

Curriculum Vitae

Personal details

Name: Celline Awino Omondi

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Email: cawino@mmust.ac.ke or omondicelline77@gmail.com or awinocelline26@gmail.com

Sex: Female

Languages: Kiswahili, English, German and Luo

Citizenship: Kenyan

Career objectives

To promote research and education on renewable energy for sustainable development

Educational background

Oct. 2014 – To 5 th July 2018	Technical university of Berlin (Germany) Doctor of natural science in renewable energy (Dr. rer. nat.)
July 2009- July 2011	University of Pune (India) Master of Science in Physics (First class with distinction)
Aug 1998- Nov 2003	Moi University (Kenya) Bachelor of education science (Physics and Mathematics) First class honors
1993-1996	Lwak Girl's High school Kenya certificate of secondary education (B+)

Professional and work experience

October 2018 to date: Masinde Muliro University of science and technology

Lecturer

- Teaching both undergraduate and post graduate students in Physics
- Research in the area of renewable energy
- Community outreach programs such as mentoring young women in STEM field in western Kenya.
- Senate representative for school of natural science (SONAS) in MMUST
- Supervision role to both undergraduate and postgraduate physics students
- Member to the school of science graduate committee to ensure quality thesis and proposals
- Member of external linkages and funding proposal committee.
- Member of school of natural science (SONAS) graduate committee
- Assess undergraduate students on industrial attachment/ internship
- Mentor women and girls in science, mathematics and engineering (STEM) fields to encourage them to pursue STEM (Physics and renewable energies) related subjects for their future carriers. The mentorship program is carried out in collaborations with MMUST women Scientist to schools in western Kenya region.
- Member of council of board of governors in Bumbe Technical college representing youth and gender
- and special interest groups
- membership to various professional organisation for women scientist in the developing world(OWSD) Physics society of Kenya, African, African material research society (AMRS), ANSOLE, KENET
- Assess students in teaching practise and field attachments in various locations in Kenya
- Forge collaborations with industry, universities and international communities
- Run community outreach programs for girls in secondary schools in Jera sub locations
- Run community sensitization programs on covid 19 response, energy matters, environment and women Empowerment

August 2011- 2018: Masinde Muliro University of science and technology

Assistant Lecturer

- Teaching Physics to undergraduate students
- Member of academic programme committee for certificates, Diploma and BSc. Programmes
- Academic advisor to year one and four BSc. Physics students
- Assess students on teaching practise
- Member of external linkages and funding proposal committee.
- Prepare learning resources and design exercises for students in the following courses
 - Hydro-energy systems
 - Fundamentals of physics I
 - Fundamentals of Physics II
 - Solar thermal energy
 - Physics of semiconductor devices II
 - Energy systems and management
 - Statistical Physics
- Undertake individual research and participate both scientific and academic congregations
- Conduct examinations and submit results to the relevant authorities on time
- Prepare teaching and learning manuals, simulations and case studies for trainings

October 2004- To August 2011: Sega township secondary school

Teacher, Physics and Mathematics

- Prepare learning resources for students in the following courses:
Physics (Form I – Form IV)
Mathematics (Form I – Form IV)
- Prepare students for Physics and Mathematics contests, symposiums and Science Congress.
- Class teacher for form one 2005 to form four 2008
- Conduct examinations and submit results to the relevant authorities on time
- Head of mathematic department
- Subject head for physics

Skills and Competencies

- Synthesis of nanoparticles (metal oxides perovskites, and magnetic) using physical and chemical approaches, sputtering and spin coating techniques.
- Analysis Techniques: (X-ray diffraction, surface photovoltage (SPV), photoluminescence (PL), UV-VIS spectroscopy, scanning electron microcopy (SEM), and ultra-violet photoelectron spectroscopy (UPS)

Computer skills and competences

Familiar with Microsoft Office (Windows XP, Windows 2007,2010,2013,2016, (Word, Excel, PowerPoint, Access)

Microsoft Internet Explorer, Mozilla Firefox, google chrome.

Have a good knowledge of C Programming language

Familiar with several software such origin Lab, general purpose photovoltaic device model (GPVDM) software, SCAPS 3.3.09 simulation software, and AutoCAD software

Social skills and competences

- Highly interactive with others. Work in department where teamwork is highly regarded Wide knowledge of international experience and exposure. Hence can cope and understand people from different socio- cultural backgrounds.
- Adaptable to different environments and places and can fit and stay comfortably with people from different races, tribes and regions.

