

PROFILE AND CURRICULUM VITAE



PROF. BERNARD O. C. ADUDA

SUMMARY

Professor Bernard O. Aduda is a **full professor** of Physics of Materials since 2005. He has a **PhD in Materials Science** from Imperial College, University of London (UK) (1991), and a **Diploma of Imperial College (DIC)**.

He has served as a **member of Council of the Kenya Polytechnic University College** (2009 – 2013), a **member of Council of the National Council for Science and Technology (NCST)**. He has also been a **resource person** (evaluator of programmes) for the Commission for University Education (**CUE**). He is a **Fellow of the Kenya National Academy of Sciences (KNAS)** and for which he has chaired many committees, and edited the KNAS publications (journals, conference proceedings and other popular publications).

Prof. Aduda has over **16 years continuous, hands-on, successful administrative experience** and is the **current Principal** College of Biological and Physical Sciences since March 2011. He is scholar who has **supervised to completion 9 PhD and 14 MSc students** and is a **founder member and the present Chief Coordinator of MSSEESA** (a regional Eastern and Southern Africa Network for Scientists working on Materials Science and Solar Energy).

He has had **prestigious post-doctoral trainings** at International Centre for Theoretical Physics (**International Centre for Theoretical Physics (ICTP), Associateship Program**), Uppsala University (**International Science Program Fellowship**), Imperial College (**Commonwealth Scholarship Fellowship**) and Princeton University (**America Science Foundation**). He **reviews** for a number of international journals. Besides, he has served as an **external examiner** in several local and regional universities.

Professor Aduda has **published widely (55 papers)** in peer reviewed journals besides making presentations in and organizing many learned international and local conferences, **edited one book**, and published **two monographs** (modules) used in teaching undergraduate physics units.

As a **Fellow** of the Kenya National Academy of Sciences, he has chaired several Local Organizing Committees that have organized local, regional or international conferences on behalf, and edited several publications of the Academy. Professor Aduda has **networked** widely - internationally, regionally and locally. He has **attracted research funding exceeding KSh176 million**

DETAILED CURRICULUM VITAE

BACKGROUND

1. **NAME:** Bernard Odhiambo Caleb Aduda
2. **DATE OF BIRTH:** 3rd Dec. 1958
3. **PLACE OF BIRTH:** Kisumu County, KENYA
4. **MARITAL STATUS:** Married
5. **PRESENT ADDRESS**

5.1 **Work:**

Department of Physics, University of Nairobi, P.O. BOX 30197 – 00100 Nairobi, Kenya

- #### 5.2 **Private:** P.O. BOX 54139 – 00200, Nairobi, Kenya.

- #### 5.3 **E-mail:** boaduda@uonbi.ac.ke or adudaboc.ba@gmail.com

- #### 5.4 **Telephone Contact:** **Office** (020 4447552); **Mobile** (0721 267 858);

6. **ACADEMIC HISTORY**

- 6.1 **B.Ed. (Physics and Mathematics)** Upper 2nd Honours, *University of Nairobi (1984)*
- 6.2 **M.Sc. (Physics)** *University of Nairobi (1984 – 1987)*
- 6.3 **Non-Destructive Testing (NDT) Level One** (1987)
- 6.4 **Diploma of Imperial College (DIC)** – Imperial College (1991)
- 6.5 **PhD (Materials Science)** *Imperial College London (University of London), (1988 -1991)*

7 **SCHOLARSHIP AWARDS**

- 7.1 **DAAD Scholarship** (1984-86) - To pursue M. Sc degree
- 7.2 **British Council (ODA) Scholarship** (1988-91). – To pursue PhD degree
- 7.3 **Overseas Research Student (ORS) award (1989/90 and 1990/91 academic years)** awarded by the Committee of Principals and Vice Chancellors of Colleges and Universities in Britain (Awarded while pursuing PhD).

8. **POST-DOCTORAL AND SABBATICAL**

- 8.1 2-Month **America Science Foundation** Fellowship at Princeton University (1st Sept – 1st Nov. 2007)
- 8.2 1-year **Commonwealth Scholarship Fellowship** tenable at Imperial College (March 2002 to March 2003)
- 8.3 3-month **International Programme in Physical Sciences (IPPS)** Fellowship, Materials Department, Uppsala University, Sweden, Sept to Nov. 1999.
- 8.4 3-month Associateship every year at the **International Centre for Theoretical Physics (ICTP)**, Trieste – Italy from 1993 - 1995 and 1998 - 2003

9. **MEMBERSHIP IN LEARNED AND PROFESSIONAL SOCIETIES**

- 9.1 Member, Kenya National Academy of Science (KNAS) since 2005; Fellow (2011)
- 9.2 Member, the Nondestructive Testing Society of Kenya, since 1992
- 9.3 Member of the Kenya Physical Society (KPS), since 1992
- 9.4 Member, the Materials Research Society (MRS) - Africa Chapter, since 2005
- 9.5 Member, European Physical Society

10. **ACADEMIC CAREER PROFILE**

- 10.1 **Professor** (December 2005 - Present)
- 10.2 **Associate Professor** (January 1999 – December 2005)
- 10.3 **Senior Lecturer** (1994 - 1999)

- 10.4 **Lecturer** (1992 - 1994)
- 10.5 **Tutorial Fellow** (1988 - 1992)
- 10.6 **Graduate Assistant** (1986 - 1988)

