



GOODWILL MESSAGES



Prof. Mojeed O. Liasu

Deputy Vice-Chancellor, LAUTECH, Ogbomoso

KUDOS TO NANO⁺

Kudos must be given to the Nanotechnology research group (NANO⁺) led by Prof. A. Lateef. The organizers of the nanotechnology conference must be commended for their efforts in bringing Nigeria to the forefront of this futuristic and promising area of research. The engine for moving all chemical, physical, and biological energy interactions have hitherto been in the speculative realm until the field of nanotechnology came into focus. With nanotechnology, energy interactions between all forms of matter can be directly manipulated and managed with higher efficiency. The most important development however is that unlike in the past when, Nigeria and Africa are usually late starters, we are early bird contributors in this initiative. We urge government and non-government agencies to give financial and material support to this noble initiative. Once again, I felicitate with the research group on the 5th year anniversary and the laudable achievements made in this field within very short period of time. I wish all the participants fruitful deliberations at LAUTECH NANO 2019.



Prof. Peter B. Olaitan

Provost, College of Health Sciences, LAUTECH, Osogbo

Another Nanotechnology meeting is here. Here we have experts discussing the way forward for our world-not just this century but even the future. Nanotechnology is the way to go as this attends to many areas of our lives. Scientists are currently debate the future implications of nanotechnology. Nanotechnology may be able to create many new materials and devices with a vast range of applications, such as in nanomedicine, nanoelectronics, biomaterials, energy production, and consumer products. Following the first discussion on the concepts that seeded nanotechnology in 1959 by renowned physicist Richard Feynman in his talk "There's Plenty of Room at the Bottom", in which he described the possibility of synthesis via direct manipulation of atoms, several developments and applications have been seen using nanotechnology. This includes even several areas of medicine-many of which are currently in use and many more still evolving. The advancement in nanotechnology helps in the treatment of neurodegenerative disorders such as Parkinson's disease and Alzheimer's disease. Applications of nanotechnology in tuberculosis treatment, the clinical application of nanotechnology in operative dentistry, in ophthalmology, in surgery, visualization, tissue engineering, antibiotic resistance, immune response are currently being investigated. It is gladdening to see our university, as a foremost university in Nigeria at the fore front of this new idea and innovations. I congratulate the organizers of the conference, the LAUTECH Nanotechnology research group (*NANO*⁺) and all the participants, as I am sure that the meeting for this year still promises to be great if not greater than the previous meetings. I therefore wish all the participants well as you partake in channeling the path to the future of our world.



Prof. Olajide A. Ajao

Dean, Faculty of Agricultural Sciences, LAUTECH, Ogbomoso

My visit to Prof. Lateef’s laboratory a couple of years ago got me thinking on how the emerging area in science such as Nanotechnology can provide a paradigm shift that will solve one of Nigeria’s highly complex and diverse food problem. The country population by estimate is close to 200 million and substantially food insecure despite the promising opportunities from Nanoscience to improve sustainability of food production. Unlike other fields such as medicine, application of nanotechnology in agriculture is marginal, however, with the efforts and readiness of LAUTECH Nanotechnology research team to collaborate with scientists in other faculties, the coming workshops will surely address and welcome papers on “agriculture and nanotechnology”. As an economist, I strongly believe in the efficient use of resources and will like to see in no distant future how nanotechnology will usher in new systems for food to ensure food security. The recent images of malnourished kids from certain parts of the country are highly disturbing and the trend must be stopped. To achieve this mandate, all hands must be on deck. Once again, I congratulate the Nanotechnology research team, all the stakeholders at this conference and wish us a fruitful deliberation.

Thank you and God bless



Prof. O. Adekunle Olowe

Dean, Faculty of Basic Medical Sciences, College of Health Sciences, LAUTECH, Osogbo

What a great concept from a productive research oriented group, 'LAUTECH-NANO⁺'? It’s of note that one application of nanotechnology in medicine currently being developed involves employing nanoparticles to deliver drugs, heat, light or other substances to specific types of cells, such as cancer cells. This technique reduces damage to healthy cells in the body and allows for earlier detection

of disease. Its applications in other fields especially in computer technology, healthcare, sustainability, etc... are of great importance to nature. Once again, congratulations to *NANO*⁺ for making us proud in LAUTECH. I wish all the participants a fruitful deliberation at the conference.



Prof. Anifowoshe M.O. Atolagbe

Dean, Faculty of Environmental Sciences, LAUTECH, Ogbomoso

LAUTECH NANO 2019: A colossal research stride

We in the Faculty of Environmental Sciences, welcome once again, and with pageantry, the 2019 edition of the conference of LAUTECH Nanotechnology research group, a proud identity of the Ladoke Akintola University of Technology: the third in the series. This group has come strongly over the last few years, starting from its larger than maiden edition of August 21-24, 2017; through the 2018 edition to the 2019 edition titled “Nanotechnology Applications in Africa: Opportunities and Constraints” that espoused prospects of Nanotechnology in sustainable development of Africa. The theme for this edition is not only apt, but logical in sequence, and step-wise in trend to that of 2018, all aimed at the growth of Africa – economic, infrastructural, food, and all-round development in the Africa sub-world. This is of good, laudable credence to sustainable global development.

