



# POINTS OF EMPHASIS IN NIGERIAN GEOLOGY AND THE OUTSTANDING CONTRIBUTIONS BY PROFESSOR ANTHONY CHUKWUMA ONYEAGOCHA (1942-1987)

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## A TRIBUTE TO PROF. ANTHONY C. ONYEAGOCHA

The 36<sup>th</sup> anniversary of the death of **Professor Anthony Chukwuma Onyeagocha** was marked on 28<sup>th</sup> August 2023. As my mentor and my academic father, I feel fulfilled to give him this tribute to remind



the global academic community of his outstanding contributions to geology in general and Nigerian geology in particular. Tony as he was fondly called was born in 1942 in Owerri, Southeastern Nigeria. The Father was a prominent lawyer who sent him to the United States of America to study geology after his secondary education at Holy Ghost College,

Owerri, Nigeria. He studied at Ohio State University Columbus Ohio (1963-1965) and Iowa State University Ames, Iowa (1966-1968) for his undergraduate education, Iowa State University for his master's degree, under the supervision of Prof. Karl Seifert (1968-1970) and a Ph.D. degree under the supervision of Prof. Benard Evans at the University of Washington, Seattle (1970-1973). He proceeded for his postdoctoral research in Smithsonian Institute, Washington, Dc (1973-1974) and bagged Smithsonian Fellowship.

In September 1974, I was admitted in to the Department of Geology, University of Nigeria, Nsukka, Nigeria for a B.Sc. program in Geology. Upon my arrival at the department of geology, I met a young man, six feet tall, who I was told had just been recruited to teach Petrology in the Department of Geology.

He sounded amiable and soft. My first contact with Tony showed me that he came back to Nigeria after fourteen Years of study in the U.S.A. to contribute to the development of geology in the country especially Petrology. He told me that he had realized that no matter how long one stayed abroad one has to start afresh whenever one return to the country, so he was vivacious and eager to impart knowledge.

At the time of Tony's return to Nigeria, the economy was good as the U.S. dollar exchange rate for Nigeria Naira was one dollar to 0.76 Naira (Seventy six kobo) or less. It was rumoured at that time that the then Nigerian Head of State boasted that the problem of Nigeria was not how to get money but how to spend it. The oil money was indeed flowing into Nigerian treasury and geology was a very lucrative discipline. However, Tony soon found that the interest of most Nigerians and indeed geologists was rather in applied aspect of Geology which ensured recruitment by oil companies that paid fabulous salaries. This was not the case for Basic geology field, Petrology which makes one to end up as a teacher/lecturer as at then as the lowest paid professional.

Tony sought to emphasize that basic science holds the key to the development of applied science and technology and that most of the rich countries of the world anchored their researches in the basic science field of geology which trained people on the occurrence and exploration of mineral deposits and not fossil fuels. That was not the points of emphasis in Nigeria geology. Even now the emphasis is still on those aspects of geology that give lucrative employment or bring riches. He taught Petrology but most students showed little or no interest. His manner of teaching made the situation worse.

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I remember Tony asking my class then to choose between writing notes in class and teaching (ie. verbal teaching). Then we had a meeting and decided that he should be giving us notes being that we did not understand his teachings due to his American accent and his soft spoken nature. At this point he stopped teaching in class but only dictated notes.

Notwithstanding, Tony was a very intelligent and knowledgeable man. Due to his new teaching habit, many students developed little interest to his teaching, but I chose to go closer to him because I found that if one asked him questions he would spend time in his explanation and that I became close to him and did well in his courses.

However, during our final year field mapping exercise and project supervision, students were asked to choose their supervisors. Tony told the class that he hoped to get at least one postgraduate student among us and everyone chuckled and looked towards my direction.

On his return to Nigeria Tony had chosen Akwanga north central, a virgin area where no geological studies had been done as his research area. Four students out of thirty-five of us in a class; Okoko, Okonkwo, Ibe and Ekwueme chose to work with him. Tony then took us in his 404 saloon car in December 1977 to Keffi, Nasarawa State and introduced us to the chief of Kokona and told us to sort out ourselves. We did sort out ourselves mapping the rocks in the area, after which he visited us for supervision and the first geological map of Akwanga was produced and published in 1982.

Tony did not lose focus. He was eager to supervise students even at postgraduate level. He told me that it is at that level that a lecturer is given the opportunity to showcase his knowledge and brilliance. Hence, after our undergraduate external Oral defence, he asked me to draft an article to be submitted to a journal for possible publication, which I did and my first article "The pre-Pan-African Structures in Northcentral Nigeria" (Onyeagocha and Ekwueme 1982) was published. While on my National Youth Service (1978-1979) Tony advised me to come back to the university to pursue postgraduate studies under his supervision and equally encouraged his wife, Chii to talk to me. He assured me of his support and also affirmed that if I study petrology under him, one day the world would stand up for me in academia. With this persuasion I registered for M.Phil. degree programme in Geology at the University of Nigeria, Nsukka in 1979 under his supervision. He supported me by nominating me for a DAAD scholarship which covered all my study expenses. He did not delay the reading of my thesis draft, rather he encouraged me to write the draft and send through University of Nigeria postgraduate students who were staff of University of Calabar. Tony had a wonderful sense of acknowledgement and appreciation, and respected and honoured his

lecturers. For the defence of my M.Phil. dissertation, he insisted that University of Nigeria, Nsukka invited Prof. Karl Seifert of Iowa State University, his M.Sc. degree supervisor, to examine my research. He had authored the article on "Optical properties of Adirondack anorthosite plagioclases" with Prof. Seifert (Onyeagocha and Seifert 1971). My M.Phil. thesis was also on "plagioclases of Lokoja area, northcentral Nigeria" and we coauthored an article from it (Ekwueme and Onyeagocha 1988).

