CURRICULUM VITAE *of*
AMARFIO, Eric Mensah
PhD in view (UMaT), MSc (AUST), BSc (KNUST)

1. PERSONAL DETAILS

(A)	Name:	AMARFIO, Eric Mensah
(B)	Date of Birth:	4th April, 1984
(C)	Nationality:	Ghanaian
(D)	Marital Status:	Married
(E)	Number of Children:	Three (2)
(F) Address:		Petroleum and Natural Gas Engineering Dept.

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(G) Current Position: Lecturer, Petroleum and Natural Gas Eng. Dept., ,
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2. ACADEMIC BACKGROUND

(A) Academic Degrees	Date
(i) PhD in View (Petroleum Engineering)	Aug. 2018-March 2021
(ii) MSc (Petroleum Engineering)	December 2011
(iii) BSc (Chemical Engineering)	June 2008

(B) Institutions Attended	Date
(i) University of Mines and Technology, Tarkwa, Ghana	Aug. 2018 – Mar. 2021
(ii) African University of Science and Technology, Abuja, Nigeria.	July. 2010 – Dec. 2011
(iii) Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.	Aug. 2004 – Jun. 2008

(C) <u>Professional Affiliations</u>   <u>Date</u>

    (i)   Member, University Teachers Association of Ghana   March 2013 – To date
           (UTAG).

    (ii)   Member, International Association of Engineers   June 2020 – To date
           (IAENG).

    (iii) Member, Member of Society of Petroleum Engineers,   Sept. 2015 – To date
           International (SPI).

    (iv) Member, Ghana Section, Society of Petroleum   Sept. 2015 – To date
           Engineers (SPE Ghana).

(D) Scholarships/Awards   **Date**

    (i)   Staff Development Fund for PhD, University of   Sept. 2013 – Jan. 2018
           Mines and Technology, Tarkwa

    (ii)   World Bank Scholarship for MSc, African   Jul. 2010 – Dec. 2011
           University of Science and Technology, Abuja,
           Nigeria.

3.   UNIVERSITY TEACHING AND/OR RESEARCH EXPERIENCE

(A) Academic Ranks Held

- ❖ *November 2015 to date*: **Lecturer**, Petroleum Engineering Department, University of Mines and Technology, Tarkwa, Ghana.

- ❖ *August 2013 to November 2013:* **Assistant Lecturer**, Petroleum Engineering Department, University of Mines and Technology, Tarkwa, Ghana.

(B) Subjects Taught

Since my appointment as an Assistant Lecturer in March 2010 and Lecturer in April 2013, I have handled a total of nine (9) different courses – seven (7) at the undergraduate level and two (2) at postgraduate level. The details are shown in Table 1.

Table 1 Courses Taught at UMaT

Undergraduate Level

SN	Course Code	Course Name	Year
1.	PE 275	Properties of Reservoir Rocks and Fluids	2013, 2019 and 2020
2.	PE 378	Transportation of Oil and Gas	2014
3.	GL 234	Training on Oil Rigs	2014, 2015, 2016, 2017, 2018, 2020
4.	PE 381	Production Equipment and Operation	2014
5.	PE 172	Principles of Petroleum Engineering	2015
6.	PE 274	Reservoir Engineering 1	2016, 2017
7.	PE 377	Reservoir Engineering 11	2014, 2015, 2017
8.	PE 275	Chemical Thermodynamics	2016, 2017, 2018, 2019
9.	PE 256	Field Trip and Technical Report Writing I	2018
10.	PE 356	Field Trip and Technical Report Writing II	2018, 2020
Postgraduate Level			
11.	PE 471	Fundamentals of Reservoir Engineering	2017, 2020
12.	PE 518	Field Trip and Technical Report Writing	2017

(C) Supervision of Students Project Works and/or Theses

Since my appointment as an Assistant Lecturer in August 2013 and Lecturer in November 2015, I have successfully supervised a total of nineteen (34) undergraduate project works in the Petroleum Engineering Department and have served as Internal Examiner for more than 100 of such final year projects:

1. French-Baidoo, K. (2014), "Comparative Analysis of the Sliding Scale and Fixed Rate Royalty to Maximise Ghana's Oil Revenue", *BSc Project Report*, University of Mines and Technology, Tarkwa, 24 pp.

2. Wadie, D (2014), "Effects of Modified Starch and Potash on the Rheological Properties of Water Based Drilling Fluids", *BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp.

3. Moudihou, C. (2014), "Proposing Enhanced Oil Recovery Methods for Jubilee Field Using The Screening Criteria", *BSc Project Report*, University of Mines and Technology, Tarkwa, 22 pp.

4. Kwarteng, Y. (2014), "Preparing An Oil Based Mud Using A Home Based Biodiesel

From Cooking Oil", *BSc Project Report*, University of Mines and Technology, Tarkwa, 31 pp.

5. Amusa, I. (2014), "Effect of Salinity on Compressive Strength of Cement", *BSc Project Report*, University of Mines and Technology, Tarkwa, 19 pp.

6. Quaidoo, B. (2014), "Investigating into The Effects of Carboxymethyl Cellulose on the Rheological Properties of Water Based Muds", *BSc Project Report*, University of Mines and Technology, Tarkwa, 35 pp.

7. Inimgba, V. (2015), "Safety in the Onshore Pipeline Transportation of Natural Gas From the Atuabo Gas Plant to the Aboadze Thermal Plant.", *BSc Project Report*, University of Mines and Technology, Tarkwa, 19 pp.

8. Ossai, J. (2015), "The Use of Cocoyam Flour (Colocosia Esculanta) as a Secondary Viscosifier and a Fluid Loss Agent in Water Based Muds", *BSc Project Report*, University of Mines and Technology, Tarkwa, 36 pp.

9. Erzoah, C. (2015), "Examining the Performance of Alpha Aluminium Oxide Nanoparticles in a Sea Water Based Drilling Mud", *BSc Project Report*, University of Mines and Technology, Tarkwa, 29 pp.

10. Nkansah, R. (2015), "Effect of Spent Zeolite on the Rheological Properties of Water Based Mud", *BSc Project Report*, University of Mines and Technology, Tarkwa, 38 pp.

11. Adza, E. K. (2016) "Evaluating the Use of Sugarcane Bagasse Ash as an Additive in Drilling Shally Formation Using Water Based Mud", *BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp.

12. Ngoa, E. (2016) "Evaluating The Effect of Potassium Nitrate as a Clay Inhibitor in Water Based Mud" *BSc Project Report,* University of Mines and Technology, Tarkwa, 32 pp.

