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SUMMARY

Dr. Yen Adams Sokama-Neuyam is a Senior Lecturer and Head of the Department of Petroleum Engineering at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi. He is also the Principal Research Lead of the Net-Zero Carbon Emission Lab (NCEL) in the Department of Petroleum Engineering, KNUST. With a proven track record in research, teaching, and leadership, his main research interests include Carbon Intensity Assessment and monitoring of Oil and Gas Processes and Facilities, Carbon Capture, Utilization and Storage (CCUS), Underground Hydrogen Storage (GHS), Flow Assurance, Reservoir Formation Damage and Development of Green Oilfield Materials. Prior to his current role, Dr. Sokama-Neuyam served as an Assistant Professor in Natural Gas Engineering at the University of Stavanger, Norway, where he gained invaluable research experience collaborating with international industry leaders such as Equinor and the renowned Norwegian Research Centre (NORCE). His research findings have been widely published in reputable peer-reviewed journals, reflecting his high level of expertise and contribution to the field. He is also the Co-PI of the Coconut Value Chain research project, PI of the Biocement research project and Co-PI of the Silica Xerogel project, funded projects in the Department of Petroleum Engineering, KNUST. Dr. Sokama-Neuyam holds a PhD and MSc in Petroleum Engineering from the University of Stavanger (UiS), Norway, and a BSc in Petroleum Engineering from KNUST, Ghana.

PROFESSIONAL EXPERIENCE

2022 – Present **Principal Research Lead, The Net-Zero Carbon Emissions Lab (NCEL), KNUST, Ghana.**
Founder and Principal Research Lead at the Net-Zero Carbon Emission Lab (NCEL), leading four research projects and assisting several energy related companies to decarbonize and pursue their net-zero targets.

2019 – Present **Senior Lecturer, Department of Petroleum Engineering, KNUST, Ghana.**
Provided direct supervision for over 60 undergraduate-level theses and supervised at least 8 postgraduate project theses. Also serving as the Postgraduate program's coordinator in the Department.

2016 – 2018 **Assistant Professor, University of Stavanger (UiS), Norway.**
Supervised over 8 postgraduate theses and about 4 undergraduate research projects in areas related to carbon capture, utilization, and storage. Taught postgraduate-level courses in Natural Gas Reservoir and Production Engineering and undergraduate-level courses in Natural Gas Engineering for the two years under review.

2013 – 2017 **Research Fellow, University of Stavanger (UiS), Norway.**
I served as the lead researcher of a NOK 3.5 million industry-funded research project that aimed to investigate the impact of mineral dissolution and fines mobilization on CO_2 injectivity during CO_2 storage. The findings from this collaborative project have been widely published in reputable peer-reviewed journals and conference proceedings, showcasing the significance of the research.

EDUCATION

2013 - 2017 **PhD in Petroleum Engineering**, University of Stavanger, Norway.

Carbon Capture, Utilization and Storage (CCUS)

Investigated and published novel findings on the impact of fines mobilization on CO2 injectivity impairment during CO2 injection into deep saline reservoirs. This pioneering research has significantly advanced understanding of the mechanisms underlying CO2 injectivity impairment and has greatly improved the estimation of CO2 storage potential in deep saline reservoirs.

2011- 2013 **MSc in Petroleum Engineering**, University of Stavanger, Norway.

Green Enhanced Oil Recovery (GEOR)

Developed screening criteria for selecting reservoir rocks for low salinity water flooding, a relatively sustainable oil recovery technique compared to other enhanced oil recovery methods in terms of energy demand, accessibility, and cost of operation.

2006 - 2010 **BSc in Petroleum Engineering**, KNUST, Ghana.

General petroleum engineering with strong computational and analytical skills

First Class Honours.

SELECTED COURSES TAUGHT

Carrying a minimum average semester teaching load of three (3) courses per semester, the following are selected courses that I have taught and presently teaching:

- PE 476 Energy and Climate Change
- PE 455 Reservoir Simulation
- PE 362 Well Testing
- PE 361 Reservoir Engineering II
- PE 350 Numerical Methods for Petroleum Engineers
- PE 262 Computer Programming in Oil and Gas
- PE 255 Fluid Mechanics
- PE 258 Petroleum Engineering Thermodynamics II
- PE 155 Introduction to Information Technology

Selected Publications

Journal Articles

1. Sokama-Neuyam, Y.A., Yusof, M.A.M., Owusu, S.K. *et al.* Experimental and theoretical investigation of the mechanisms of drying during CO_2 injection into saline reservoirs. *Sci Rep* **13**, 9155 (2023). https://doi.org/10.1038/s41598-023-36419-3

2. Quaye, J.A., Jiang, Z., Liu, C., Adenutsi C.D., Adjei S., Sarkodie K., **Sokama-Neuyam Y.A.**, *et al* (2023). Understanding the role of bioturbation in modifying petrophysical properties: a case from well L5 of the third-member Paleocene Funing Formation (E_1f_3), Gaoyou Sag, Subei Basin, China. *Arab J Geosci* **16**, 407. https://doi.org/10.1007/s12517-023-11506-x

