SYLVIA IGBAFE

Petroleum Engineer

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Petroleum engineer and PhD researcher specialising in drilling engineering, with a focus on water-based mud and biodegradable drilling additives, and working experience in production and reservoir engineering. Currently building a machine learning and data analytics toolkit applied to drilling fluid data, from literature-derived datasets through to modelling and reporting.

PROFESSIONAL EXPERIENCE

Lecturer II Oct 2023 to present

Department of Chemical and Petroleum Engineering, Afe Babalola University, Ado Ekiti

- Teach Petroleum Production Engineering, Reservoir Engineering, Drilling Engineering Laboratory Practical and Industrial Studies I and II to 300 and 400 level students.
- Supervise final-year research projects, including enhancement of water-based drilling mud with natural additives under saline conditions.
- Publish peer-reviewed research in drilling optimisation and the performance of biodegradable alternatives; presented at SPE NAICE 2024.
- Assess students for industrial experience and internal and external project defence.

Student Trainee and Laboratory Assistant Jan to Sep 2018

Laser Engineering, Port Harcourt

- Monitored and maintained processes in the research and development laboratory, and assisted in the PVT laboratory.
- Participated in reservoir simulation studies, well test analysis and petrophysics training.
- Maintained slickline department pipework, including cleaning and re-coating.

Student Trainee Jan to Dec 2017

Ansett Integrated Services, Ajah, Lagos

- Maintained core sample inventory and PVT laboratory equipment.
- Supported HSE briefings and represented company services at SPE NAICE 2017.

MACHINE LEARNING AND DATA ANALYTICS

Nigerian Water-Based Mud Formulation Database 2026

Python, pandas, matplotlib, Excel

- Built a 71 formulation, 34 column database by hand from four published Nigerian clay studies, benchmarked against API Specification 13A, with every value traceable to its source table.
- Designed the workbook so plastic viscosity, yield point and compliance verdicts are recomputed from raw dial readings rather than copied, which detected two arithmetic defects in published tables, including a physically impossible negative yield point.
- Quantified replicate scatter exceeding the treatment effect under study, and reported that the published design cannot resolve a dose response rather than presenting a spurious trend.
- Produced four charts, a cited technical report and a published dataset, notebook and repository.

Biodegradable Against Conventional Drilling Fluid Additives 2026 to 2027

Regression and tree based models, scikit-learn

- Modelled plastic viscosity, yield point and fluid loss as functions of additive type, dose, salinity and temperature, using laboratory data generated under my supervision alongside published studies.
- Ranked the variables carrying performance by feature importance, and compared locally sourced additives against CMC and xanthan gum on identical test conditions.

Thermal and Aging Stability of Biodegradable Additives 2027

Curve fitting and degradation modelling

- Modelled the loss of viscosity and fluid loss control as temperature and aging time rise, to establish the depth to which each natural polymer additive can be trusted.

Eco-friendly Shale Inhibition for Reactive Niger Delta Shales 2027

Model comparison and inhibitor ranking

- Compared green shale inhibitors against potassium chloride on linear swelling and shale recovery data, and ranked them for use in inhibited water-based systems.

Nigerian Gas Flaring Trends and Forecasting 2027

Time series analysis, public regulatory and satellite data

- Reconciled operator reported flare volumes against satellite derived estimates site by site, using NUPRC, NOSDRA and World Bank data, and quantified the discrepancy rather than asserting a cause.
- Decomposed trend and seasonality by operator and field, flagged anomalies indicating operational upsets, and forecast volumes with stated uncertainty.

EDUCATION

PhD, Petroleum Engineering In progress

M.Eng, Petroleum Engineering 2021 to 2023

Covenant University, Ota, Ogun State

B.Eng (Hons), Petroleum Engineering 2014 to 2019

Igbinedion University, Okada, Edo State

TECHNICAL SKILLS

Drilling fluids	Water-based and oil-based mud formulation, rheology, API 13A testing, filtration and fluid loss, beneficiation, biodegradable additives
Petroleum engineering	Production engineering, reservoir engineering, well test analysis, petrophysics, PVT laboratory work, HSE compliance
Data and modelling	Python (pandas, matplotlib, NumPy, scikit-learn), SQL, Excel modelling and formula design, Google Colab, design of experiments, response surface data, regression and tree based models
Research	Literature extraction and dataset construction, Zotero, Mendeley, Scopus, Google Scholar, technical writing and peer-reviewed publication
Tools	Microsoft Office 365, Git and GitHub

PUBLICATIONS

Peer-reviewed publications in drilling fluids, corrosion inhibition and green energy, including first-author work on biodegradable drilling mud additives presented at SPE NAICE. The full list with DOIs is available on my GitHub, github.com/sly2997

PROFESSIONAL DEVELOPMENT AND ASSOCIATIONS

- Member, Society of Petroleum Engineers (SPE).
- Registered Engineer, Council for the Regulation of Engineering in Nigeria (COREN).
- Certificate Course on Modern Teaching Methods and Pedagogy, Afe Babalola University, 2024.
- ABUAD and TWU International Conference on Leadership and Governance for Sustainable Change and Wealth Creation, 2023.