13. Awusebo-Asare k. (2016) "Assessing the Effects of Potash from Plantain Peels in the Control of pH in Water Based Drilling Fluids" *BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp.

14. Agyir, D. O. (2016) "Evaluating the Effects of Aluminium Oxide Nanoparticles on the

Thermal Stability of Oil Based Mud (Diesel)" *BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp.

15. Agordor, M. (2016) "Evaluating the Effects of Aluminium Oxide Nanoparticles on the Rheological Properties of Synthetic Oil Based Mud" *BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp.

16. Kpan C. S. (2016) "The Effects of Corn Starch on the Rheological Properties of Water Based Mud" *BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp.

17. Acquah, A. (2017) "Evaluating The Effect of Silica Flour in Compressive Strength Development in Locally Manufactured Cement at Low Temperatures" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 38 pp

18. Assan, P. (2017) "The Use of Modified Starch (Acetylated Potato Starch) As A Secondary Viscosifier in Water Based Mud" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 42 pp.

19. Gyagri, M. (2017) "Determinants of Crude Oil Prices" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 42pp.

20. Wango, R. H. L. (2017) "Evaluation of Cote D'Ivoire's PSC Fiscal Regime on The Espoir Oil Field in Cote D'Ivoire" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 28 pp.

21. Mohammed, A. M. (2017) "Performance Evaluation of Palm Kernel Shell Ash (PKSA) on Local Cement" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 37 pp.

22. Onasis, A. B. (2018) "Evaluation of Various Water Flooding Patterns in the Kube Filed" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 34 pp

23. Barrister, W. K. (2018) "Comparative Analysis of Recovery Efficiencies of Water Injection and Water Alternating Gas in the Kube Reservoir" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 36 pp.

24. Oduak, O. G. (2018) "Comparison between Exponential Decline Model and Logistics Growth Model Decline in Production Forecasting of Oil and Gas" *Unpublished BSc*

Project Report, University of Mines and Technology, Tarkwa, 32 pp.

25. Adusu, T. P. (2018) "Optimising Candidate Well Selection for Matrix Stimulation- IPR Approach" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 37pp.

26. Wobil, D. A. (2018) "Review of Treatment of Waste Water in the Petroleum Industry" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 25 pp.

27. Bediako, B. A. (2019) "Waterflood Pattern Size Reduction in Faulted Anticlinal Reservoirs", *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 43 pp.

28. Ntiamoah E. A. (2019) "The Future and Challenges of Liquefied Natural Gas (LNG)" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 38 pp.

29. Akomeah E. F. (2019) "Performance of Horizontal Injection in Waterflood Operations" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 36 pp.

30. Anane S. K. A. (2019) "Assessment of Process Safety Standards in the Tema Oil Refinery(TOR) Tank Farm" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 40 pp.

31. Johnson, E. N. (2020) "Evaluation of Corn Starch as an Additive on the Rheological Properties of Water Based Mud System" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 36 pp

32. Okpoti, A. R. (2020) "Economic Evaluation of CO_2-EOR Project" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 32 pp

33. Asiam, E. N. B. (2020) "Numerical Simulation of Surfactant-Polymer Injection for Enhanced Oil Recovery, *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 33 pp

34. Igwilo, O. C. (2020) "Comparative Analysis of Horizontal and Vertical Well Injection for Heterogenous Reservoirs in Water Flooding Operation" *Unpublished BSc Project Report*, University of Mines and Technology, Tarkwa, 33 pp

(D) Other Professionally Related Experience

(i)   Practical Training and Academic Visits

I have had the opportunity to enrich my professional and academic experience through practical training with, and visits to the following Companies/Facilities including the following:

(a) *Drilling Rig:* Petroleum Training Institute (PTI), Effurun, Warri, Nigeria.   Jul. 2019

(b) *Production Flow Station:* Shell Production and Development Company (SPDC), Port Harcourt, Nigeria.   Jul. 2019

(c) *Compressed Natural Gas (CNG) Production Station:* Total Energy Support, Port Harcourt, Nigeria;   Jul. 2019

(d) *Ansett Integrated Services* (Expects in coring services), Port Harcourt, Nigeria.   Jul. 2019

(e) *Baker Hughes GE Service Company,* Takoradi, Ghana.   Jul. 2017 / Mar. 2017

(f) *Nigeria National Petroleum Corporation (Oil and Gas Refinery Plant)*, Port-Harcourt, Nigeria.   Jul. 2017

(g) *Jubilee Technical Training Institute*, Takoradi, Ghana   Mar. 2017

(h) *Baroid, Halliburton Ghana LTD*, Takoradi, Ghana

(i) *Hamilton Technologies Limited*, Port Harcourt, Nigeria   Jan 2017 / Jul. 2017

(j) *Tema Oil Refinery*, Tema, Ghana

(k) *Explo Ghana*, Takoradi, Ghana   Mar 2015 / Nov. 2014

4. DETAILS OF RESEARCH UNDERTAKEN SINCE APPOINTMENT TO THE UNIVERSITY

(A) Research Conducted

Since my appointment as an Assistant Lecturer in August 2013 and to Lecturer position in November 2015, I have undertaken a total of eleven (17) research works. Details of the research undertaken are the following:

1. **2020**: Waterflood Pattern Size Reduction in Faulted Anticlinal Reservoirs

   Waterflooding is a secondary recovery method applied in reservoirs when the natural energy drives are depleted (Asadollahi et al, 2009). Reduction in the sizes of waterflood patterns have an impact on waterflood efficiency and ultimate oil recovery. As such, this study was geared towards investigating the impact of waterflood pattern size reduction in faulted anticlinal reservoirs. ECLIPSE 100 was used to build a reservoir model on which pattern size reduction of a normal 5-spot pattern was carried out. The production period of the reservoir spun for 20 years. Results obtained showed that the oil production rate and total oil production of the field increased as the waterflood pattern size was being reduced. It was concluded that pattern size reduction through infill drilling and producer-to-injector conversions increases well density and reduces well spacing, which contributes to an increase in ultimate oil recover

