


Dr. John Nguu_Daystar_University_Staff_Profile

1. Name:	<ul style="list-style-type: none">• Dr. John Njagi Nguu,• Ph.D. in Condensed Matter Physics,• Senior Lecturer
2. Passport photo:	
3. Job Title and Responsibilities:	<ul style="list-style-type: none">• Senior Lecturer,• School of Science, Engineering and Health,• Department of Science and Engineering<ul style="list-style-type: none">• Responsibilities:• Teaching activities include;<ul style="list-style-type: none">• Teaching (facilitator) Physics Courses,• Supervising and grading Physics laboratory reports,• Setting, invigilating and marking/grading exams• Supervising Physics Projects for the physics major students• Administration activities include:<ul style="list-style-type: none">• Coordination and projection of Physics, Physical Science and Engineering courses in the Department of Science & Engineering.• Development of curriculum• Developing research proposals• Conversion of lecture notes into a compendium• Participation in self-assessment of curriculum• Research activities include;<ul style="list-style-type: none">• Sourcing for research funds• Conducting research activities• Community engagement;<ul style="list-style-type: none">• Providing academic mentorship to students• Leading Bible study sessions
4. Biography:	<ul style="list-style-type: none">• My name is John N. Nguu Ph.D. I am a committed Christian, a Kenyan and a Physicist with over ten years of teaching physics courses at the University level. My journey into the sciences started when I studied the sciences in

	<p>secondary school and posted excellent performance in the pure sciences. This good performance informed my choice of Mathematics and Physics as my undergraduate study subjects at Egerton University.</p> <p>Upon excelling in my undergraduate studies, I was employed as a tutorial fellow at Egerton University and embarked on a staff development program eventually serving as a tutorial fellow in the department of Physics upon the successful completion of my Master’s degree.</p> <p>In 2002, I joined Daystar University as a lecturer and was allocated many Physics course to teach to the Bachelor of Science in Computer Science students as well as Bachelor of Education students. I was also allocated Physical Science course, a general education course studied by the liberal arts students and which aims at strengthening their knowledge of the sciences and technology.</p> <p>In my classes, the students are encouraged to demonstrate reflective critical thinking as they process and apply the concepts. In addition to teaching, I have served as the examinations officer and as the head of the Department of Science and Engineering. I developed a Bsc. Physics curriculum for Daystar University and converted physical science course notes into a compendium currently used in physical science course instruction.</p> <p>During my tenure as the head of the department of Science and Engineering, I oversaw the development of Bachelor of Science curriculum for Nursing, Actuarial Science, Mathematics, Biomedical sciences, and Environmental health programmes of Daystar University.</p> <p>In 2012, Daystar University leadership granted me study leave to pursue my doctorate studies at University of Nairobi, which I successfully completed in 2017. My doctorate studies enabled me contribute to the knowledge in the areas of renewable energy, especially the solar energy.</p> <p>I have been an active member of;</p> <ul style="list-style-type: none"> • Prof. Aduda’s Lab (UON), • the Africa Network of Solar Energy (ANSOLE), • Materials Science and Solar Energy network for Eastern and Southern Africa (MSSEESA), • Joint US-Africa Materials Initiative (JUAMI), • Kenya Physical Society (KPS) and the • Materials Research Society for Kenya (MRSK) (in formative stages). <p>In addition,</p> <ul style="list-style-type: none"> • I have conducted training on the biogas technology and its implementation. • It has also been my privilege to serve as bible study leader both in the University and in my local church.
<p>5. Academic Qualifications:</p>	<ul style="list-style-type: none"> • Doctor of Philosophy Degree in Physics, 2017, University of Nairobi, Thesis Title: ‘Fabrication and Characterization of TiO₂/Nb₂O₅ Composite Photo-Electrodes Deposited Using Electrophoretic Technique for Application in Dye-Sensitized Solar Cells.’ • Master of Science in, Egerton University, 1996, Thesis Title: ‘Filler-Polymer