3. Erzuah, S., Aggrey, W. N., Tetteh, J. T., Bodi, V., Adenutsi, C. D., **Sokama-Neuyam, Y. A.**, ... & Biritwum, K. N. (2023). Zeta Potential Prediction of Dominant Sandstone Minerals Via Surface Complexation Modelling. *Scientific African*, e01721. https://doi.org/10.1016/j.sciaf.2023.e01721

4. Adenutsi C.D, Turkson J.N, Wang L, Zhao G, Zhang T, Quaye J.A., Erzuah S., and **Sokama-Neuyam Y. A**. (2023).Review on Potential Application of Saponin-Based Natural Surfactants for Green Chemical Enhanced Oil Recovery: Perspectives and Progresses. *Energy & Fuels. https://doi.org/10.1021/acs.energyfuels.3c00627*

5. Nsiah-Gyambibi, R., **Sokama-Neuyam, Y.A.**, Boakye, P. *et al* (2023). Valorization of coal fly ash (CFA): a multi-industry review. *Int. J. Environ. Sci. Technol*. https://doi.org/10.1007/s13762-023-04895-9

6. Adjei, S., Elkaktatny, S., **Sokama-Neuyam, Y. A.**, Sarkodie, K., & Quaye, J. A. (2023). Evaluation and remediation techniques for barite sagging: A review. *Geoenergy Science and Engineering*, 211731. https://doi.org/10.1016/j.geoen.2023.211731

7. Yusof M.A.M., **Sokama-Neuyam, Y.A.**, Ibrahim M.A., Saaid I.M., Idris A.K., Mohamed M.A. (2022). Experimental study of CO_2 injectivity impairment in sandstone due to salt precipitation and fines migration. *Journal of Petroleum Exploration and Production Technology, SpringerLink*. https://doi.org/10.1007/s13202-022-01453-w

8. Quansah, A. D., Dogbey, F., Asilevi, P. J., Boakye, P., Darkwah, L., Oduro-Kwarteng, S., **Sokama-Neuyam, Y.A.** & Mensah, P. (2022). Assessment of solar radiation resource from the NASA-POWER reanalysis products for tropical climates in Ghana towards clean energy application. *Sci Rep* **12**, 10684 (2022). https://doi.org/10.1038/s41598-022-14126-9

9. Boakye, P., Ohemeng-Boahen, G., Darkwah, L., **Sokama-Neuyam, Y. A.**, Appiah-Effah, E., Oduro-Kwarteng, S., … Woo, S. H. (2022). Waste Biomass and Biomaterials Adsorbents for Wastewater Treatment. *Green Energy and Environmental Technology, 2022, 1–25.* HTTPS://DOI.ORG/10.5772/GEET.05

10. **Sokama-Neuyam, Y.A.**, Aggrey N. W., Boakye P., Sarkodie K, Oduro-Kwarteng S., Ursin J.(2021). The Effect of Temperature on CO_2 Injectivity in Sandstone Reservoirs. *Scientific African 2021 (15)*. https://doi.org/10.1016/j.sciaf.2021.e01066

11. Asilevi, P. J., Boakye, P., Oduro-Kwarteng, S., Fei-Baffoe, B., & **Sokama-Neuyam, Y. A.** (2021). Indoor air quality improvement and purification by atmospheric pressure Non-Thermal Plasma (NTP). *Sci Rep* **11**, 22830 (2021). https://doi.org/10.1038/s41598-021-02276-1

12. Pinto, E., Aggrey, W. N., Boakye, P., Amenuvor, G., **Sokama-Neuyam, Y. A.**, Fokuo, M. K., Rockson, M. A. D. (2021). Cellulose processing from biomass and its derivatization into carboxymethylcellulose: a Review. *Scientific African*, e01078. *https://doi.org/10.1016/j.sciaf.2021.e01078*

13. **Sokama-Neuyam, Y.A.**, Boakye P., Aggrey N. W., Obeng N., Adu-Boahene F., Woo S. H., Ursin J. (2020). Theoretical Modeling of the Impact of Salt Precipitation on CO_2 Storage Potential in Fractured Saline Reservoirs. *ACS Omega 2020 5 (24), 14776-14785.* https://dx.doi.org/10.1021/acsomega.0c01687

14. Nuagah, M. B., Boakye, P., Oduro-Kwarteng, S., & **Sokama-Neuyam, Y. A.** (2020). Valorization of faecal and sewage sludge via pyrolysis for application as crop organic fertilizer. *Journal of Analytical and Applied Pyrolysis*, *151*, 104903. https://doi.org/10.1016/j.jaap.2020.104903

15. **Sokama-Neuyam, Y.A.**, Adu-Boahene F., Boakye P., Aggrey N. W., Ursin J. Theoretical modeling of the effect of temperature on CO_2 injectivity in deep saline formations (2020). *Greenhouse Gases: Science and Technology, 10: 4 - 14.* https://doi.org/10.1002/ghg.1951