2. *

3. **2020**: The Future and Challenges of LNG

   Global demand for energy keeps increasing from day to day because of economic growth and industrialisation among others. Fossil fuels such as coal, petroleum and natural gas account for the largest source of energy supply. Nevertheless, the burning of these fossil fuels to produce energy comes along with emission of greenhouse gases such as carbon dioxide, nitrous oxide and sulphur hexafluoride, which pollute the environment. Natural gas is considered as a clean energy source as compared to coal and petroleum because it emits about 50 to 60 percent less carbon dioxide, thus, it has less adverse effects on the environment than that of coal and petroleum. This study seeks to identify the drivers of petroleum energy, the indicators that make Liquefied Natural Gas (LNG) the future energy resource as well as the challenges of LNG. Microsoft Excel was used to statistically analyse secondary data from multiple sources including BP statistics, Statista, US Energy Information Administration (EIA), among

others. The drivers of petroleum identified were population growth, electrical power and transportation. Increase in proved gas reserves, LNG global trade, liquefaction plant capacity, LNG vessels and enforcement of new and existing regulations were identified as the indicators that make LNG the future energy resource. Key challenges that might disturb these drivers include are not limited to the following: delay in permitting the approval and fiscal regimes of LNG projects; project and equity financing challenges; challenging weather conditions and the fact that LNG cannot be burnt directly in an engine.

4. **2019**: Optimising Candidate Well Selection for Matrix Stimulation-IPR Approach

The selection of appropriate candidate wells for a stimulation operation is the most vital step for the economic success of the process. The selection criteria include assessing the well damage and choosing the appropriate approach to stimulate it. Most selection approaches consider the effects of damage and their corresponding treatment methods neglecting the economic influence of the process. This research, therefore, presents a detailed approach to candidate well selection for matrix stimulation using Vogel's Inflow Performance Relationship (IPR) curve analysis. A non-linear mathematical optimisation model was developed in Microsoft Excel using this analysis. This model requires certain input parameters for each well in order to generate results which could be analysed for the right decision. To validate the model, data from four wells on the Nero Field were used as input parameters. The results show that Well N3 has the highest total post-stimulation production of 12 833 886 barrels of oil and therefore should be considered for the stimulation operation. Sensitivity analysis was also conducted on Well N3 to see the performance of the well when certain independent variables such as price of oil, discount rate, and stimulation time are varied. The results show that the post-stimulation well performance is positively influenced by oil price, increasing as the oil price increase. The post-stimulation well performance, however, show a negative influence from both the discount rate and stimulation time, decreasing as those two parameters increase

5. **2019**: Flow Assurance in Subsea Pipeline Design – A Case Study of Ghana's Jubilee and TEN Fields

The increasing exploration and production activities in the offshore Cape Three Point Blocks of Ghana have led to the discovery and development of gas condensate fields in addition to the oil fields which produce significant amount of condensate gas. These discoveries require pipelines to transport the fluids avoiding hydrates and wax formation. This paper focuses on subsea pipeline design using Pipesim software that

addresses flow assurance problems associated with transporting condensate gas from the Jubilee and TEN Fields to the Atuabo Gas Processing Plant. It also considered an alternate design that eliminates the need for capacity increase of flowlines for the futuristic highest projected flow rates in 2030. The design comprises of two risers and two flowlines. Hydrate formation temperature was determined to be 72.5 °F at a pressure of 3 000 psig. The insulation thickness for flowlines 1 and 2 were determined to be 1.5 in. and 2 in. respectively. The pipe size for flowlines 1 and 2 were determined to be 12 in. and 14 in. respectively. The maximum designed flow rate was determined to be 150 MMSCFD. To meet the highest projected flow rate of 700 MMSCFD in the year 2030 at the processing plant, a 16 in. ID pipeline of 44 km length was placed parallel to the 12 in. ID flowline 1. This parallel pipeline increased the designed flow rate by approximately 4.7 times (705 MMSCFD). The alternate design employs 18 in. and 20 in. ID pipes for flowlines 1 and 2 respectively

6. **2019**: Evaluation of Various Water Flooding Patterns in the Kube Field

Water flooding is a process used to restore and maintain pressure in an oil reservoir. It enables better recovery of crude oil over longer periods of time. An important factor to consider when planning a water flood operation is the pattern arrangement of the wells to be used. As such, this project sought to determine the profitabilities of various flood patterns in an offshore field, the Kube field. Black oil simulations of 11 different patterns were created and ran using ECLIPSE 100 in order to obtain the necessary recovery factors. These patterns were used in the development of the field over a 10-year period. Results showed that the normal 5-spot pattern provided the greatest recovery while the direct line drive gave least recovery. Also, extreme water cuts as a result of the flood process limited the recovery of oil a few years after the operation began. In addition, it was discovered that normal flood patterns performed better than their inverted equivalents. It was thus concluded that from a purely technical standpoint, the normal 5spot pattern provides the highest profits.

7. **2018**: Evaluation of Guinea Corn Husk Ash as Oil-Well Cement Slurry Extender

Properly designed slurries for optimal cementing operations in oil and gas wells require additives to control properties such as density, free fluid, compressive strength, rheology, among others. These additives are imported though Ghana produces large amount of agro-waste annually and could be enhanced as cement slurry additives. The extender is one of such additives. Objective and Method: This paper evaluates the effect of guinea corn husk ash as an extender on the properties of class G cement slurries using API RP10B standards. Prepared slurry samples were subjected to

rheological, free fluid and density tests and the compressive strength of cured mould were determined. Results and Conclusion: The ash showed improvement in the compressive strength with all the samples recording values above the minimum 10.3 MPa recommended by API RP10B. The rheological properties recorded viscosity values below 50 cP confirming the good pump-ability of the slurries. The decrease in free fluid content as concentration of ash was increased is indicative of the potentials of the ash to ensure stability of the slurry during cementing operations. The guinea corn husk ash, a product developed from agro-waste showed potential properties of an oil-well cement slurry extender and requires further research

8. **2017**: Determinants of Global Pricing of Crude Oil- A Theoretical Review

Crude oil affects almost all activities of our modern day hydrocarbon society irrespective of the shifting trend to green energy. The ever increasing importance and demand of oil globally, has led to its highly complex market and pricing system. The purpose of this paper is to give a general understanding of the crude oil market and the formation of the oil pricing system in the long and short term. Understanding the factors behind this complex market system is vital as it can aid in critical decision and policy making. When the oil market began in the 1860s factors such as the quantity of oil that was demanded and flooded into the market were the main determinants of its price. Overtime the emergence of major oil companies dominated the market scene till their places were taken by governments in consumer and producer countries. These governments decisions, coupled with other organisations like the Organisation of Petroleum Exporting Countries, (OPEC), Organisation for Economic Co-operation and Development (OECD), geopolitical conflicts and wars, economic and industrial growth and development are now influential factors that affect crude prices. Other contributors to the complex market system include futures market contracts, speculators in the commodity market, refinery capacities, the value of the dollar and the weather. Crude oil prices thus change over time and cannot be attributed to one single market factor as it has spawned a highly complicated market system dependent on several different factors.

