

CURRICULUM VITAE

PERSONAL DETAILS

Name: Dr. Henry Barasa Wafula

Date of birth: - 25th May 1976

Permanent Address: - P. O. Box 1823 Bungoma, 50200

Mailing Address: - Masinde Muliro University of Science and technology, Department of
Physics

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EDUCATION BACKGROUND

1. Masinde Muliro University of Science and Technology:
September 2011–September 2015
Awarded Doctor of Philosophy in physics on 4th December 2015
Thesis title “**Characterization of Cobalt Doped Titanium Dioxide and Cu: In₂S₃ Nanocomposite Thin films Deposited by ILGAR Technique for Photovoltaic application.**”
2. University of Nairobi: – September 2002 – August 2006
Awarded Master of Science degree in Physics on 1st September, 2006
Thesis title: “**Effect of Nitration on Pressed TiO₂ Photoelectrodes for Dye Sensitized Photoelectrochemical Solar Cell**”
3. Egerton University: – June 1995 – November 2000
Bachelor of Education (Science) degree – Physics /Mathematics
Awarded **Second Class Honors Upper Division** on 10th November, 2000

SCHOLARSHIPS AND AWARDS

1. DAAD In-country scholarship for PhD in Physics at Masinde Muliro University of Science and Technology:- From 01-09-2012 to 31-08-2015
2. DAAD Short-term research scholarship for PhD research at Helmholtz Zentrum Berlin institute of Energy and Materials Systems, Berlin, Germany:-From 01-02-2013 to 31-08-2013
3. NRF Research grant 2017: Master’s Thesis Research Alima Mukasia, Ksh 425,000/=
4. COVID-19 research grant 2020, reusable face masks and automatic sterilizer research MMUST Ksh 400,000

WORK EXPERIENCE (ACADEMIC)

1. Teachers Service Commission (TSC)
Graduate teacher II, Bungoma High School, Bungoma

1st September 2001-30th May 2008

Responsibility: **HOD Co-Curricular, Games Master**

2. Masinde Muliro University of Science and Technology

Assistant Lecturer:-Department of Physics.

1st June 2008-1st September 2013

3. Masinde Muliro University of Science and Technology

Lecturer:-Department of Physics.

1st September 2013 to 30th October 2019

Responsibility: **Chairman Departmental Postgraduate Committee, Examination Coordinator, Departmental Curriculum review Coordinator, Acting Chairman of Department**

4. Masinde Muliro University of Science and Technology

Senior Lecturer:-Department of Physics.

31st October 2019 to date

Responsibility: **Chairman Departmental Postgraduate Committee, Departmental Curriculum review Coordinator, Departmental Quality Assurance coordinator**

PROFESSIONAL SOCIETY MEMBERSHIP,

1. European Physical Society (EPS)
2. African Network for Solar Energy (ANSOLE)
3. Physics Society of Kenya (PSK)
4. Kenya DAAD Scholars Association (KDSA)
5. Material Science and Solar Energy Network for Eastern and Southern Africa (MSEESA)
6. Kenya rugby referees society.(KRRS)

SEMINARS AND WORKSHOPS

1. Kenya DAAD scholars association workshop; The role of Universities and research institutions in Kenya's big four agenda, 12-14th June 2019, Sirikwa Hotel Eldoret, Kenya
2. Joint MSSEESA and DAAD International Conference on Materials Science Research for Sustainable Energy in Africa, 26-27 September 2018, University of Nairobi, Kenya
3. The First Biophysical Society (BPS) Conference on Harnessing Scholarly Biophysical Potential in Africa, 6 July 2018, Masinde Muliro University of Science and Technology, Kakamega Kenya
4. International Seminar on Photovoltaic Solar Energy Conversion 2018, 12-19 June 2018, Martin Luther Universitat Halle Wittenberg, Halle Saalle Germany