- Hold collaborations with university of Oxford, Technical university of Berlin, Pretoria, University of Rwanda Nairobi University, Catholic University (Kanya) and Kaimosi university College

List of publications

- i. **Celline Awino** et.al. (2022). International team develops physics lab kits for girls across Africa DOI:10.1063/PT.6.4.20220427a
- ii. Barasa, Godfrey Okumu, Celline Awino, Canglong Li, John Onyango Agumba, Kevin Otieno Okoth, and Denis Magero. "Indium decorated nanoporous Ag as an efficient catalyst for enhanced CO₂ electroreduction." *Solid State Sciences* (2022): 106916.
- iii. Nalinya, Milimo Amos, **Celline Awino**, Henry Barasa, Victor Odari, Francis Gaitho, Benard Omogo, and Maxwell Mageto. "Numerical study of lead free CsSn_{0.5}Ge_{0.5}I₃ perovskite solar cell by SCAPS-1D." *Optik* 248 (2021): 168060
- iv. **Celline Awino**, Godfrey Barasa , Victor Odari. Lukas Kegelmann and Thomas Dittrich. Light induced degradation of the transport length of CH₃NH₃PbI₃ studied by modulated surface photovoltage spectroscopy after Goodman. *Organic electronics*, Elsevier 2020 <https://doi.org/10.1016/j.orgel.2019.105503>
- v. Wycliffe Isoe, Maxwell Mageto, Christopher Maghanga, Maurice Mwamburi, Victor Odari, and **Celline Awino**, Thickness Dependence of Window Layer on CH₃NH₃PbI_{3-x}Cl_x Perovskite Solar Cell, *International Journal of Photoenergy*, 2020; <https://doi.org/10.1155/2020/8877744>
- vi. James Sifuna, George S. Manyali, Felix Saouma, **Celline Awino**, Victor Odari and George Amolo. The Physics of strong correlated materials. Conference proceedings Kabarak University (Sept. 2019)
- vii. **Celline Awino**, Victor Odari, Thomas Dittrich, Pongthep Prajongtat, Thomas Sakwa and Bernd Rech . Investigation of structural and electronic properties of CH₃NH₃PbI₃ stabilized by varying concentrations of poly (methyl methacrylate) (PMMA). *Coatings* 2017, 7, 115; doi:10.3390/coatings7080115
- viii. **Omondi C. A**, Sakwa W T & Ayodo Y K (2012), Bilayer Metal Oxide Thin films for UV-Visible light sensing; paper submitted to **Journal of Science, Technology, Education and Management (JSTEM)**, Masinde Muliro University of science and technology.

- ix. **Omondi C. A**, Sakwa W T & Ayodo Y K (2012), Synthesis and characterization of ZnO nanoparticles, International journal of physics and mathematical sciences vol2 (2) pp 159-168 ISSN 2277-2111
- x. Thomas Dittrich, **Celline Awino**, Pongthep Prajongtat, Bernd Rech, and Martha Ch. Lux-Steiner. Temperature Dependence of the Band Gap of CH₃NH₃PbI₃ Stabilized with PMMA: A Modulated Surface Photovoltage Study. 2015 American Chemical Society J. Phys. Chem. C 2015, 119, 23968–23972
- xi. Kegelmann, Lukas, Wolff Christian, **Celline Awino Omondi**, Lang Felix, Unger Eva, Korte Lars, Dittrich Thomas, Neher Dieter, Rech Bernd, Albrecht Steve. It takes two to tango – double-layer selective contacts in perovskite solar cells for improved device performance and reduced hysteresis. ACS Appl. Mater. Interfaces 2017, 9, 17245–17255. DOI: 10.1021/acsami.7b00900
- xii. Sakwa W.T, Ayodo Y.K, Saisi P.O, Sarai A, Rapando W, **Omondi C.A**. A Non-Degenerate Binary System of Helium Isotopes, East African Journal of Engineering, Science & Technology, ISSN: 2219-8598, Vol.1 ,No.2, pp.66, April 2013
- xiii. T.W.Sakwa, J.S.Prichani, Y.K.Ayodo, A.Sarai, **C.A.Omondi** & H.B.Wafula. Energy Equations for N-Tuple Pendula System, International Journal of Physics and Mathematical Sciences, ISSN: 2277-2111, Vol.2 (2), pp 154-158, 2012