9. **2017**: Determining the Key Factors Affecting Global Pricing of Crude Oil Using Trend Analysis and Numerical Modelling

Crude Oil affects almost all activities of our modern day hydrocarbon society. The ever increasing importance and demand of oil globally, has led to its highly complex market and pricing system. This paper investigates the factors that determine the prices of crude oil and the impact of these individual factors using regression and trend analysis.

Crude oil prices along with other factors such as global and Oil Production and Exporting Countries (OPEC's) production rates, global oil consumption and refinery rates where studied from 1965 to 2015. The analysis employed a log-log multiple regression method using ordinary least squares, with oil price as the response variable and the other factors mentioned as predictor variables. The results from the regression analysis were complemented with trend analysis of these factors with oil prices. It was revealed from the results that all explanatory variables examined save natural gas consumption and wars were found to have significant impact in the oil price determination. Global oil and OPEC's production rates have a negative (inverse) relationship with oil price while consumption, the presence of wars directly relate to oil prices. The study established that crude oil prices change over time cannot be attributed to one single market factor, or just the explanatory factors analyzed in this work.

10. **2016**: Effect of AL2O3Nanoparticles on the Rheological Properties of Water Based Mud

This research work investigates into the performance of Aluminium Oxide nanoparticles in water based bentonite drilling fluid at high temperature formations. We looked into the thermal stability effect of the Aluminium oxide nanoparticles on the drilling fluid at varying temperature conditions. We analyzed the interactive effects of temperature, the Aluminium Oxide nanoparticles and shear rates on the shear stress of the drilling fluid. Optimization of these parameters at the high and low point of the shear stress of the drilling fluid was analyzed. We also developed a predictive expression for Shear stress as a response variable for changes in temperature, Aluminium Oxide nanoparticle and shear rate.

11. **2015**: Effect of Fe4O3 Nanoparticles on the Rheological Properties of Water Based Mud

Maintaining the viscosity and fluid loss ability during drilling operation is core for a drilling fluid to perform its functions effectively. The unfriendly conditions such as high temperature and pressures encountered as drilling operations cut deeper into formations require robust drilling mud formulae that would provide thermal stabilization of the drilling fluids while maintaining their rheological integrity. This research work investigates the stability of the oxides of Iron nanoparticles on the rheological properties of water based bentonite mud. The work focused on the effect of the nanoparticles on the rheology of the bentonite drilling fluid, as well as, their degree of thermal stabilization on the working fluid. The interactive effects of the iron

oxide nanoparticles, temperature and shear rate on the shear stress of the drilling were also analyzed. We also showed quantitative relationship of the nanoparticle, temperature and shear rate at the optimization points of the shear rate.

12. **2015**: Evaluation of Rheological Properties of Clay from the Western Region of Ghana

The rheological properties of drilling fluids are important components for a successful drilling program. The ability of water based drilling fluid to suspend drilling cuttings depends largely on the gellingproperty of the clay. Bentonite which is a colloidal clay exhibits best this ability hence it's widely use in the petroleum industry. Ghana imports bentonite for its drilling operations, however there are clay deposits in all ten Regions of Ghana. This work focuses on the evaluation of the rheological properties of local clay samples obtained from Wasa Akropong, Shama and Inchaban in the Western Region of Ghana, to ascertain their suitability as substitute for bentonite. Clay samples obtained from Wasa Akropong, Shama and Inchanban in the Western Region of Ghana were milled using jaw crusher and ball mill. The powdery form of these clay samples was obtained using 75 micrometer sieve. Both aged and unaged samples of the clays were prepared and subjected to gel strength, plastic viscosity, yield point and thermal stability tests. Imported untreated bentonite clay was also prepared for both aged and unaged to be used as a benchmark in this research work. The rheological performance of the local clays showed that they can only be usedin the petroleum industry if they are beneficiated and further test performed on them as these clays met some but not all of the API requirements. Clay from Ghana has been used mainly in the ceramic, brick and tile industry but not the petroleum industry. This work provides knowledge on the possibility of using these clays from Ghanain the petroleum industry

13. **2014**: Environmental and Health Impacts of Nanoparticles Application in Our Oil Industry .

This study seeks to bring to the forefront among many other publications, the pernicious and inconspicuous hazards that the unguarded application of nanoparticles or nanotechnology may pose to the environment, as well as, the health of both humans and animals. The environmental and health implications of this new transcending technology differs not in many field where this technology is applied, but this work narrows down most of these identified risks in our oil and gas fields as an area of major concentration for this work. As part of the major work of resolving the emulsion problems in the oil and gas field using engineered nanoparticles, this

paper analyses the risk and the reliable safety measures that must be followed from production to the application of the nanoparticles in the oil field as well as the disposal of the spent nanoparticles. This work is not only to increase the awareness of the health and environmental risks associated with the production and application of nanoparticles, but more also we showed in this work, the great benefits and the future impact of this technology as we produce and apply the nanoparticle under the proposed safe measures that we have described in this paper.

14. **2014**: Determination of Average Reservoir Pressure from Constant-Rate Drawdown Tests

This paper presents a method that can be used to analyze constant-rate drawdown tests to determine average reservoir pressure as a function of flowing time. The proposed method couples the pseudosteady state equation with its integral function to yield a unique plotting function that results in a zero slope (i.e., a constant value on the ordinate), which, based on the definition of stabilized flow equation, is equivalent to the difference between the average reservoir pressure and the bottom-hole flowing pressure. The average reservoir pressure history is, thus, obtained since the bottom-hole flowing pressure profile is known. As opposed to derivatives, the proposed approach yields smooth data; and is very diagnostic on the cartesian plot. Extension to gas wells is also considered. The significant contribution of this paper is that average reservoir pressure profile can directly be estimated using constant-rate drawdown test. Also, our proposed approach is based on a sound theoretical background. We demonstrate the validity of the proposed method with simulated and field data that are already published in the literature

15. **2014**: Production Analysis for Solution Gas-Drive Reservoirs: General Variable Pressure/Variable Rate Case –Theory

Presently, analytical models for estimating reservoir parameters for solution gas-drive are restricted to either constant pressure or constant rate assumption. Thus, current models for solution gas-drive do not allow for rigorous analysis of simultaneous variations in pressure and rate. In addition, the traditional material balance time or pseudotime, which models variable pressure and/or variable rate case, is limited to single-phase flow. This paper proposes a normalized multiphase pseudotime function that is capable of modeling general variable pressure and/or variable rate data for solution gas drive reservoirs during boundary-dominated flow. In particular, we present a multiphase flow equation that incorporates this pseudotime function. This flow equation is expressed in a form that traces the rate/time harmonic depletion curve.