16. **Sokama-Neuyam, Y.A.**, Ursin J., Boakye P (2019). Experimental Investigation of the Mechanisms of Salt Precipitation during CO_2 Injection in Sandstone. *C: Journal of Carbon Research, MDPI, C 2019, 5(1),4.* https://doi.org/10.3390/c5010004

17. **Sokama-Neuyam, Y.A.**, Ursin J (2018). The Coupled Effect of Salt Precipitation and Fines Mobilization on CO2 Injectivity in Sandstone. *Greenhouse Gases: Science and Technology, 00: 1 - 13 (2018).* https://doi.org/10.1002/ghg.1817

18. **Sokama-Neuyam, Y.A.**, Ursin J., Ginting P., Timilsina B (2017). The Impact of Fines Mobilization on CO_2 injectivity: An Experimental Study. *International Journal of Greenhouse Gas Control, (65) 195-202.* https://doi.org/10.1016/j.ijggc.2017.08.019

19. **Sokama-Neuyam, Y.A.**, Forsetlkken, S.L, Lien, J, Ursin, J (2017). The Coupled Effect of Fines Mobilization and Salt Precipitation on CO2 Injectivity. *Energies 2017, (10), 1125.* https://doi.org/10.3390/en10081125

20. **Sokama-Neuyam, Y.A.**, Ursin J (2016). Experimental and Theoretical Investigations of CO_2 Injectivity. *AGH Drilling, Oil and Gas Journal, (33) 245-258.* dx.doi.org/10.7494/drill.2016.33.2.245

Book Chapters

1. **Sokama-Neuyam, Y. A.**, Yusof, M. A. , & Owusu, S. K. (2022). CO_2 Injectivity in Deep Saline Formations: The Impact of Salt Precipitation and Fines Mobilization. Sarvajayakesavalu, & K. Karthikeyan (Eds.), Carbon Sequestration. *IntechOpen.* https://doi.org/10.5772/intechopen.104854

Conference Publications

1. Mardhatillah, Mutia Kharunisa, Md Yusof, Muhammad Aslam, Sa'id, Alva Andhika, Mohammad Fuad, Iqmal Irsyad, **Sokama Neuyam, Y. A.**, and Nur Asyraf Md Akhir (2022). "Predictive Modelling of Carbon Dioxide Injectivity Using SVR-Hybrid." *Paper presented at the Offshore Technology Conference Asia, Virtual and Kuala Lumpur, Malaysia.*

2. Shaibu R, **Sokama-Neuyam, Y.A.**, Ursin J (2018). A Theoretical Study of the Effect of Salt Precipitation on CO_2 Injectivity. *SPE International Conference and Exhibition on Formation Damage Control, 7-9 February, Lafayette, Louisiana, USA.*

3. **Sokama-Neuyam, Y.A.**, Ursin J (2017). Experimental Investigation of the Impact of Salt Precipitation on CO_2 Injectivity. *International Symposium of the Society of Core Analysts, 27-30 August, Vienna, Austria.*

4. **Sokama-Neuyam, Y.A.**, Ursin J (2015). CO_2 Well Injectivity: Effect of Viscous Forces on Precipitated Minerals. *International Petroleum Technology Conference, 6-9 December, Doha, Qatar.*

5. **Sokama-Neuyam, Y.A.**, Ursin J (2015). The Effect of Mineral Deposition on CO2 Well Injectivity. *SPE EUROPEC Conference, 1-4 June, Madrid, Spain.*

6. Fjelde I., Omekeh A. V., **Sokama-Neuyam Y. A** (2014). Low Salinity Water Flooding: Eect of Crude Oil Composition. *SPE Improved Oil Recovery Symposium, 12-16 April, Tulsa, Oklahoma, USA.*

MEMBERSHIP AND ACTIVITIES IN PROFESSIONAL ASSOCIATIONS

- **Member**: Society of Petroleum Engineers (SPE)
- **Member**: European Association of Geoscientists and Engineers (EAGE)
- **Member**: Society of Core Analysts (SCA)

COMMUNITY SERVICE

2022 – *Date* ***Guest Editor, Special Issue on Advances in CCUS for the natural gas industry, Journal of Natural Gas Science and Engineering, Elsevier.***
Responsible for inviting and selecting manuscripts for the special issue and arrangement of the manuscripts for review and publication.

2020 – 2022 **Moderator**: The Bsc. Oil and Gas Engineering programme at the Madina Institute of Science and Technology, Accra, an Affiliate of KNUST.

2020 – Date ***Reviewer, Gas Science and Engineering, Elsevier.***
A reviewer of technical papers in gas conversion, carbon capture and sequestration, petroleum reservoir engineering and related areas for possible publication in the journal.

2019 – Date ***Reviewer, Energy Conversion and Management, Elsevier.***
A reviewer of technical papers in gas conversion, carbon capture and sequestration, petroleum reservoir engineering and related areas for possible publication in the journal.

2018 – Date ***Reviewer, Minerals, Sustainability, Energies, Resources, MDPI.***
A reviewer of technical papers in gas conversion, carbon capture and sequestration, petroleum reservoir engineering and related areas for possible publication in the journal.