5. InterSolar PV trade Fair 2018, 20-22 June 2018 Munich, Germany
6. Kenya-DAAD Scholars (KDSA) conference/AGM, Maseno University, Kisumu, June 1^{5th} -1^{6th} 2017
7. KENET-Computational modeling and materials Science Workshop at Shieywe Hotel, Kakamega , July 6th -7th 2017
8. Workshop on performance contracting, Masinde Muliro university of Science and Technology, 24 October 2015, Kakamega, Kenya.
9. University Multiplication training workshop on curriculum development and review for public universities in Kenya: Implementation and accreditation, Masinde Muliro University of Science and Technology, 23-24 January 2014. Kakamega, Kenya.
10. Joint ICTP-IAEA Workshop on Nuclear Data for Analytical Applications, 21 - 25 October 2013, ICTP Trieste, Italy.
11. Research proposal writing training workshop organized by DAAD/NCST, Masinde Muliro University of Science and Technology, July 25-27, 2012, Kakamega, Kenya
12. Quality Management Systems Awareness training (ISO Training and Certification Process), 4-9 march 2011. Science Block, Masinde Muliro University of Science and Technology.
13. 15th International workshop on Computational Physics and Material sciences: Total energy and Force Methods 13- 15 January 2011. ICTP Trieste, Italy.
14. ICT Capacity Building and Pedagogy workshop: Masinde Muliro University of Science and Technology, 9 – 21 August 2010. Kakamega, Kenya.
15. Conference on Opto-electronic Devices: Their Potential for Sustainable Development, 8 - 9 July 2010, university of Nairobi, Kenya.
16. 1st International Conference on Solar Energy Materials Research: Material Science and Solar Energy Network for eastern and southern Africa and Physics Department, University of Dar es Salaam. 13 – 15 October 2009. Dar es Salaam, Tanzania.
17. 7th Thin Film College on Solar Energy materials and Utilization: 10 – 16 October 2002, Physics Department University of Dar es Salaam, Tanzania.

PUBLICATIONS

1. Milimo Amos Nalianya, Celline Awino, **Henry Barasa**, Victor Odari, Francis Gaitho, Benard Omogo and Maxwell Mageto (2021) Numerical study of lead free $\text{CsSn}_{0.5}\text{Ge}_{0.5}\text{B}_3$ perovskite solar cell by SCAPS-1D International Journal for Light and Electron Optics 248, 168060
2. Gloria I. Murila, **Henry Barasa Wafula** and Maxwell Mageto (2021) Structural, Electronic and Electrochemical Properties of Vanadium Disulphide Material for Energy Conversion and Storage in Li/Na-ion Battery, Journal of Materials Science Research and Reviews 7(2), 41-49, JMSRR 64855
(<https://journaljmsrr.com/index.php/JMSRR/article/view/30177>)
3. Ligavo Margdaline, Mageto Maxwell, **Wafula Henry Barasa**, Emmanuel Yeri Kombe (2019) The impact of Air Mass on performance of a Monocrystalline Silicon Solar Module in Kakamega, Physical Science International Journal, 21(2), 1-7, PSIJ.47540
4. Gloria I. Murila, George S. Manyali and **Henry B. Wafula** (2019) Adsorption Energies of Lithium and Sodium Ions on Vanadium Disulphide: A DFT Study, Journal of Materials Science Research and Reviews, 2(1), JMSRR.45546
5. Alima Mukasia, George S. Manyali, **Wafula Henry Barasa** and James Sifuna (2019) Thermoelectric Properties of Zn-doped CdO, Journal of Materials Science Research and Reviews, 2, JMSRR.45389
6. Ligavo Margdaline Musanga, **Wafula Henry Barasa** and Mageto Maxwell (2018) The Effect of Irradiance and Temperature on the Performance of Monocrystalline Silicon Solar Module in Kakamega, Physical Science International Journal, 19(4), PSIJ.44862
7. Antony Ingosi, **Henry Barasa Wafula**, Thomas Welikhe Sakwa, Horace E Kibe (2018) Thermodynamic Properties of YBCO-123 Superconducting Materials with S-Wave And P-Wave Singlet Admixture, Journal of Multidisciplinary Engineering Science and Technology, Vol. 5 Issue 10, 8790-8793
8. Barasa Godfrey & **Wafula Henry Barasa** (2018) Structural and Optical Characterization of CdO-ZnO Nanocomposites deposited by Sol Gel Method, International Research Journal of Multidisciplinary Science & Technology, Vol 3 Issue 3, 1-5
9. Alphayo Ocholla, Wakhu Rapando, **Henry B. Wafula**, Ayodo Yudah (2017) Wave Function of Induced Superconductivity: The Proximity Effect, International Research Journal of Multidisciplinary Science & Technology, Vol 2 Issue 10 10-19