Thus, the proposed approach allows analysts to use a single depletion curve to model constant rate, constant pressure and variable pressure/variable rate cases for solution gas drive reservoir systems. In addition, we propose a multiphase pseudocumulative function that is normalized by pseudopressure drop to permit the extension of flowing material balance method to solution gas drive. This is essential since analysis using flowing material balance method offers a better resolution than decline type curves. It also permits the computation of initial-oil-in-place. The significant contribution of this paper is the generality of the proposed model that allows the rigorous handling of variable pressure and/or variable rate case for solution gas drive reservoir systems. Thus, the proposed approach, as opposed to existing models, is not limited to production constraints. Only the appropriate equations and the methods of analyses and interpretation are presented in this paper. Illustrative examples are deferred to a subsequent writing.

16. **2015**: Proposing Enhanced Oil Recovery Methods for Jubilee Field Using The Screening Criteria.

In this research, a comprehensive method of choosing a suitable enhanced oil recovery method for the Jubilee Field was developed based on the then current fluid and rock properties of the Jubilee Field Formation Reservoir. Hydrocarbon gas injection according to the selection procedure came out as the most suitable enhanced oil recovery method for implementation on EOR on jubilee field in this study.

17. **2013**: Breakthrough Time Correlations for Coning in Bottom Water Supported Reservoirs

This paper investigates the development and behaviour of cones (both water and gas cones) in oil reservoirs supported by strong aquifer, and from which analytical correlations are developed for quick engineering estimates of the time for water/gas cones to break into the perforations of the producing wells. The studies treated the cone development and breakthrough times in both horizontal and vertical well producing reservoirs and made analysis on them. The Ozkan and Raghavan (1990) method was employed as the base approach in the modeling of the cones in both horizontal and vertical well. The developed models were then run on field data, the results were graphically represented in both the horizontal and vertical well cases. Analytical correlations were then developed from the results obtained for the breakthrough time estimations, which are simpler, compared to literature (Ozkan et al correlations, 1990) but give close results on same example case. This work actually employs the dimensionless (or the normalized approach) system to curtail the units

complexities and represent the results in a more generalized form. These analytical correlations can be leveraged on to plan better future recompletion strategy as they provide an engineering estimate of when water breaks into the production wells.

(B) Publications Arising out of the Research

(i) Refereed Journal Papers

1. **Amarfio, E.M**., Ntiamoah, E.A., Bediako B.A., Brobbey, O. (2020), "The Future and Challenges of LNG", *International Journal of Petroleum and Petrochemical Engineering*, 6(3), pp. 21-28. DOI: https:// doi.org/10.20431/2454-7980.0603003

2. **Amarfio, E. M**., Akoto, R. N. A., Bediako, B. (2020) "Waterflood Pattern Size Reduction in Faulted Anticlinal Reservoirs", *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* 6(2), pp. 17-22. DOI: http://dx.doi.org/10.20431/2454-7980.0602003

3. Marfo, S. A., Opoku Appau P., Acquah J. and **Amarfio, E. M**., (2019), "Flow Assurance in Subsea Pipeline Design – A Case Study of Ghana's Jubilee and TEN Fields", *Ghana Mining Journal*, Vol. 19, No. 1, pp. 72 - 85.

4. **Amarfio, E. M**, and Brobbey, O (2019) "Evaluation of Various Water Flooding Patterns in the Kube Field" *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* Volume 5, Issue 2, 2019, PP 1-8 ISSN 2454-7980 (Online) DOI: http://dx.doi.org/10.20431/2454-7980.0502001

5. Marfo, S. A, Owusu, W. A and **Amarfio, E. M** (2018) "Evaluation of Guinea Corn Husk Ash as Oil-Well Cement Slurry Extender" *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* Volume 4, Issue 4, 2018, PP 1-7 ISSN 2454-7980 (Online) DOI: http://dx.doi.org/10.20431/2454-7980.0404001

6. **Amarfio,** E. **M**., Gyagri, M. and Marfo**, S. A.** (2017), "Determining the Global Pricing of Crude Oil Using Trend Analysis and Numerical Modelling", *Ghana Journal of Technology*, Volume 2, Issue 1, pp. 82 - 90.

7. Gyagri M., **Amarfio**, E. **M**. and Marfo S**. A.** (2017), "Determinants of Global Pricing of Crude Oil - A Theoretical Review", *International Journal of Petroleum and Petrochemical Engineering (IJPPE)*, Volume 3, Issue 3, pp. 7-15. http://dx.doi.org/10.20431/2454-7980.0303002

8. **Amarfio, E. M**. and Abdulkadir, M (2016) "Effect of AL2O3 Nanoparticles on the Rheological Properties of Water Based Mud", *International Journal of Science and Engineering Applications,* Volume 5 Issue 1, 2016 ISSN-2319-7560 (Online)www.ijsea.com.

9. **Amarfio**, **E**. **M**. and Abdulkadir M. (2015) "Effect of Fe4O3 Nanoparticles on the Rheological Properties of Water Based Mud" *Journal of Physical Science and Application,* Volume 5, Number 6 (2015), pp.*377*-415. doi: 10.17265/2159-5348/2015.06.005

(ii)   Refereed Conference Publications

1. **Amarfio, E. M.,** and Adusu, P. T. (2019, August 5). Optimising Candidate Well Selection for Matrix Stimulation-IPR Approach. *SPE Nigeria Annual International Conference and Exhibition,* Lagos, 5-7th August, 2014. doi:10.2118/198707-MS

2. Marfo, S. A., Somuah, E. K. and **Amarfio**, **E**. **M**. (2015), "Performance Evaluation of Rheological Properties of Clay from the Western Region of Ghana", Proceedings of the *8th International Conference of the African Materials Research Society*, Accra, Ghana, 7 -10th December, 2015.