Nanotechnology has, and will continue to benefit the built environment in building materials and environmental management. It has utilized materials at nanoscale (10^{-9} m) to achieve high-quality, durable and hard-wearing materials, goods and services, for overall quality of life. In architecture and building construction, nanoparticles of silver have been deployed for improved properties and quality of building materials-such as steel and concrete-against microbial attack, bio-deterioration and degradation. Considerable lightness, remarkable strength, and improved performance has also been achieved in building materials through graphene, a nanomaterial in building construction; and high quality composite materials like paints, cement, building earth,

wood veneers, roofing sheets, tiles, ceiling boards, etc; all of which are achievable through innovative research in nanomaterials.

In Fine and Applied Arts, zinc nanomaterials have been successfully deployed to achieve protection from, or shielding, of textile materials from radiations; while silver nanoparticles have led to remarkable improvements in the quality of paints, textiles, furniture and general protection of art works against deterioration. In Urban and Regional Planning, nanomaterials offer, and present great potentials for the treatment of wastes and abatement of environmental pollution.

Ladies and gentlemen of the LAUTECH Nanotechnology research group, I congratulate and felicitate with you, on behalf of the staff and students of the Faculty of Environmental Sciences as you host this assembly of front blazers in the seeking, unraveling and deployment of data on nanomaterials for the advancement of knowledge and betterment of human life.

Wishing all the participants a fruitful deliberation.



Engr. Prof. Simeon O. Jekayinfa

**Dean, Faculty of Engineering and Technology,
LAUTECH, Ogbomoso**

On behalf of the entire staff and students of Faculty of Engineering and Technology of our great University-LAUTECH, I am sending this goodwill message to the organizers and participants of this year's Nanotechnology conference. In her two previous conferences, LAUTECH's Nanotechnology Research Group (*NANO*⁺) has brought together a rich diversity of scientists from various universities and industries to share ideas and new perspectives on a wide range of topics related to Nanoscience and Nanotechnology and their applications in different fields of human endeavor. I spoke at the 2018 edition of the conference organized by the group on 'Nanotechnology for sustainable development: prospects for Africa' as the guest lecturer. The conference this year is unique because it is to be held in partnership with The Postgraduate School of LAUTECH. The theme of this year's conference 'Nanotechnology applications in Africa: Opportunities and constraints' is also very topical because it has the potentials of attracting relevant scholars, manufacturers and policymakers to showcase their stewardships and

outputs. The *NANO*⁺ group has become a very formidable entity in LAUTECH and indeed in this part of the world because its activities have led to enormous contributions to knowledge in the field of nanotechnology through publications in top-rated journals and training of several undergraduate and postgraduate students in nanotechnology. Members of this group are some of the top-rated researchers in LAUTECH who are internationally recognized and have therefore contributed to enviable ranking position the University is currently enjoying. May the interdisciplinary discussions at your conference inspire a scientific revolution that will significantly contribute to the advancement of this special field of knowledge in Africa!



Nanotechnology, Nanoeconomics and Nigerian economy

Prof. Owolabi A. Usman

Dean, Faculty of Management Sciences, LAUTECH, Ogbomoso

On behalf of the faculty of Management Sciences, I felicitate with the LAUTECH Nanotechnology Research Group (*NANO*⁺) on the 5th anniversary of the group, and the organization of the 3rd workshop/conference on nanotechnology with the theme: Nanotechnology applications in Africa: opportunities and constraints. Nanotechnology is considered as an emerging and converging technology as one of the key technologies of the 21st century. Nanotechnology can be applied to all aspects of economics: wages, employment, purchasing, pricing, capital, exchange rates, currencies, markets, supply and demand. On the other hand, nanoeconomics is the alliance of nanoscience and economics to accelerate the pace of technological change. It is not the application of one field to study other field. The fields of both microeconomics and macroeconomics have long recognized the importance of technological developments in economic systems. Nigerian economy is in the midst of a large-system paradigm shift driven by accelerated exponential growth of new technologies. The integration of nanotechnology into the economy due to high readiness, effective strategic planning and widespread investments by business, education, labour and government might result in accelerated national policy and investments producing economic agility and rapid widespread large system change management.

At the moment, nanotechnology has not been integrated into the Nigerian economy due to low readiness and inadequate strategic planning resulting in low social and industry-wide nanotechnology adoption, reactive cultural reaction to investment and non-existent investment in national nanotechnology policy. The absence of comprehensive nanotechnology integration, adoption and readiness would lead to a drastic reduction in post-industrial growth and poor performance in global competitiveness with a negative growth impact on the overall economy. Hence, readiness of nanotechnology must be considered as part of our social economic policy in Nigeria.

