



# THE TECHNICAL UNIVERSITY OF KENYA

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NAME: PROF GEORGE ODHIAMBO AMOLO

Faculty:	Applied Sciences and Technology
School:	PHYSICS AND EARTH SCIENCES
Department:	TECHNICAL AND APPLIED PHYSICS
Current Designation:	Professor, TECHNICAL AND APPLIED PHYSICS (DTAP)
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Consultation Hours:	8AM-5PM MON - FRI



## EDUCATION

LEVEL	QUALIFICATION NAME	INSTITUTION	YEAR
Doctor of Philosophy (PhD)	PHYSICS	UNIVERSITY OF THE WITWATERARAND, JOHANNESBURG(South Africa)	2007
Masters of Science (M.Sc.)	PHYSICS	UNIVERSITY OF NAIROBI(Kenya)	1994
Bachelor of Science (BSc)	PHYSICS	MOI UNIVERSITY(Kenya)	1990

## WORK EXPERIENCE

<b>PERIOD</b>	<b>INSTITUTION</b>	<b>POSITION</b>
MAY 2024 - OCTOBER 2024	International Union of Pure and Applied Physics (IUPAP)	Reviewer and Africa nominee; review of 100 years of IUPAP
OCTOBER 2015 - OCTOBER 2019	COMMISSION FOR UNIVERSITY EDUCATION	PEER REVIEWER
SEP 2008 - OCT 2012	UNIVERSITY OF ELDORET/ CHEPKOILEL UNIVERSITY COLLEGE	SENIOR LECTURER
AUGUST 2013 - MAY 2016	UNIVERSITY OF ELDORET	COORDINATOR -SCIENTIFIC MENTORSHIP PROGRAM
2018 - DATE	ELSEVIER PUBLISHING COMPANY	PEER REVIEWER - JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS
25.04.2019 - DATE	TECHNICAL UNIVERSITY OF KENYA	PROFESSOR
2018 - DATE	ELSEVIER PUBLISHING COMPANY	PEER REVIEWER - SOLID STATE COMMUNICATIONS
2018 - DATE	ELSEVIER PUBLISHING COMPANY	PEER REVIEWER - PHYSICA B - CONDENSED MATTER
DECEMBER 2019 - DATE	TECHNICAL UNIVERSITY OF KENYA	DIRECTOR - SCHOOL OF PHYSICS AND EARTH SCIENCE
1ST SEPTEMBER 2018 - DATE	KENYA EDUCATION NETWORK (KENET)	RESEARCH ASSOCIATE (COMPUTATIONAL MODELING AND MATERIALS SCIENCE)
2016 - DATE	CENTRE FOR HIGH PERFORMANCE COMPUTING, CAPE TOWN, SOUTH AFRICA	PRINCIPAL INVESTIGATOR - MATS862
OCTOBER 2023 - DATE	ALUPE UNIVERSITY	PHYSICS EXTERNAL EXAMINER
JUNE 2021 - DATE	INTERNATIONAL ADVISORY COMMITTEE - US-AFRI ELECTRONIC STRUCTURE INITIATIVE	MEMBER
2017 - DATE	ELSEVIER PUBLISHING COMPANY	PEER REVIEWER - APPLIED SURFACE SCIENCE
2015 - DATE	SPRINGER SCIENCE	PEER REVIEWER - JOURNAL OF ELECTRONIC MATERIALS
1st January 2016 - 31st December 2018	UNIVERSITY OF THE WITWATERSRAND	VISITING ASSOCIATE PROFESSOR
1ST OCTOBER 2016 - 30TH SEPTEMBER 2019	TECHNICAL UNIVERSITY OF KENYA	CHAIR - DEPARTMENT OF PHYSICS AND SPACE SCIENCE
16.05.2016 - 24.04.2019	TECHNICAL UNIVERSITY OF KENYA	ASSOCIATE PROFESSOR
2010 - 2020	INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS	MEMBER - INTERNATIONAL ADVISORY PANEL - AFRICAN SCHOOL ON ELECTRONIC STRUCTURE METHODS (ASESMA)
2016 - 2020	EGERTON UNIVERSITY	PHYSICS EXTERNAL EXAMINER
2010 - 2017	NATIONAL RESEARCH FOUNDATION/NACOSTI/NCST	PROPOSAL REVIEWER/POSTGRADUATE SCHOLARSHIP REVIEWER
OCT 2012 - 2016	UNIVERSITY OF ELDORET/ CHEPKOILEL UNIVERSITY COLLEGE	ASSOCIATE PROFESSOR
2013 - 2016	UNIVERSITY OF NAIROBI	PHYSICS EXTERNAL EXAMINER
2009 - 2014	INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS - ITALY	REGULAR ASSOCIATE
2008 - 2014	UNIVERSITY OF ELDORET/CHEPKOILEL UNIVERSITY COLLEGE	CHAIRMAN - SCHOOL OF SCIENCE RESEARCH COMMITTEE
2009 - 2013	UNIVERSITY OF ELDORET/CHEPKOILEL UNIVERSITY COLLEGE	DEPARTMENTAL POSTGRADUATE STUDIES CHAIR
1995 - 2008	MOI UNIVERSITY	LECTURER
1994 - 1995	MOI UNIVERSITY	TUTORIAL FELLOW
1990 - 1993	MOI UNIVERSITY	GRADUATE ASSISTANT

