

# DR. JOHN NJAGI NGUU, PhD

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## CAREER PROFILE SUMMARY

A dedicated and passionate university lecturer of Physics with over 15 years of experience showing commitment to excellence in teaching. I excel in teaching Physics courses in the department, preparing course materials, coordinating teaching activities in the department. My experience has leveraged my expertise in lecturing, curriculum development, academic journal reviewing, lesson preparation, assessment and developing proposals for research funding. Moreover, I also possess good communication skills which help in disseminating knowledge in conferences and in publications. I have the ability to work independently and as a part of a team. Dr Njagi is passionate about making a difference in the lives of students and has good interpersonal skills which enable him to work independently and as part of a team regarding research interests.

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## TELEPHONE CONTACT:

**Current Work Place:** Department of Physical & Biological Sciences, P. O. Box 75-10200 Muranga, Kenya.

## POSTAL ADDRESS:

**Private:** P. O. Box 31668-00600 Nairobi

## EDUCATION BACKGROUND

- **Doctor of Philosophy Degree in Physics:** University of Nairobi; 2017  
Concentration: Condensed Matter Physics, dye-sensitized solar cells,  
Thesis title: Fabrication and Characterization of  $\text{TiO}_2/\text{Nb}_2\text{O}_5$  Composite Photo-Electrodes Deposited Using Electrophoretic Technique for Application in Dye-Sensitized Solar Cells
- **Master of Science (M Sc.):** Egerton University-Njoro; 1996  
Concentration: Condensed Matter Physics,  
Thesis title: Filler-polymer interaction parameter for polymer filled composites.
- **Bachelor of Science (Bsc):** Egerton University-Njoro; 1992
- Concentration: Mathematics and Physics.
- **Kenya Advanced Certificate of Education (2 Principals and a Subsidiary):** Meru Technical School; 1987  
Concentration: Mathematics, Chemistry and Physics (MPC),
- **Kenya Certificate of Education (Division one):** Thika Technical School; 1985
- **Facilitation of Learning:** Experienced in facilitating learning and class discussions of concepts, assessing and grading exams and laboratory work as well as keeping classes related records.
- **Great research and writing skills:** Proven ability to perform research and prepare papers for publication in peer reviewed journals.
- **Good Communication skills:** Ability to disseminate knowledge at national and international conferences.

## KEY SKILLS AND COMPETENCIES

## WORK HISTORY

- **Experience in Curriculum Development:** Developed a BSc Physics curriculum for Daystar University and was involved in developing MSc in Physics curriculum at University of Nairobi
- **Good interpersonal skills:** Ability to work independently and as part of a team in collaborating and supporting colleagues regarding research interests
- **Expertise in Peer reviewing:** Peer reviewed papers and book chapters in the Journal of materials Science Research and Reviews, Asian Journal of Research and Review in Physics and Journal of Energy and Power Engineering,
- **Units Preparations:** Excellent ability to conduct adequate research on units to deliver instructional activities that facilitate active learning experiences.
- **Ability to develop proposals for research funding:** Developed funded research and grant proposals.
- **Proven skills:** Expertise in fabrication and characterization of materials for application in harnessing of energy.
- **ICT Competence:** Proficient in using the Microsoft, Matlab, and Origin softwares

### **Lecturer 1<sup>st</sup> April 2024 - to Present**

#### **Duties and Responsibilities**

- Involved in reviewing the Master of Science in Physics degree curriculum at Muranga University of Technology
- Teaching Undergraduate and postgraduate Physics courses in the department of Physical and Biological Sciences.
- Supervising postgraduate students in their thesis preparation
- Internally examining the post graduate thesis.
- Setting, moderating, administering, processing and marking examinations.
- Offering academic advice and mentoring undergraduate and postgraduate students.
- Articulating the Vision and Mission of the University and the Department
- Initiating, planning and conducting research.

### **Academic Journal Reviewer**

#### **July 2021 – To Date**

#### **Duties and Responsibilities**

- Providing feedback on the journal, suggesting improvements and making a recommendation to the editor about whether to accept, reject or request changes to the journal.
- Indicating whether the writing is clear, concise, and relevant and rating the work's composition, scientific accuracy, originality, and interest to the journal's readers
- Maintaining the confidentiality of the review process: not sharing, discussing with third parties, or disclosing information from the reviewed journal.