The establishment of Calabar Campus of University of Nigeria in 1974 necessitated that Tony and other lecturers went from Nsukka to Calabar periodically to teach some of the geology courses. After my M.Phil. defence, he told me that he would like me to take my Ph.D. thesis mapping area as the Oban massif of southeastern Nigeria. He stressed that the area was geologically unexplored and by pioneering such research I would have a lot of mileage. Hence, when I received an invitation letter to take up appointment as an Assistant Lecturer in the University of Calabar in 1982, Tony and my grandmother Maria Onuh encouraged me to take up the appointment. Shortly after that, I registered to pursue my Ph.D. programme on part time basis under the supervision of Tony. He would always come from Nsukka to Calabar to supervise the work and inominated him as the external Examiner for one of my M.Sc. student's research and other undergraduate projects of the Department. This led to his frequent visits to Calabar.

Tony abhorred quarrels. He was easy-going and forgiving. When the Head of Department of Geology at Calabar became antagonistic and directed me to stop my study in the Oban Massif claiming that it was his research area, Tony advised me to leave the place for him but I refused. Since I could not analyze my rocks in Nigeria because of lack of facilities, he assisted me to get scholars abroad who did the analyses. When my Ph.D thesis was ready, he insisted that only Prof. Bernard Evans (his major supervisor for his Ph.D programme) would examine my thesis. University of Nigeria, Nsukka invited Prof. Evans to Nsukka. He arrived in Nigeria and examined my thesis on November 25, 1985. Tony, while informing me that Prof. Evans would be my external examiner told me he was difficult to satisfy and one of the best in the field of Petrology and Mineralogy in the world. He instructed me not to contact him before the examination but to prepare for a tough defence of my thesis. Prof. Evans was indeed a thoroughbred Petrologist. His examination of my thesis lasted for three hours and it was an open defense in a classroom where everyone who wished attended and participated in asking questions. At the end, Prof. Evans requested for an evidence that my thesis was publishable and Tony gave him a galley proof of our article titled; "Metamorphic Isograds of Uwet area, Oban Massif, Southeastern Nigeria."

After perusing through the article, Prof. Evans appended his signature to authenticate the examination and declared

“Congratulation Dr. Ekwueme” and this success made me feel exhilarated.

In 1984, Tony emphasized the importance of attendance and presentation of papers at learned conferences. He made sure that I presented a paper at the Nigerian Mining and Geosciences (NMGS) conference held at Nsukka, Nigeria in 1984. Also, after my Ph.D thesis defence he asked me to draft a paper from the thesis to be presented at NMGS conference in Port Harcourt in 1986, which I did and the article titled “Rb-Sr Geochronology of Metamorphosed Rocks of Uwet Area Southeastern Nigeria” was presented and won the second position of the maiden NMGS-Elf award (1986).

Tony's ambition was to become a Professor. Promotion to this level required a number of publications in scholarly journals. He had published articles in reputable and high impact factor journals from his research in the USA. These articles are in journals such as the American Mineralogist, Contributions to Mineralogy and Petrology (Onyeagocha and Seifert, 1971; Onyeagocha 1974; Misch and Onyeagocha 1976). Although they were indeed of high-quality, Tony did not meet the number of required articles for professorial promotion. Quantity and quality were emphasized in Nigeria and Tony following his training believed that it was better to put all the data that could be used to publish three articles in an area to produce one solid paper in a reputable journal. To this end, he visited USA to carry out electron microprobe analysis of Akwanga rocks (Onyeagocha 1986). It was during and after my Ph.D. programme that I convinced Tony that we could publish a paper using field data from Nigeria and geochemical data obtained through collaborations with colleagues abroad. There was an explosion in the number of articles we published together (Onyeagocha and Ekwueme, 1987; Ekwueme and Onyeagocha, 1995a,b, 1986, 1987, 1988). These articles made significant impact on the petrology of the Nigerian Basement Complex. Tony was a committed member of the Nigerian Mining and Geosciences Society. He served as both a Treasurer and Editor-in-chief of the Journal of Mining and Geology. Treasurer (1978 to 1979). Editor-in-chief (1985 to 1987)

He insisted that I present all papers we wrote at NMGS conferences before submitting them to journals for review and publication. In this course, the articles were criticized and discussed and were published in both local and international journals. Awards were also received. For instance, my articles had received Total/NMGS Awards 1986, 1995 and 2008. The climax was the Hutchison Young Scientist Award, which I received during the 29<sup>th</sup> International Geological Congress (IGC) Washington, DC in 1989. The award was the fulfillment of the prediction of Tony that one day the world would stand up for me in academia. It was indeed my most rewarding experience as an article from my Ph.D thesis titled:

“Tectonothermal Evolution of the Oban Massif, Southeastern Nigeria” was chosen as one of the three articles by International Union of Geological Sciences (IUGS) to win the maiden Hutchison Young Scientist Award (1989). Tony died in 1987, but before his death he asked me to draft an article on “Temperature-Pressure distribution pattern in the Nigerian basement complex.” The article was accepted and published in the Journal of African Earth Sciences vol. 11, pp. 83-93 (1990). I dedicated the article to his cherished memory (Onyeagocha and Ekwueme 1990).