List of posters and oral presentations

- i. Celline Awino, Victor Odari and George Manyali. Effects of charge selective contacts and Light Soaking on the Electronic Properties of CH₃NH₃PbI₃ films. Oral presentation AMRS conference in Arusha Tanzania (2019).
- ii. **Celline Awino**, Godfrey Barasa and Victor Odari. Light induced degradation of the transport length of CH₃NH₃PbI₃ studied by modulated surface photovoltage spectroscopy after Goodman. Poster presentation at the American Institute Sciences- 1st *International Conference on Nature Inspired Surface Engineering (NISE)*, on June 11- 14, 2019 at the Stevens Institute of Technology, Hoboken, New Jersey, USA.
- iii. **Celline Awino**- Bio-Physics materials for sustainable development. Kakamega, July 2019
- iv. **Celline Awino Omondi**, Thomas Dittrich, Eva Unger, and Bernd Rech. Modulated Surface Photovoltage Spectroscopy of CH₃NH₃Pb(I,Br)₃ thin films — Helmholtz-

Zentrum Berlin für Materialien und Energie GmbH, Institut für Silizium-Photovoltaik, Kekuléstr. 5, 12489 Berlin, Deutschland (oral presentation in DPG Dresden, Germany, March 2017 conference)

- v. **Celline Awino Omondi**, Thomas Dittrich, Eva Unger, Lukas Kegelmann, Steve Albrecht, Bernd Rech. Characterization of leadhalide perovskites by modulated surface photovoltage. poster presentation at European material research society (EMRS spring conference 2017, Strasbourg, France)
- vi. **Celline Awino Omondi**, Thomas Dittrich, Eva Unger, Lukas Kegelmann, Steve Albrecht, Bernd Rech. Characterization of lead halide ($\text{CH}_3\text{NH}_3\text{PbI}_3$) perovskites. Visual poster presentation at EU PVSEC 2017 (33rd European Photovoltaic Solar energy conference and Exhibition) Amsterdam, Netherland.
- vii. **Celline Awino Omondi**, Thomas Dittrich, Eva Unger, Lukas Kegelmann, Steve Albrecht, Bernd Rech. Investigation of lead halide ($\text{CH}_3\text{NH}_3\text{PbI}_3$) perovskites by surface photovoltage. poster presentation at European material research society (EMRS Falls conference 2018, Warsaw, Poland).

Conferences Attended

- i. Attended first International Conference on Nature Inspired Surface Engineering (NISE), on June 11- 14, 2019 at the Stevens Institute of Technology, Hoboken, New Jersey, USA.
- ii. Attended a conference organised by Physics department, MMUST on Bio-physics for sustainable development in Kakamega, July 2019.
- iii. Attended European material research society (EMRS 2018 Fall meeting) conference. Poster presentation on surface photovoltage study of lead halide perovskites, Warsaw, Poland Sept. 2018.
- iv. Attended German Physics Society (DPG Spring meeting) on Thin films – fundamental of perovskites Photovoltaics and gave oral presentation on the title ‘Modulated surface photovoltage spectroscopy of $\text{CH}_3\text{NH}_3\text{Pb}(\text{I},\text{Br})_3$ thin films , 19-24 March 2017 Dresden Germany.
- v. Attend European material research society (EMRS 2017 spring meeting) conference. Poster presentation on Characterization of lead halide perovskites, Strasbourg France May 2017.
- vi. Conference on visual poster presentation at EU PVSEC 2017 (33rd European Photovoltaic Solar Energy Conference and Exhibition) in Amsterdam (Netherland).