	Interaction Parameters for Polymer Filled Composites.’ •
6. Research Interests:	<p>My research interests lie in the development and implementation of renewable energy technologies for solar and biogas energies. My goal is to contribute to the modification of materials for the construction of low cost solar cells with improved conversion efficiencies. Related research topics include; powder coatings, electrophoretic deposition of thin films, fabrication, and characterization of metal oxide composite thin films and dye sensitized solar cells (DSSCs).</p> <p>I successfully developed a proto type of a dye-sensitize solar cell using electrophoretically deposited photo electrodes.</p> <ul style="list-style-type: none"> • Title of Main Research Projects: • Development of dye-sensitized solar panels: upscaling the DSSCs. • Perception of Livestock Farmers on Generation of Cattle Waste-based Biogas Methane: Funded by Daystar University
7. Publications:	<ul style="list-style-type: none"> ○ Academic Papers in Peer Reviewed Journals ○ Nguu, J., Nyongesa F., Musembi, R., and Aduda B., Electrophoretic Deposition and Characterization of TiO₂/Nb₂O₅ Composite Thin Films for Dye-Sensitized Solar Cells. <i>Journal of Materials Physics and Chemistry</i>, 2018, 6(1), 1-8. DOI:10.12691/jmpc-6-1-1. • Nguu, J. N., Aduda, B. O., Nyongesa, F. W., Musembi, R. J., Njogu, S. M., Mwathe, P.M., Electrical Characterization of Nano-TiO₂/Nb₂O₅ Composite Thin Films Deposited Using Electrophoretic Deposition Technique. <i>International Journal of Innovative Research in Advanced Engineering</i>, 2 (2), 2015, 192-198. • Nguu, J. N., Musembi, R. J., Nyongesa, F. W., and Aduda, B. O., Electrophoretic Deposition of TiO₂/Nb₂O₅ Composite Thin Films for Photovoltaic Applications. <i>Journal of Energy and Power Engineering</i>, 8 (4), 2014, 757-764. • Nguu, J. N., Musembi, R. J., Nyongesa, F. W., and Aduda, B. O., Effect of Process-Related Parameters on Band Gap of Electrophoretically Deposited TiO₂/Nb₂O₅ Composite Thin Films. <i>Africa Journal of Physical Science</i>, 1 (1), 2014, 43-49. • Nguu, J., Ndivo, S., Aduda, B., Nyongesa, F., and Musembi, R., Livestock Farmers’ Perception on Generation of Cattle Waste-based Biogas Methane: The Case of Embu West District, Kenya, <i>Journal of Energy Technologies and Policies</i>, 4(8), 2014, 1-7. • Mwathe, P., Musembi R., Munji, M., Odari, B., Munguti, L., Ntilakigwa, A. A., Nguu, J. N., and Muthoka B. Influence of Surface Passivation on Optical Properties of Spray Pyrolysis Deposited Pd-F:SnO₂ <i>International Journal of Materials Science and Applications</i> 3(5), 2014, 137-142 • Mwathe, P., Musembi, R., Munji, M., Odari, V., Munguti, L.,

Ntilakigwa, A., **Nguu, J.**, Aduda, B., and Muthoka, B., Surface Passivation Effect on CO₂ Sensitivity of Spray Pyrolysis Deposited Pd-F: SnO₂ Thin Films Gas Sensor, (in press) *Coatings* 2014, **4**, 1-x manuscript; DOI: 10.3390/coatings40x000x ISSN 2079-6412

○ Books /Book Chapters

- Nguu, J. (2018) Ref 24, cited in Chapter 8 of the Book Nyamukamba, P., Okoh, O., Mungondori, H., Taziwa, R., & Zinya, S. ‘*Synthetic methods for Titanium Dioxide Nanoparticles: A Review.*’
- <http://dx.doi.org/10.5772/intechopen.75425>

○ Lectures

- Nguu, J., Featured in Ruvaga, L. (2017). East Africa’s largest Biogas Energy Plant Supplies Kenya’s national Grid. VOA Recording. <https://www.voanews.com/a/east-africa-largest-biogas-energy-plant-supplies-kenya-national-grid/3744670.html>
- I have been featured in interview on exploring options for youth empowerment hosted by Switch TV Kenya.