It therefore gladdens my heart that LAUTECH is playing prominent roles in advancing research activities and discussions on nanotechnology in this country through the concerted efforts of *NANO*⁺, which is highly commendable. I wish all the participants a successful LAUTECH NANO 2019 conference.



Prof. Beatrice I.O. Ade-Omowaye

**Dean, Faculty of Food and Consumer Sciences,
LAUTECH, Ogbomoso**

Over the last few years, the yearly Nanotechnology Conference in LAUTECH, Ogbomoso, Nigeria has become an important part of the lives of many – Senior and upcoming academics, and students from various disciplines all over the country. The conference has always been a place to stop and reflect, a place to inspire and be inspired, a place where human capacity are built and a place where a joint goal and aspiration for a better African continent for all to live in is developed in the good academic tradition of open, intellectual discourse. Every participant, presenter or chair, discussant or audience member, must be thanked for dedicating his/her time to this worthy cause. The theme of this year’s conference – NANOTECHNOLOGY APPLICATIONS IN AFRICA: OPPORTUNITIES AND CONSTRAINTS is wisely chosen, as the numerous challenges facing our economy show that the only path to achieving sound economic advancement is through human resource development, coordination of research activities, translation of research outputs

to real products and services, and adoption of relevant technology for sustainable national development. I must therefore, applaud the organizers for choosing the conference theme. Like many previous technologies, nanotechnology could be both relevant and appropriate to sustainable development practices in developing countries. Nanotechnology is the next industrial revolution and has limitless potentials in different disciplines if properly harnessed for the betterment of African continent. For instance, nanotechnology is a technology that has the potential to revolutionize the food industry. It has potential applications in all aspects of food sectors including food processing, food packaging, food monitoring, production of functional foods, and development of tailor made foods according to desired specifications. The applications of nanotechnology in food sector have been summarized into two main categories that are food nanostructured ingredients and food nanosensing. Food nanostructured ingredients encompass a wide area from food processing to food packaging. In food processing, these nanostructures can be used as food additives, carriers for smart delivery of nutrients, anti-caking agents, antimicrobial agents, fillers for improving mechanical strength and durability of the packaging material, etc. whereas food nanosensing can be applied to achieve better food quality and safety evaluation. This technology can keep market leadership in the food processing industry to produce high quality products. This conference promises to increase empowerment of researchers in the country and beyond to enable participation in the ongoing nanotechnology development to ensure a full global contextualization of nanotechnology.

Once again, I congratulate the Nanotechnology research group (*NANO*⁺) in LAUTECH as they mark their 5th year anniversary for the excellent waves they are making in innovative technology and their notable contributions to human capacity development. I wish all the stakeholders at this conference fruitful deliberation.

Long live LAUTECH Nanotechnology research group! Long Live LAUTECH!! Long live Nigeria!!!



Prof. Adewale S. Adeyemi

Dean, Faculty of Clinical Sciences, LAUTECH, Osogbo

I want to congratulate Prof. A. Lateef and indeed Nanotechnology Research Group (*NANO*⁺), the organizers of the Nanotechnology conference for this year. No doubt our University has a lot to gain from such a potentially impacting field like nanotechnology. I look forward to collaboration with our faculty on this new technology towards delivering effective medical research and clinical care. One application of nanotechnology in medicine currently being developed involves employing nanoparticles to deliver drugs, heat, light or other substances to specific types of cells (such as cancer cells). Particles are engineered so that they are attracted to diseased cells, which allow direct treatment of those cells. This technique reduces damage to healthy cells in the body and allows for earlier detection of disease. This will become very useful in the management of cancer patient. Researchers are also developing nanoparticles that can be taken orally and pass through the lining of the intestines into the bloodstream. This should allow drugs that must now be delivered with a shot to be taken in pill form. These and many more are the promising areas that nanotechnology can be useful to us in clinical medicine. I therefore wish you a very successful deliberation and believe that we would continue to forge ahead towards improving our world with the assistance of nanotechnology.



Prof. Emmanuel A. Akande

Director, Academic Planning Unit, LAUTECH, Ogbomosho

I just wanted to let you know how happy I am for this group on this occasion celebrating the **fifth year** anniversary of **NANOTECHNOLOGY IN LAUTECH, Ogbomosho** and the organization of the 3rd workshop/conference on nanotechnology holding 22-24 October, 2019. This is another year of celebrating the impacts you have made in the world of Nanoscience and Nanotechnology, particularly on LAUTECH and her community. More so, the love and happiness you have demonstrated amidst your group. As a tree must learn to bend when the wind blows to prevent it from breaking apart, together you've learned to bend in the bad times and stand tall during the good. May you continue to stand tall together for many more years to come. You are remembering the yesterdays, that is why you are celebrating today and the strategy is to plan for tomorrow. May your activities continue to bloom and grow with the passing days in Jesus Name (Amen).