## GENERAL STATEMENT ON RESEARCH AREAS

A Scientific Mentorship Program initiative started in Moi University in 2007 and later University of Eldoret has now moved to the national level through the support of the Kenya Education Network (KENET) with a focus on graduate students as well as young faculty who have attained PhD within the last 5 years in the areas of fundamental and applied research in materials science related themes that address aspects of the big 4 agenda and other related goals of national interest.

I work as a Research Associate of a Kenyan special interest group on Computational Modeling and Materials Science on studies of the properties of materials for energy conversion and environmental applications involving collaboration the experimental aspects in these areas. These efforts will support a multidisciplinary approach to the existing potential of studying complex physical, chemical and biological systems, among others, that characterize current and emerging challenges in our society.

## CURRENT RESEARCH PROJECTS

Materials for Green Energy Conversion

Materials Science

Computational Modeling of Selected Materials of Industrial Utility

Physics - Materials Science

## SELECTED PUBLICATIONS

TITLE	LINK TO PUBLICATION	YEAR
Growing materials science in Africa - The case of the African School on Electronic Structure Methods and Applications (ASESMA)	<a href="#">View online</a>	
Quantum Monte Carlo study of pressure-induced phase transition in GaAs	<a href="#">View online</a>	
Insights on hydrogen evolution reaction in transition metal doped monolayer TcS <sub>2</sub> from density functional theory calculations	<a href="#">View online</a>	
Ab-initio simulations of copper oxide nanowires and clusters on TiO <sub>2</sub> (101) anatase surface.	<a href="#">View online</a>	
A Density Functional Theory Study of Water Photo-Oxidation at Copper Oxide Nanostructures on the Anatase (101) Surface	<a href="#">View online</a>	
Hardness characterization parameters of Niobium Carbide and Niobium Nitride: A first principles study	<a href="#">View online</a>	
First-principle calculations of the bulk properties of 4d transition metal carbides and nitrides in the rocksalt, zinblende and wurtzite structures.	<a href="#">View online</a>	
Controlling the magnetic and optical response of MoS <sub>2</sub> monolayer by lanthanide substitutional doping: a first-principles study	<a href="#">View online</a>	
Effect of 3d transition metal substitutional dopants and adatoms on monolayer TcS <sub>2</sub> ab initio insights	<a href="#">View online</a>	
Adhesion of electrodes on diamond (111) surface: A DFT study	<a href="#">View online</a>	
First-principles study of two-dimensional electron and hole gases at the head-to-head and tail-to-tail 180° domain walls in PbTiO <sub>3</sub> ferroelectric thin films	<a href="#">View online</a>	
Theoretical investigation of the thermoelectric properties of ACuO <sub>2</sub> (A = K, Rb and Cs)	<a href="#">View online</a>	
A density functional theory study of the thermoelectric properties of K <sub>3</sub> AuO	<a href="#">View online</a>	
Two-dimensional graphene-HfS <sub>2</sub> van der Waals heterostructure as electrode material for alkali-ion batteries	<a href="#">View online</a>	
Comparison of band -fitting and Wannier-based model construction for WSe <sub>2</sub>	<a href="#">View online</a>	
Ab initio insights into Graphene-Zirconium disulfide/diselenide heterostructure as electrode material for alkali-ion batteries	<a href="#">View online</a>	
The impact of anionic vacancies on the mechanical properties of NbC and NbN: An ab initio study,	<a href="#">View online</a>	