### **Senior Lecturer**

#### **Department of Science and Engineering, Daystar University; 28<sup>th</sup> November 2011 – 1<sup>st</sup> April 2024**

#### **Duties and Responsibilities**

- Involved in developing a Master's degree (Condensed Matter Physics) curriculum at the University of Nairobi.
- Teaching Physics courses in the department.

- Participating in curriculum review of Applied Computer Science degree Programme.
- Developing lecturer materials for online, blended and physical teaching.
- Setting, moderating, administering, processing and marking examinations.
- Offering academic advice and mentoring undergraduate and postgraduate students.
- Articulating the Vision and Mission of the University and the Department
- Initiating, planning and conducting research.

#### **Key Achievements**

- Developed a Bachelor of Science Physics curriculum for Daystar University the Curriculum approved by the commission for University education (CUE), Kenya.
- Converted physical science course notes into a compendium currently used in physical science course instruction.

#### **Lecturer**

**Department of Science and Engineering, Daystar University; 1<sup>st</sup> August 2002 to 27<sup>th</sup> November 2018**

#### **Duties and Responsibilities**

- Taught Mechanics (Classical), Heat and Thermodynamics, Wave motion, and Vibrations, Electricity and Magnetism, Condensed Matter I, Geometric Optics, Circuits and Networks, Semiconductor Physics.
- Initiated, planned and conducted research.
- Developed teaching and learning materials.
- Supervised undergraduate and postgraduate students in research activities.
- Developed research proposals for funding.

#### **Key Achievements**

- Recognized by Daystar University as the Best Lecturer of the year (2015) and awarded the “Daystar’s Star of Excellence Award (SOEA)” trophy.
- Carried out self-assessment of applied computer science (ACS) degree programme as a team member.
- Received books awards from Daystar University’s Centre for Excellence in Teaching and Learning (CETL) in recognition of personal commitment to quality teaching.

#### **Chairman of the Department of Science**

**Daystar University; 1<sup>st</sup> October 2007 to 1<sup>st</sup> October 2009**

#### **Duties and Responsibilities**

- Coordinated teaching activities in the department by participating in sourcing and interviewing new lecturers.
- Allocated classes and communicated with colleagues about the needs of the department.
- Budgeted for departmental needs.
- Oversaw timetable preparation.
- Advised students about their academic and career goals.
- Coordinated examination moderation and supervision.
- Chaired departmental meetings and represented the department at the University Senate.

#### **Key Achievements**

- As the Chairman of the department, I oversaw the development of Bachelor of Science (Bsc.) curriculum for Nursing, Actuarial Science, Mathematics, Biomedical sciences, and

## OTHER ENGAGEMENTS

Environmental health during my tenure as Head of the Science department, Daystar University.

### **Examinations Officer- Department of Science: Daystar University; 1<sup>st</sup> August 2006 to 30<sup>th</sup> September 2007**

Ensured timely preparation, moderation and administration of examinations.

### **Assistant Lecturer: Egerton University; 7<sup>th</sup> November 1996 to 31<sup>st</sup> July 2002**

Taught undergraduate students, supervised and graded Physics laboratory reports, and supervised Physics Projects for the physics major students.

## PUBLICATIONS

### Book Chapter

- 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>
- Final acceptance letter issued for Manuscript no: 2023/BP/18899D  
Study about TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Electrode Thin Films for Photovoltaic Application  
Authors: John Njagi Nguu, Bernard Odhiambo Aduda, Francis Wanjala Nyongesa, Robinson Juma Musembi. Book Chapter in,  
**“Fundamental Research and Application of Physical Science.”**