10. Alphayo Ocholla, **Henry B. Wafula**, Waku Rapando, (2017) Ground State Energy of Induced Superconductivity and Its Variation with Inter- Atomic Distance, International Research Journal of Multidisciplinary Science & Technology, Vol 2 Issue 10 27-31
11. **Wafula, Henry Barasa**; Musembi, Robinson Juma; Juma, Albert Owino; Tonui, Patrick; Simiyu, Justus; Sakwa, Thomas; Prakash, Deo; Verma, K.D. (2017) Compositional analysis and optical properties of Co doped TiO₂ thin films fabricated by spray pyrolysis method for dielectric and photocatalytic applications, Optik - International Journal for Light and Electron Optics, vol. 128, pp. 212-217
12. **Henry Wafula**, Albert Juma, Thomas Sakwa, Robinson Musembi, Justus Simiyu, (2016) A Surface Photovoltage study of surface defects of Co-doped TiO₂ thin films deposited by spray pyrolysis, *Coatings*, **6, 30**, 1-9
13. **Henry Wafula** , Musembi Robinson, Albert Juma, Thomas Sakwa, Manasse Kitui, Rodrigo Araoz and Christian-H. Fischer.(2015) Role of Cl on Diffusion of Cu in In₂S₃ Layers Prepared by Ion Layer Gas Reaction Method, *Coatings* **5**, 54-62.
14. **Henry Wafula** (2015) *Effect of Nitration on Pressed TiO₂ Photoelectrodes for PEC Solar Cell*. Saarbrücken, Germany: LAP Lambert Academic Publishing.
15. Juma Albert., **Wafula Henry**, Wendler E. and Dittrich T. (2014) Meyer-Neldel rule for Copper (I) Diffusion in In₂S₃ Layers. *Journal of Applied Physics* **115**, 053703, 1-5
16. Omondi C A, Sakwa W T , Ayodo Y K and **Wafula Henry**, (2012) Bilayer metal oxide thin films for U V – Visible light Sensing.Eastern Africa Journal of Engineering Science & Technology, Vol. 1 No. 2 November 2012, pg 67-74 ISSN 2219-8598.
17. Sakwa T., Prichani, S., Ayodo, Y., Sarai, A., Omondi, S. & **Wafula, Henry**, (2012) Energy Equations for n-Tuple Pendula Systems, *International Journal of Physics and Mathematical Sciences*, **Vol. 2**
18. **Wafula, Henry**. and Sakwa, T., (2008) Optical and IV Characteristics of pressed Nitrogen Doped TiO₂ Photoelectrodes for Dye-sensitized Solar Cells. *East African Journal of Pure and Applied Sciences (EAJPAS)*, **Vol 1 No. 1** pp 97-100. ISSN 2070-0903
19. **Wafula Henry**, Mwabora J. M., Simiyu J., and Waita S., (2007) Effect of Nitration on Pressed TiO₂ Photoelectrodes for Dye-sensitized Solar Cells. *African Journal of Science and Technology (AJST), Science and Engineering Series* **Vol. 8**, No. 2, pp. 63-71

SUPERVISIONS

Completed graduate supervision and degree awarded to the graduate students

1. Alphayo Abacha Ocholla (2015) Completed MSc Student Masinde Muliro University of Science and Technology, Thesis Title: Thermodynamic properties of a BCS superconductor at finite ratio of debye cut-off energy to critical temperature. Graduated on 7th December 2018
2. Margadeline Ligavo (2015) Completed MSc Student Masinde Muliro University of Science and Technology, Thesis Title: Characterization of a photovoltaic Solar cell based on ambient conditions in Kakamega region. Graduated on 7th December 2018
3. Alima Makokha (2015) Completed MSc Student Masinde Muliro University of Science and Technology, Thesis Title: Enhanced properties of thermoelectric materials for technological applications. Graduated on 6th December 2019
4. Antony Ingosi. (2014): Completed MSc Student. Masinde Muliro University of Science and Technology, Thesis Title: Thermodynamic properties of YbCo-123 superconducting materials. Graduated on 6th December 2019
5. Gloria Mulira Isendi (2016) Completed MSc Student. Masinde Muliro University of Science and Technology, Thesis Title: Simulation of Gravimetric capacity, Structural and Electronic properties of Vanadium disulphide: for Energy Application, Graduated on 6th December 2019