I was able to visit USA, presented a paper at the congress, and I met Prof. Bernard Evans at the venue. We both shared the grief of losing Tony. I participated in IGCP 233 field trip to the southern Appalachian and workshop on <sup>40</sup>Ar/<sup>39</sup>Ar dating method organized by Prof. David Dallmeyer of University of Georgia Athens Georgia, USA. These trips were paid for through the award. Prof. Evans asked Dr. Svea Sorensen of Smithsonian Institute in Washington DC to assist me in the geochemical analyses of the samples I took with me to the USA (Ekwueme, 2007). She did and using the data, I wrote three papers which were accepted and I presented them in conferences in Adelaide, Canberra and Perth, Australia in 1990 on different occasions. The award also made it possible for me to attend and present a paper at a symposium on Precambrian Granitoid in Helsinki Finland in 1989 (Ekwueme 2007).

Tony was also versatile in his research. He wrote an article on Mallam Tanko Serpentinite of Sokoto State. This article is comparable to his article on Twin Sisters Dunite of Washington (Onyeagocha, 1978; 1979). He even wrote an article on fossils in the Benin Formation of Nigeria (Onyeagocha 1980), in which he reported the occurrence of **Ophiomorpha** for the first time. Tony was an inspiring teacher and mentor. He loved supervision at postgraduate level. Many books written by me and awards were dedicated to him and I feel privileged to have supervised more than ten students in Petrology. Eight of them are Ph.D holders while the other four are Professors. Presently, I am supervising two Ph.D. students. These Professors have also produced Ph.D. holders who are now academic grand-children of Tony. This is so because Tony's wife told me that when Tony was alive, he always referred to me as his academic son. Today, one of these academic grand-children is working with a friend of Tony. She is pursuing her Ph.D. programme in Petrology and Geochemistry in the United States of America.

Tony has many friends and admirers. Even many who never met him know him by reputation. That was true of Prof. Robert C. Newton of University of Chicago, USA. I met him in South Africa during the Limpopo belt conference on Granulite and deep crustal tectonics held in South Africa in 1990. The conference was attended by experts in the field of

petrology to examine rocks in the area with a view to solving the charnockite problem: "Is charnockite an igneous or metamorphic rock?" (Ekwueme, 2007). During our discussion Prof. Newton inquired from me whether I know a Nigerian petrologist who studied in the USA, Tony Onyeagocha? I told him that he was my B.Sc., M. Phil. and Ph.D thesis supervisor. He was excited and told me he had never met Tony in person but knew him by reputation. He offered to send us complimentary copies of Journal of Geology which he was then editing and to request his friends who were editors of Geology and the American Mineralogist to be sending complimentary copies of their journals to Department of Geology, University of Calabar Library. This promise was fulfilled. One of my M.Sc. products who is currently pursuing her Ph.D. in USA fortunately met a friend of Tony. He inquired if she knows a Nigerian Petrologist; Tony Onyeagocha. She replied that Tony supervised her supervisor, though he is late. The man was excited and told her Tony was his friend and this man has been good to her.

There is therefore, no doubt that, in spite of his short stay on Earth (he died at 45), Tony made and is still making tremendous impact on the life of people. He demonstrated that he was a pure scientist whose joy was in the discovery of which science brings **not on acquisition of riches?** An eloquent testimony to that was his rejection of an appointment in Imo State shortly after returning from USA to Nigeria to be a Commissioner. This is a political post which many Nigerians yearn for and struggle to get. Tony rejected the appointment telling the Governor that his vocation was to be a lecturer, and not a politician. The only other Nigerian I know that did the same is my friend Prof. Gabriel Olayi, a Mathematician who rejected appointment into the Cabinet of the Governor as a commissioner in Cross River State of Nigeria and taught in the University until he retired.

Tony started his life as a Catholic Christian having attended Holy Ghost College Owerri. I did not know him as a good Catholic, may be due to his sojourn in the USA but friend of his who is also my friend, Prof. Chuma Eze told me that after he was diagnosed of terminal illness Tony became zealous and with his daughter attended mass regularly at St. Peter's Chaplaincy University of Nigeria Nsukka. He died as a good Catholic on 28<sup>th</sup> August 1987 and I conclude by wishing his soul eternal rest in the bosom of our Lord Jesus Christ: *Requiem aeternam dona eis, Domine: et lux perpetua luceat eis. Requiescat in pace Amen.*

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