### Journal Articles

- **Nguu, J.**, Nyongesa F., Musembi, R., and Aduda B., Electrophoretic Deposition and Characterization of TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Thin Films for Dye-Sensitized Solar Cells. *Journal of Materials Physics and Chemistry*, 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., and Mwathe, P.M., Electrical Characterization of Nano-TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Thin Films Deposited Using Electrophoretic Deposition Technique. *International Journal of Innovative Research in Advanced Engineering*, **2** (2), 2015, 192-198.
- **Nguu, J. N.**, Musembi, R. J., Nyongesa, F. W., and Aduda, B. O., Electrophoretic Deposition of TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Thin Films for Photovoltaic Applications. *Journal of Energy and Power Engineering*, **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 TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Thin Films. *Africa Journal of Physical Science*, **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, *Journal of Energy Technologies and Policies*, **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: SnO<sub>2</sub> *International Journal of Materials Science and Applications* **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 CO<sub>2</sub> Sensitivity of Spray Pyrolysis Deposited Pd-F: SnO<sub>2</sub> Thin Films Gas Sensor, (in press) *Coatings* 2014, **4**, 1-x manuscript; DOI: 10.3390/coatings40x000x ISSN 2079-6412.

**CONFERENCES  
AND WORKSHOPS  
ATTENDED**

- **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>
- **26<sup>th</sup> and 27<sup>th</sup> September 2018**: Presented a paper entitled "From Cells to Module: Study of Factors Influencing the Development of Dye-Sensitized Solar Modules" at the Joint MSSEESA and DAAD International Conference on Materials Science and Research for Sustainable Energy, held at the University of Nairobi, School of Physical Sciences, Nairobi.
- **16<sup>th</sup> 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.
- **29<sup>th</sup> May to 10<sup>th</sup> June 2016** Participated in JUAMI 2016 Materials for Sustainable Energy School in Nelson Mandela Institute of Science and Technology, Arusha, Tanzania.
- **9<sup>th</sup> October 2014** Presented a paper entitled "Electrical Properties of Electrophoretically Deposited Nb<sub>2</sub>O<sub>5</sub>:TiO<sub>2</sub> Thin Films," at Condensed Matter Research Group Colloquium, Physics Department, University of Nairobi
- **28<sup>th</sup> & 29<sup>th</sup> November 2013** Presented a paper entitled "Morphological and Structural Characterization of TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Electrode Thin Films Synthesized by Electrophoretic Deposition (EPD) Technique," at the 1<sup>st</sup> 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.
- **17<sup>th</sup> to 19<sup>th</sup> August 2013**: Poster presentation entitled "Electrophoretic Deposition of TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Thin Films for Photovoltaic Applications," abstract: 0352, at the International Conference on Solar Energy for World Peace, in Istanbul, Turkey.
- **9<sup>th</sup> May 2013**: Presented a paper entitled "Fabrication of TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> Composite Electrode Thin Films Deposited Using Electrophoretic Deposition Technique" at the African Network for Solar Energy (ANSOLE) Mini-Symposium in Kenya {AMSK 2013}, at University of Nairobi, Chiromo Campus, Nairobi, Kenya.
- **10<sup>th</sup> to 20<sup>st</sup> December 2012**: 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.
- **25<sup>th</sup> to 27<sup>th</sup> 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.
- **12<sup>th</sup> to 13<sup>th</sup> May 2011**: Presented a paper at the International Conference on Advances in Technology and Socio-Economic Development (ATSED 2011), Eldoret Polytechnic, and Sponsored by National Council for Science and Technology (NCST), Eldoret, Kenya.
- **8<sup>th</sup> December 2010**: Presented a paper at the 3<sup>rd</sup> Research colloquium organized by the Center for Research, Publications and Consultancy, held at Biblica Guest House, Nairobi.
- - Africa Network of Solar Energy (ANSOLE),
  - Materials Science and Solar Energy network for Eastern and Southern Africa (MSSEESA),
  - Joint US-Africa Materials Initiative (JUAMI),
  - Materials Research Society for Kenya (MRSK).
- Certificate of Excellence in Reviewing; Asian Journal of Research and Reviews in Physics (AJR2P)

**PROFESSIONAL  
MEMBERSHIPS**

**CERTIFICATES  
AWARDED**

- International Conference on Renewable Energy and Environment (ICREE 2021)  
Certificate of Participation in International Technical Program Committee Member
- Certificate of Excellence in Reviewing; Journal of Materials Science Research and Reviews (JMSRR)
- Certificate of Excellence in Reviewing; Journal of Energy and Power Engineering (JEPE)

## **REFEREES**

### **Professor Robinson Musembi**

Associate Professor of Physics, Department of Physics.

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