3. Mohammed, S., **Amarfio, E. M**. and Ohenewaa, O. D. (2014) "Production Analysis for Solution Gas-Drive Reservoir; General Variable Pressure/ Variable Rate Case-Theory", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE 172426, 5-7th August 2014.

4. **Amarfio, E. M**. and Mohammed, S. (2014) "Environmental and Health Impact of Nanoparticles in Our Oil and Gas Industry", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE-172427, 5-7th August, 2014.

5. Mohammed, S., Enty, G. S. and **Amarfio, E. M**. (2014) "Determination of Average Reservoir Pressure from Constant Rate Drawdown Test", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE-172424-MS, 5-7th August, 2014

6. **Amarfio, E. M**., Aborisade, O and Mohammed, S. (2013), "Effects of Nano-Particles in Emulsion Treatment and Separation", *SPE Nigerian Annual International Conference and Exhibition,* Lagos. SPE 167508, August, 2013.

7. **Amarfio, E. M.** and Igbokoyi, A. O. (2013), "Breakthrough Time Correlations for Coning in Bottom Water Supported Reservoirs", *SPE Nigeria Annual Conference and Exhibition,* Lagos, SPE 167511, August, 2013.

(iii) Contributions in Co-authored Publications

    (a)   Principal Co-authorship

- I am the principal co-author of the paper entitled, "*The Future and Challenges of LNG*". I conducted the research and I wrote the paper with the support of my co-author and served as the corresponding author during the publication.

- I am the principal co-author of the paper entitled, "*Optimising Candidate Well Selection for Matrix Stimulation-IPR Approach*". I conducted the research and I wrote the paper with the support of my co-author and served as the corresponding author during the publication.

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- I am the principal co-author of the paper entitled, "*Waterflood Pattern Size Reduction in Faulted Anticlinal Reservoirs*". I conducted the research and I wrote the paper with the support of my co-authors and served as the corresponding author during the publication.

- I am the principal co-author of the paper entitled, "*Evaluation of Various Water Flooding Patterns in the Kube Field*". I conducted the research and I wrote the paper with the support of my co-author and served as the corresponding author during the publication.

- I am the principal co-author of the paper entitled, "*Determining the Global Pricing of Crude Oil Using Trend Analysis and Numerical Modelling*". I conducted the study and I wrote the paper together with my co-authors and served as the corresponding author during the publication.

- I am the principal co-author of the paper entitled, "*Environmental and Health Impact of Nanoparticles in Our Oil and Gas Industry*". I conducted this study as part of my PhD work. I wrote the paper together with my co-author and served as the corresponding author during the publication.

- I am the principal co-author of the paper entitled, "*Effect of AL2O3 Nanoparticles on the Rheological Properties of Water Based Mud*". I

conducted this study as part of my PhD work. I wrote the paper together with my co-author and served as the corresponding author during the publication

(b) Second Co-authorship

- o I am the second co-author of the paper entitled, *"Determinants of Global Pricing of Crude Oil - A Theoretical Review"*. This is a research I conducted together with my co-author. I provided the technical direction of the study as well as the writing of the paper.

- o I am the second co-author of the paper entitled, "*Production Analysis for Solution Gas-Drive Reservoir; General Variable Pressure/ Variable Rate Case*". This paper was produced from a research conducted by my co-author and I. I also provided technical direction in the writing of this paper.

(c) Third Co-authorship

- o I am the third co-author of the paper entitled, "*Determination of Average Reservoir Pressure from Constant Rate Drawdown Test*". This is a research conducted by my co-author. I provided technical advice and helped in the writing of the paper.

- o I am the third co-author of the paper entitled, "*Performance Evaluation of Rheological Properties of Clay from the Western Region of Ghana*". This is a research conducted by my co-author. I provided technical advice during the writing of the paper.

(d) Fourth Co-authorship

- o I am the fourth co-author of the paper entitled, "*Flow Assurance in Subsea Pipeline Design – A Case Study of Ghana's Jubilee and TEN Fields*". This is a research conducted by my co-author. I provided technical advice in the conducting and writing of the paper.

5. CONFERENCES/SEMINARS/WORKSHOPS

(A) conferences/seminars/workshops with published papers

    (i)   **Aug. 2019**   43rd SPE Nigerian Annual International Conference and Exhibition, Lagos. Organised by SPE Nigerian National Council, 5-7th August, 2019

    (ii)   **Aug. 2014**   38th SPE Nigerian Annual International Conference and Exhibition, Lagos. Organised by SPE Nigerian National Council, 5-7th August, 2019

    (iii)   **Aug. 2013**   37th SPE Nigerian Annual International Conference and Exhibition, Lagos. Organised by SPE Nigerian National Council, 5-7th August, 2013

    (iv)   **Nov. 2019**   Postgraduate Seminar, University of Mines and Technology, Tarkwa

(B) Conferences/Seminars/Workshops without Published Papers

    (i)   **Jan. 2020**   Presentation by ParisTech, France. Organised by the Office of International Programmes, UMaT, 22nd January, 2020

    (ii)   **Mar. 2018**   SPE Ghana Students Conference hosted by the All Nations University College (ANUC), Koforidua.

    (iii)   **Mar. 2018**   SPE Workshop, Ghana Future Leaders, Accra, Ghana, 15 March, 2018

    (iv)   **Mar. 2018**   SPE Africa Regional Student Paper Contest, Accra, Ghana, 16 March, 2018.

    (v)   **Feb. 2018**   Financial Management in the University and Internal Audit Unit Operating System in UMaT(1 February, 2017)

    (vi)   **Nov. 2017**   Oil and Gas Familiarization Extended Training, Organised by BHGE, Accra, Ghana, 13-24 November, 2017

    (vii)   **Nov. 2017**   Local Content Conference and Exhibition on Developing Competitive Local Service Providers and Personnel in Ghana's Petroleum

Industry, Takoradi, 8-9th November, 2017.

(viii)   **Nov. 2017**   Workshop on Creating Learning Materials for Open and Distant Learning, Organised by PQAU, UMaT, 1-3rd November, 2017

(ix)   **Jul. 2017**   Seminar on Discussions on Increasing UMaT's Research Visibility, Organised by PQAU, UMaT, 20 July, 2017

(x)   **April 2017**   Seminar on Career Progression and Documentation of Promotion Papers and Content Assessment, Organised by PQAU, UMaT, 11 April, 2017

(xi)   **Mar. 2017**   SPE Ghana Students Conference hosted by the University of Energy and Natural Resources (UENR), Sunyani.