NAME	PROJECT TITLE	PERIOD
DR VICTOR MENG'WA	Studies of Nanoparticles of TiO <sub>2</sub> for carbon dioxide reduction	2016 - 2018
DR DENIS MAGERO	Electrochemical and Photo Properties of some remarkable Ruthenium Complexes (Elephox project - international multidisciplinary collaboration)	2014 - 2017
DR PHILIP NYAWERE	First Principles Calculations of the Optical and Thermal Properties of Barium Fluoride.	2010 - 2013
DENIS MAGERO	Investigating Li and Mg Hydrides as Materials for Hydrogen Fuel Applications (MSc)	2010 - 2013
VICTOR MENG'WA	Studies of TiO <sub>2</sub> and SnO <sub>2</sub> Surfaces for Applications in Dye Sensitized Solar Cells (MSc)	2011 - 2014
DR MIRIAM CHEPKOECH	Thermoelectric Properties of alpha - and beta-MnO <sub>2</sub>	2016 - 2020
DR HENRY OTUNGA	Phase Transition Studies of GeSbTe using ab initio methods.	2013 - 2016
DR RONALD ROP	Generation and Manipulation of Novel Laser Beams	2008 - 2013
DR COSMAS RONNO	Modeling Solar Radiation in Selected Kenyan Meteorological Stations	2008 -2013
CECIL OUMA	Pressure Induced Phase Transition Studies GaAs using Density Functional Theory and Quantum Monte Carlo (MSc)	2008 - 2010
KORIR KIPTIEMOI	First Principles Studies of Group 4d Transition Metal Carbides and Nitrides (MSc)	2008 - 2010
PERPETUA MUCHIRI	The effect of defects on the properties of hard materials (MSc)	2019 - DATE
ISAAC MOTOCHI	Surface Studies of Various Metal Atoms on Diamond using ab initio Methods (MSc)	2008 - 2010
FELIX DUSABIRANE	Electronic Structure of NiO using LDA+U, GW and BSE Methods (MSc)	2011 - 2014
LYNET ALLAN	Nitrogen doping of titania for energy applications (MSc)	2019 - 2021
Dr GLADYS KING'ORI	COMPARATIVE STUDY OF 2D GRAPHENE TRANSITION METAL DICHALCOGENIDE HETEROSTRUCTURES AS ELECTRODES FOR ALKALI ION BATTERIES	2016 - 2022
DR JAMES SIFUNA	2D electron and hole gases in selected oxide perovskites (PhD)	2018 - 2023
DR GEOFFREY ARUSEI	PHYSICAL AND OPTICAL PROPERTIES OF Ti-MAX PHASES: A DFT STUDY	2014 - 2023
GLADYS KINGORI	2D Heterostructures of metal chalcogenides and graphene for battery applications (PhD)	2016 - 2022

#### COURSES TAUGHT

NAME	DESCRIPTION	PERIOD
SPPI3202 - Statistical Physics	This course combines fundamental physics with aspects of statistics in several areas such as thermal and electrical transport, noise and properties of matter.	2016 - TO-DATE
SPPI2103 - Solid State Physics	Is an introductory course that explores the properties of matter from geometrical aspects to interaction of matter with radiation and related observations. The student is provided with fundamentals that help relate geometrical structure with properties measured.	2016 - TO-DATE

#### PROFESSIONAL AFFILIATIONS AND SOCIETIES

<b>TITLE</b>	<b>INSTITUTION</b>
Member (183)	KENYA NATIONAL ACADEMY OF SCIENCE
Member	Materials Research Society of Kenya
Editor (Eastern Africa)	African Physics Newsletter
Member (10007617)	Materials Research Society - <a href="http://www.mrs.org">www.mrs.org</a>