Workshops attended

- i. Webinar on solar powered water systems in Humanitarian context, Nov 2020
- ii. Attended workshop on Career development workshop for women in physics in Oct-Nov 2019. ICTP Trieste Italy and presented a poster on the role of interfaces on Perovskite solar cells.
- iii. Mentorship workshop for secondary girl schools in the western region at Mukumu Girls High school; organized by UNESCO (April 2019)
- iv. Attended workshop organized by Centre for migration for development (CIM) in May 2019
- v. Attended British connect seminar on proposal writing, effective communication skills and collaborations skills in Kisumu Kenya (11-13th Feb. 2019)
- vi. Attended a two-week workshop on Joint understanding for material initiatives (JUAMI) in Kampala (9th Dec-21st Dec 2018)
- vii. Attended 6th Joint Workshop-Seminar of Forschungszentrum Jülich IEK5-Photovoltaik and Helmholtz-Zentrum Berlin, Dept.of Silizium-Photovoltaik (EE-IS), PVcomB, NSIP Hirschegg , Kleinwalsertal (Austria) from 11 September – 16 September 2016.
- viii. Attended a seminar on *Climate Change and Renewable Energies in Africa* and gave presentation on solar energy in Kenya. Hechingen (Germany) in Dec 2017
- ix. Attended international summer University (ISU energy 2015) in Falera Switzerland
- x. Attended scientific writing workshop training for PhD students at Technical University of Berlin in February 2015
- xi. Attended joint US- Africa Material Initiative (JUAMI) fellowship in Addis Ababa in Dec 2012
- xii.** Module writing training workshop at Cicada Hotel Eldoret, on 12th to 16th March 2012.
- xiii. ISO certification workshop for Masinde Muliro University staff at Masinde Muliro university, on 18th May 2012
- xiv. Seminar for Mathematics Teachers in Nyanza province held at Kisumu Girl's High school on 6th of March 2009.
- xv. Third cycle in service training for secondary mathematics and Science teachers at Rangala Girl's High school in April 2006.

Scholarship and Grants

- Masinde Muliro University grant award (URF) Ksh 450,000. Grant number MMU/URF/2022/1-027
- The World academy Research Grant Program in Basic Sciences (TWAS). Grant number: 20-287 RG/PHYS/AF/AC_G – FR3240314167, USD 28,489.00 – Principal investigator. 2020-2022
- A Foundry for Research into Emerging Photovoltaic Materials, Internal Global Challenge Research Fund (GCRF) 2020, University of Oxford, GBP 39,112.32- (Co-investigator)
- Mini grant award of USD 15,000 by Kenya Education network (KENET) for project entitled ‘Study of photovoltaic absorbers and thermoelectric materials using density functional theory (DFT) (co-investigator)-2019-2020
- Katholischer Akademischer Austausch Dienst (KAAD), Catholic Academic Exchange Service: Scholarship 2014/2018 (PhD)
- Helmholtz association of German research for doctoral training programs: April 2018- July 2018 (PhD).
- Commonwealth scholarship under Indian council for cultural relations (ICCR) for Master of Science degree in Physics
- Prize awarded for the best physics teacher in Ukwala division and third best physics teacher in Siaya district in KCSE 2007

Community engagement/ Collaborations

- i. Member of Board of governors (BOG) Bumbe Technical training institute(2021-2024)
- ii. Chairman Board of management (BOM chair) Jera Secondary school (2021- 2024)
- iii. Vice Chairman Board of management, Udira Secondary school (2022-2025)
- iv. Memorandum of understanding between **Women Supporting Women in the Sciences**, Northwestern University, Materials Science & Engineering, USA ("**WS2**") and **Celline Awino Omondi**, Masinde Muliro University of Science and Technology (MMUST) Kakamega, Kenya ("**WS2 Partner**").The WS2 initiative ("Lab Kit Initiative") funded by the American Physical Society Innovation Fund is an international teams that design and

distribute low-cost physics and materials science lab kits relevant to elementary and secondary school students across East Africa.

Equipment brought to Physics department MMUST

- i. Glovebox (Grant No. 20-287 RG/PHYS/AF/AC_G – FR3240314167)
- ii. Spin Coater (Donated by GIZ)
- iii. Basic IT equipment (Apple laptop, HP color laser jet printer (GIZ)
- iv. Hot plate (GIZ)
- v. Analytical balance (GIZ)
- vi. 5 high speed computers (KENET Grant)
- vii. Printer (KENET Grant)

Scientific Societies

1. Kenya Renewable Energy Association (KEREA)
2. Material Science and Solar Energy Network for Eastern and Southern Africa (MSSEESA)
3. African Network for Solar Energy (ANSOLE)
4. Physics Society of Kenya (PSK)
5. African material research Society (AMRS)
6. Organization for women in science for developing world (OWSD)

LIST OF REFEREES

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