(xii)   **May 2016**   Workshop on Curriculum Design and Learning Outcome Approach, Organised by PQAU, UMaT.

(xiii)   **Feb. 2015**   Workshop on Implementation of Spot Fines, Legislative Instrument (LI) 2180, UMaT.

(xiv)   **Feb. 2014**   Workshop on Career Progression and Promotion Issues, UMaT.

(xv)   **Aug. 2014**   GMJ Online Journal Publication Workshop. Organised by UMaT.

(xvi)   **Nov. 2012**   SPE lecture series on Smart and intelligent fields, Abuja. Organised by SPE Abuja Section.

(xvii)   **Oct. 2011**   2nd Annual Internal Education Conference, Abuja. Organised by Diamond Lecture Centre, Abuja.

(xviii)   **Aug. 2011**   35th SPE Nigerian Annual International Conference and Exhibition, Lagos. Organised by SPE Nigerian National Council.

6.   LIST OF JOURNALS AND CONFERENCES TOGETHER

(A) Referred Journal Papers (Published with Exact References)

1. **Amarfio, E.M**., Ntiamoah, E.A., Bediako B.A., Brobbey, O. (2020), "The Future and Challenges of LNG", *International Journal of Petroleum and Petrochemical Engineering*, 6(3), pp. 21-28. DOI: https:// doi.org/10.20431/2454-7980.0603003

2. **Amarfio, E. M**., Akoto, R. N. A., Bediako, B. (2020)"Waterflood Pattern Size Reduction in Faulted Anticlinal Reservoirs", *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* 6(2), pp. 17-22. DOI: http://dx.doi.org/10.20431/2454-7980.0602003

3. Marfo, S. A., Opoku Appau P., Acquah J. and **Amarfio, E. M**., (2019), "Flow Assurance in Subsea Pipeline Design – A Case Study of Ghana's Jubilee and TEN Fields", *Ghana Mining Journal*, Vol. 19, No. 1, pp. 72 - 85.

4. **Amarfio, E. M**, and Brobbey, O (2019) "Evaluation of Various Water Flooding Patterns in the Kube Field" *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* Volume 5, Issue 2, 2019, PP 1-8 ISSN 2454-7980 (Online) DOI: http://dx.doi.org/10.20431/2454-7980.0502001

5. Marfo, S. A, Owusu, W. A and **Amarfio, E. M** (2018) "Evaluation of Guinea Corn Husk Ash as Oil-Well Cement Slurry Extender" *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* Volume 4, Issue 4, 2018, PP 1-7 ISSN 2454-7980 (Online) DOI: http://dx.doi.org/10.20431/2454-7980.0404001

6. **Amarfio,** E**. M**., Gyagri, M. and Marfo**, S. A.** (2017), "Determining the Global Pricing of Crude Oil Using Trend Analysis and Numerical Modelling", *Ghana Journal of Technology*, Volume 2, Issue 1, pp. 82 - 90.

7. Gyagri M., **Amarfio**, E. **M**. and Marfo S**. A.** (2017), "Determinants of Global Pricing of Crude Oil - A Theoretical Review", *International Journal of Petroleum and Petrochemical Engineering (IJPPE)*, Volume 3, Issue 3, pp. 7-15. http://dx.doi.org/10.20431/2454-7980.0303002

8. **Amarfio, E. M**. and Abdulkadir, M (2016) "Effect of AL2O3 Nanoparticles on the Rheological Properties of Water Based Mud", *International Journal of Science and Engineering Applications,* Volume 5 Issue 1, 2016 ISSN-2319-7560 (Online)www.ijsea.com.

9. **Amarfio**, E. **M**. and Abdulkadir M. (2015) "Effect of Fe4O3 Nanoparticles on the Rheological Properties of Water Based Mud" *Journal of Physical Science and Application,* Volume 5, Number 6 (2015), pp.*377*-415. doi: 10.17265/2159-5348/2015.06.005

(B)   Referred Conference Paper (Published with Exact References)

8. **Amarfio, E. M.,** and Adusu, P. T. (2019, August 5). Optimising Candidate Well Selection for Matrix Stimulation-IPR Approach. *SPE Nigeria Annual International Conference and Exhibition,* Lagos, 5-7th August, 2014. doi:10.2118/198707-MS

9. Marfo, S. A., Somuah, E. K. and **Amarfio**, **E. M**. (2015), "Performance Evaluation of Rheological Properties of Clay from the Western Region of Ghana", Proceedings of the *8th International Conference of the African Materials Research Society*, Accra, Ghana, 7 -10th December, 2015.

10. Mohammed, S., **Amarfio, E. M**. and Ohenewaa, O. D. (2014) "Production Analysis for Solution Gas-Drive Reservoir; General Variable Pressure/ Variable Rate Case-Theory", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE 172426, 5-7th August 2014.

11. **Amarfio, E. M**. and Mohammed, S. (2014) "Environmental and Health Impact of Nanoparticles in Our Oil and Gas Industry", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE-172427, 5-7th August, 2014.

12. Mohammed, S., Enty, G. S. and **Amarfio, E. M**. (2014) "Determination of Average Reservoir Pressure from Constant Rate Drawdown Test", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE-172424-MS, 5-7th August, 2014

13. **Amarfio, E. M**., Aborisade, O and Mohammed, S. (2013), "Effects of Nano-Particles in Emulsion Treatment and Separation", *SPE Nigerian Annual International Conference and Exhibition,* Lagos. SPE 167508, August, 2013.

14. **Amarfio, E. M.** and Igbokoyi, A. O. (2013), "Breakthrough Time Correlations for Coning in Bottom Water Supported Reservoirs", *SPE Nigeria Annual Conference and Exhibition,* Lagos, SPE 167511, August, 2013.

(C)   Ten Selected Publication for External Assessment (Since Last Appointment)

1. **Amarfio, E.M**., Ntiamoah, E.A., Bediako B.A., Brobbey, O. (2020), "The Future and Challenges of LNG", *International Journal of Petroleum and Petrochemical Engineering*, 6(3), pp. 21-28. DOI: https:// doi.org/10.20431/2454-7980.0603003
2. **Amarfio, E. M**., Akoto, R. N. A., Bediako, B. (2020)"Waterflood Pattern Size Reduction in Faulted Anticlinal Reservoirs", *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* 6(2), pp. 17-22. DOI: http://dx.doi.org/10.20431/2454-

7980.0602003

3. **Amarfio, E. M**, and Brobbey, O (2019) "Evaluation of Various Water Flooding Patterns in the Kube Field" *International Journal of Petroleum and Petrochemical Engineering (IJPPE)* Volume 5, Issue 2, 2019, PP 1-8 ISSN 2454-7980 (Online) DOI: http://dx.doi.org/10.20431/2454-7980.0502001

4. **Amarfio,** E**. M**., Gyagri, M. and Marfo**, S. A.** (2017), "Determining the Global Pricing of Crude Oil Using Trend Analysis and Numerical Modelling", *Ghana Journal of Technology*, Volume 2, Issue 1, pp. 82 - 90.