○ Conferences

- **26-27TH September, 2018** Presented a paper entitle “From Cells to Module: Study of Factors Influencing the Photovoltaic Performance of Assembled Dye-sensitized Solar Modules,” at the Joint MSSEESA and DAAD International Conference on Materials Science Research for Sustainable Energy in Africa, held at the University of Nairobi, School of Physical Sciences, Nairobi, Kenya.
- **9TH October, 2014** Presented a paper entitled “Electrical Properties of Electrophoretically Deposited Nb₂O₅:TiO₂ Thin Films,” at Condensed Matter Research Group Colloquium, Physics Department, University of Nairobi
- **28TH & 29TH November, 2013** Presented a paper entitled “Morphological and Structural Characterization of TiO₂/Nb₂O₅ Composite Electrode Thin Films Synthesized by Electrophoretic Deposition (EPD) Technique,” at the 1st Young Scientist Material Science and Solar Energy Network for Eastern and Southern Africa (MSSEESA), Conference on Material Science and Solar Cell Technology, at the United Kenyan Club, Nairobi, Kenya.
- **17TH-19TH August, 2013:** Poster presentation entitled “Electrophoretic Deposition of TiO₂/Nb₂O₅ Composite Thin Films for Photovoltaic Applications,” abstract :0352, at the International Conference on Solar Energy for World Peace, in Istanbul, Turkey.
- **9TH May, 2013:** Presented a paper entitled “Fabrication of TiO₂/Nb₂O₅ Composite Electrode Thin Films Deposited Using Electrophoretic

	<p>Deposition Technique” at the African Network for Solar Energy (ANSOLE) Mini-Symposium in Kenya {AMSK 2013}, at University of Nairobi, Chiromo Campus, Nairobi, Kenya.</p> <ul style="list-style-type: none"> • 12TH -13TH May 2011: Presented a paper at the International Conference on Advances in Technology and Socio-Economic Development (ATSED 2011), Eldoret Polytechnic, Sponsored by national Council for Science and Technology (NCST), Eldoret, Kenya • 8TH December 2010: Presented a paper at the 3rd Research colloquium organized by Center for Research, Publications and Consultancy of Daystar University, held at Biblica Guest House, Nairobi. • 10TH -20ST December, 2012: Successfully completed the First International Materials Research School on Materials for Sustainable Energy organized by the Joint U.S.-Africa Materials Institute (JUAMI), held in Addis Ababa, Ethiopia. • 25TH -27TH July 2012: Successfully participated in Research/Grant Proposal Writing Workshop organized by Kenya DAAD Scholars Association in collaboration with NCST, held at Strathmore University, Kenya. • 16TH June, 2017 Participated in Seminar on Particle Size Characterization and Color Measurement Solutions, organized by Vision Scientific & Engineering Kenya Ltd in conjunction with Malvern Instruments Ltd, and X-Rite GmbH, at EKA Hotel, Nairobi, Kenya • 29TH May-10TH June, 2016 Participated in JUAMI 2016 Materials for Sustainable Energy School in Nelson Mandela Institute of Science and Technology, Arusha, Tanzania • 9TH-12TH March, 2015 Completed training in “Qualitative and Quantitative Data Analysis for Decision Making,” organized by Institute of Leadership and Professional Development (ILPD) at Daystar Academic Center, Nairobi, Kenya. • 8TH & 9TH July, 2010 Participated in the Conference on Opto-Electronic Devices: Their Potential for Sustainable Development, at Chiromo Campus, University of Nairobi. <ul style="list-style-type: none"> ○ Etc.
<p>8. Classes you teach:</p>	<p><i>My taught Classes include:</i></p> <ul style="list-style-type: none"> • PHY117 Mechanics • PHY217 Waves, Electricity and Magnetism • PHY224 Thermodynamics • PHY321 Geometric Optics • PHY324 Quantum Mechanics I • PHY325 Condensed Matter I • PHY326 Introduction to Relativity, Particle Physics and Cosmology • PHY313 Electronic Devices • PHY351 Electromagnetic fields • PHY120 Physics for the Life Sciences • PHY112 Physical Science

	<ul style="list-style-type: none"> • EEE221 Digital Logic • BMS 412 Radiology and Radiotracers • MAT 102 Basic Mathematics
9. Other relevant links:	<ul style="list-style-type: none"> • http://portal.daystar.ac.ke/secure/Staff/ • https://www.linkedin.com/in/dr-john-n-nguu-29a568b/ • https://www.researchgate.net/profile/John_Nguu • https://daystaruni.academia.edu/JohnNguu • https://www.ansole.org/ • https://www.isp.uu.se/what-we-do/physics/networks/msseesa/ • https://aasciences.ac.ke • http://www.mrsk.or.ke/about-us/ • http://africanmrs.net/ • http://www.deliverancesukari.or.ke/
10. Official Contact Details:	<ul style="list-style-type: none"> • jnguu@daystar.ac.ke • +254722605507 • johnnjagin@yahoo.com • https://web.facebook.com/john.njagi.3954