Ongoing Graduate Supervision

1. Manase Kitui (2015) Ongoing PhD candidate, Masinde Muliro University of Science and Technology, Thesis Title: ab initio study of the physical properties of skutterudite-pn3: Materials for converting waste heat to electricity
2. Jacob Oduogo (2015) Ongoing PhD candidate, Masinde Muliro University of Science and Technology, Thesis Title: performance models for sphere anemometer, sonic anemometer and cup anemometer wind velocity measurements in the atmospheric boundary layer of the temperate zone.
3. Elly Okiring (2015) Ongoing MSc Student, Masinde Muliro University of Science and Technology, Thesis Title: Installed household solar energy, demand pattern and optimization in Busia county of kenya.
4. Joseph Ondeke (2014): Ongoing MSc Student Masinde Muliro University of Science and Technology, Thesis Title: Study of Bargasse based energy cogeneration system at Mumias sugar industry
5. James Anyasi Miimo, (2016): Ongoing MSc Student Masinde Muliro University of Science and Technology, Thesis Title: Fabrication of Dye Sensitized Solar Cells with Vanadium Doped Titanium Oxide
6. Clement Sichangi, (2016): Ongoing MSc Student Masinde Muliro University of Science and Technology, Thesis Title: Electrical and Structural Characterization of Copper Antimony Sulphide CuSbS₂ Thin Film Deposited by Spin Coating.

7. Humphrey Musuya, (2017): Ongoing MSc Student Kibabii University, Thesis Title: Current-Voltage Characterization and Efficiency Measurement of a Mono-Crystalline Silicon Solar Cell Based on MATLAB configuration.
8. Kizito Wafula Simiyu (2017): Ongoing MSc Student Kibabii University, Thesis Title: Potential of Mini- Grid Renewable Hybrid Power Plant to Mitigate Power Outages at Kibabii Area of Bungoma

THESIS EXAMINATIONS

MSc thesis

- 1) James Simiyu Sifuna -SPH/G/10/2015 “Dental Filling Materials in the Negative and Near Zero Thermal Expansion Regimes: AB Initio Study on Scadium Trifluoride”. MMUST 2017
- 2) Ngeno Emily Chelangat: -SCH/G/07/12, “Environmental levels of selected pharmaceuticals (lake victoria catchment area, kenya) and their adsorption onto natural zeolite and water hyacinth biochar”. MMUST 2016
- 3) Andati Wellington SPH/G/03/09:- “Biogas production from biomass kitchen waste mixed with cow dung in a modified laboratory-scale anaerobic digester”. MMUST 2018
- 4) Emily Khalenya Munasia SPH/G/06/15:- “High temperature Superconductivity in Cuprates due to d-wave stimulation by radiation”. MMUST 2019
- 5) Edward Nyongesa Uluma SPH/G/25/2015, “A SCINDA- GPS study of Equitorial plasma Bubbles over Kisumu Kenya during 2013-2014 period”. MMUST 2020

COMMUNITY ENGAGEMENT

- 1) 1ST February 2016 to date: Chairman Board of Management Namisi Secondary School, Bungoma County, Chair School management activities.
- 2) 1ST June 2011 to date: International Match Official Educator, World Rugby Board, train rugby match officials both local and international.
- 3) 1ST January 2004 to date: International Rugby Board Referee level 2, Kenya Rugby Union, Referee Rugby matches both local and international games.
- 4) 1ST May 2000 to date: First Aider, Kenya Red Cross Society of Kenya, Provide First Aid health care to victims.

REFEREES

Prof. Thomas Sakwa	Prof. Justus Simiyu	Pror. Boniface Ndinya
Department of Physics	Department of Physics	Department of Physics
Masinde Muliro University	Maasai Mara University	Masinde Muliro University
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