5. Gyagri M., **Amarfio**, **E**. **M**. and Marfo S**. A.** (2017), "Determinants of Global Pricing of Crude Oil - A Theoretical Review", *International Journal of Petroleum and Petrochemical Engineering (IJPPE)*, Volume 3, Issue 3, pp. 7-15. http://dx.doi.org/10.20431/2454-7980.0303002

6. **Amarfio**, **E**. **M**. and Abdulkadir M. (2015) "Effect of Fe4O3 Nanoparticles on the Rheological Properties of Water Based Mud" *Journal of Physical Science and Application,* Volume 5, Number 6 (2015), pp.*377*-415. doi: 10.17265/2159-5348/2015.06.005

7. **Amarfio, E. M.,** and Adusu, P. T. (2019, August 5). Optimising Candidate Well Selection for Matrix Stimulation-IPR Approach. *SPE Nigeria Annual International Conference and Exhibition,* Lagos, 5-7th August, 2014. doi:10.2118/198707-MS

8. Mohammed, S., **Amarfio, E. M**. and Ohenewaa, O. D. (2014) "Production Analysis for Solution Gas-Drive Reservoir; General Variable Pressure/ Variable Rate Case-Theory", *SPE Nigeria Annual International Conference and Exhibition,* Lagos, SPE 172426, 5-7th August 2014.

9. **Amarfio, E. M**. and Mohammed, S. (2014) "Environmental and Health Impact of Nanoparticles in Our Oil and Gas Industry", *SPE Nigeria Annual International Conference and Exhibition,* Lagos*,* SPE-172427, 5-7th August, 2014*.*

10. **Amarfio, E. M.** and Igbokoyi, A. O. (2013), "Breakthrough Time Correlations for Coning in Bottom Water Supported Reservoirs", *SPE Nigeria Annual Conference and Exhibition,* Lagos*,* SPE 167511*,* August, 2013.

7.   RECORD OF SERVICE TO THE COMMUNITY

(A) Service to the University Community (SUC)

Since my appointment into the University of Mines and Technology in 2010, I have served the university community in the following areas:

(i)   Administrative Experience

Aug. 2018   *Departmental Training Officer*, Petroleum Engineering Department, UMaT.

Aug. 2017   *Departmental Training Officer*, Petroleum Engineering Department, UMaT.

Aug. 2016   *Lecturer-in-charge of Students Associations and Sport Teams*, Petroleum Engineering Department, UMaT.

Aug. 2014   **Lecturer-in-charge of Lab**., Petroleum Engineering Department, University of Mines and Technology, Tarkwa..

(ii)   Membership of Non-Statutory/Ad-hoc Committees

Oct. 2020   *Member:*   Committee on Review of Proposed New BSc Chemical Engineering Programme, UMaT, SPetS.

Feb. 2020   *Member:*   Committee on the Re-accreditation of Undergraduate Petroleum Engineering Programme

Sept. 2019   *Member:*   Committee on Introduction of Certificate Programmes in Reservoir Engineering

Jul. 2017   *Member:*   Committee on Developing the Guidelines for Assigning, Supervising and Grading Students' Project work and Thesis

Jan. 2017   *Member:*   Committee on Developing Fee Regime for Postgraduate Programme in Petroleum Engineering

Aug. 2016	*Secretary*:	Committee on Developing Learning Outcomes for Petroleum Engineering Programme.
Aug. 2016	*Member*:	Committee on Developing Curriculum for Subsea Engineering Programme.
Feb. 2014	*Member*,	Committee on Development of Petroleum Engineering Postgraduate Programme.
Jan. 2014	*Member*,	Course Structure Development Committee for Refinery and Petrochemical Engineering and Natural Gas Engineering, Undergraduate
Jul. 2014	*delegated Participant*,	Admissions and selection committee meeting
Jul. 2019	*Team member,*	part of a team of three (3) Petroleum Engineering staffs and 42 students to embark on a two week Industrial Field Trip to Oil and Gas facilities in Port Harcourt, Nigeria.
Jul. 2017	*Team member,*	part of a team of four (4) Petroleum Engineering staffs and 42 students to embark on a two week Industrial Field Trip to Oil and Gas facilities in Port Harcourt,
Jul. 2019	*Team member,*	part of a team of seven (7) Petroleum Engineering staffs and 42 students to embark on a two week Industrial Field Trip to Oil and Gas facilities in Port Harcourt, Nigeria.
Aug. 2013	*AcademicTutor:*	Petroleum Engineering Department. UMaT. Tarkwa.

(iii)   Extension Work/Workshops

Nov. 2019:	*Speaker*,	Seminar/Lecture on the topic, "*Optimising Candidate Well Selection for Matrix Stimulation-IPR*

Approach, SPS, UMaT, Tarkwa.

(iv)   Participation in University/Faculty/Department Activities

Since my appointment into the University of Mines and Technology in 2010, I have participated in university/faculty/department activities in the following areas:
- Convocation Meetings
- Faculty Board Meetings
- Departmental Board Meetings
- Seminars/Colloquium

(C)   Service to the International Community (SIC)

(i)   Membership of International Committees/Professional Bodies

Dec. 2020 – To date   *Member*, International Association of Engineers (IAENG).

Aug. 2019   *Facilitator*, SPE Nigerian International Conference and Exhibition 5-7th August, 2019, Lagos, Nigeria

Sept. 2018   *Section Award Judge*, Society of Petroleum Engineers International.

Mar. 2018   *Judge,* SPE African Regional Student Paper Contest, Accra, Ghana

Sept. 2015   *Member*, Society of Petroleum Engineers International (SPEI)

(ii)   Editor/Peer Review

April 2017:   *Editor*, International Journal of Petroleum and Petrochemical Engineering (IJPPE)

May 2020:   *Reviewer*, "Comparative Characterization of Petrophysical and Mechanical Properties of Siliciclastic Reservoir Rocks within a compressional structure. Anals of Science and Technology (AST)