 2019

University of Ibadan - Top of class

### B.Sc., Chemistry & Physics

Dec 2016

University of Ibadan

## SELECTED PUBLICATIONS & PRESENTATIONS

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- Nitrene-Transfer Chemistry to C-H and C=C Bonds Mediated by Triangular Coinage Metal Platforms Supported by Triply Bridging Pnictogen Elements Sb(III) and Bi(III). *Organometallics*, 43(6), 634-652 (2024).
- C-H Amination Chemistry Mediated by Trinuclear Cu(I) Sites Supported by a Ligand Scaffold Featuring an Arene Platform and Tetramethylguanidiny Residues. *Dalton Transactions*, 53(38), 15946-15958 (2024).
- Relativistic Modulation of Supramolecular Halogen/Copper Interactions and Phosphorescence in Cu(I) Pyrazolate Cyclotrimers. *Dalton Transactions*, 52(13), 3964-3970 (2023).
- Glyphosate-Based Herbicide: Impacts, Detection, and Removal Strategies in Environmental Samples. *Groundwater for Sustainable Development*, 22, 100961 (2023).
- Ligand-to-Ligand Charge Transfer (LLCT) Transitions in Square-Planar Metal-Bipyridyl Complexes of Heteroatom-Substituted Maltol. *Inorganic Chemistry*.
- Luminescence Rigidochromism in a Novel Mixed-Metal Cyclic Trinuclear Complex (in review); plus a submitted manuscript on heterobimetallic Au(I)/Ag(I) luminophores.
- Conference talks/posters: ACS Spring 2026 National Meeting (Atlanta), ACS Southwest Regional Meeting (2023), and 55th ACS DFW Meeting in Miniature.

## CERTIFICATIONS

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Project Management Professional (PMP), PMI | PMI Agile Certified Practitioner (PMI-ACP), PMI | Six Sigma Green Belt, Kennesaw State University | FMEA Specialist, AIGPE | Generative AI for Project Managers, PMI | Minitab Essential Training

## ADDITIONAL EXPERIENCE

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### Operations Coordinator

2015 - 2020

Imperial College Ibadan - Ibadan, Nigeria

- Managed online classroom operations and set up remote learning platforms, then onboarded and coordinated teaching staff on the new tools.
- Coordinated logistics, finance, and day-to-day administration to keep the school running smoothly.

## AFFILIATIONS

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Project Management Institute (Newsletter Director, Dallas Chapter) | American Chemical Society | Sigma Xi Scientific Research Honor Society | American Intellectual Property Law Association (AIPLA) | NOBCCHE