EXPERIENCE IN ADMINISTRATION AND MANAGEMENT, UNIVERSITY OF NAIROBI

11. ADMINISTRATIVE POSITIONS

- 11.1 **Principal**, College of Biological and Physical Sciences (CBPS) (March 2011 – present)
- 11.2 **Associate Dean**, Kenya Science Campus (KSC) (Nov. 2007 – March 2011)
- 11.3 **Chairman Dept.** of Physics (October 2003 – November 2007)
- 11.4 **Group Leader**, Condensed Matter Physics Group, Physics Department, (2000 – Present)
- 11.5 **Acting Chairman** (Dec. 1997 to Dec. 1998), Oct. 2001-Feb. 2002
- 11.6 **Departmental Examination officer** (1992 – 2003)
- 11.7 **Chairman**, Faculty of Science Examination Committee (1999 – 2003)

11.1 SHORT-TERM ACTING CAPACITIES

- 11.8 **Ag. Deputy Principal** (KSC) (Diverse dates in 2008 – 2010)
- 11.9 **Ag. Principal** (CBPS) (Diverse dates in 2009 - 2011)

12. OTHER (PRESENT & PAST) UNIVERSITY RESPONSIBILITIES

- 12.1 **Member**, University Management Board (UMB)
- 12.2 **Member**, University Senate
- 12.3 **Member and Chairman**, College Management Committee (CMB)
- 12.4 **Member and Chairman**, College Academic Board (CAB)
- 12.5 **Chairman of Appointment Committees** up to Assistant Lecturer Level
- 12.6 **Member and Chairman**, College Procurement Committee (CBPS)
- 12.7 **Chairman**, College Disciplinary Committee
- 12.8 **Chairman**, College Corruption Prevention Committee
- 12.9 **Chairman**, College ISO Management Review Committee
- 12.10 **Chairman**, University Executive Board Committee on Rewards and Sanctions (2018)
- 12.11 **Chairman**, Infrastructure Maintenance Policy Review Committee, 2018
- 12.12 **Member**, UEB Committee on the Development of Culture Change Programme, 2018
- 12.13 **Member**, UEB Committee to Review the Rules and Regulations Governing the Conduct and Discipline of Students, 2018
- 12.14 **Chairman**, Committee on University of Nairobi Students Association Constitution (UNSA), 2017
- 12.15 **Special Assignment by Vice Chancellor to supervise** the completion of the Kisumu Towers (2016)
- 12.16 **Chairman**, Committee to Review SONU Constitution, 2016
- 12.17 **Vice-Chairman**, Coordinating Committee – UoN's Digital Literacy Programme (DLP, 2016)
- 12.18 **Chairman**, The UoN's Coordinating Committee for DLP Expression of Interest (EOI), 2015
- 12.19 **Member**, University of Nairobi Public-Private Partnership (PPP) Node
- 12.20 **Member** of several University Executive Board Committees
- 12.21 **Member**, School of Physical Sciences (SPS) and CBPS Academic Boards
- 12.22 **Member**, the CBPS College Management Board (CMB)
- 12.23 **Chairman**, The Kenya Science Disposal Committee (2008 to 2011)
- 12.24 **Member**, Tender Committee UNES (Ltd) (2008 – 2010)
- 12.25 **Chairman**, Board of Survey (College of Health Sciences) March – July 2007

- 12.26 **Has chaired** several Technical Evaluation Committees for Tender Awards
- 12.27 **Member**, College of Biological and Physical Science's (CBPS) Sub-Committee on Staff Training and Development (STDF) (2005 – 2011)

13 **MANAGEMENT SEMINARS, WORKSHOPS AND TRAININGS ATTENDED**

- 13.1 University Leadership Retreat: Personal Effectiveness for University Managers. July 29th-31st 2005, Voyager Beach Resort, Mombasa.
- 13.2 An in-house Training Programme on Financial Management and Human Resource Management for Chairman of Departments of the University of Nairobi, KCCT – Mbagathi 2nd – 4th Feb., 2006
- 13.3 The workshop on Training of Chief Internal Examiners of the University of Nairobi. July 13th–14th 2006, KCCT, Mbagathi, Nairobi.
- 13.4 Senior Management Staff Training on Results Based Management (RBM) and Rapid Results Initiative (RRI), May, 2007, Utalii Hotel
- 13.5 Special Senate Training on Performance Contracting and Review of Customer Survey – 11th July 2007, Taifa Hall
- 13.6 Seminar on Public Procurement, Central Catering Unit, 20th March 2008
- 13.7 Induction Training for Alternate Members of the Tender Committee and Members of Kenya Science Campus Disposal Committee – 16th July, 2008 at Central Catering Unit
- 13.8 Records Management & Corruption Prevention – 14th Sept. 2010 – CBPS
- 13.9 HIV/AIDs Awareness and Drug & Substance Abuse – 22nd Nov., 2010 at CBPS
- 13.10 Strategic Leadership and Change Management Programme for Directors of State Corporations held at the Kenya Institute of Administration (K.I.A) 12 – 13th November 2010
- 13.11 Workshop on technical Evaluation for Goods and Services held at The Central Catering Unit (CCU), 27th January 2011
- 13.12 Workshop for CEOs of State Corporations, Kenya School of Government, On Monday January 15th 2018

CONTRIBUTIONS

14. **REGIONAL AND INTERNATIONAL CONTRIBUTIONS**

- 14.1 **Honorary Treasurer**, Network of Africa Academy of Sciences (NASAC), 2013 – to date
- 14.2 **Chief Coordinator**, MATERIALS SCIENCE AND SOLAR ENERGY NETWORK FOR EASTERN AND SOUTHERN AFRICA (**MSSEESA**) Network (2018 –)
- 14.3 **A member** of the pioneer group that in 2002 initiated the MATERIALS SCIENCE AND SOLAR ENERGY NETWORK FOR EASTERN AND SOUTHERN AFRICA Network (referred to as “MSSEESA”) – a Network aimed at forging collaboration in Solar cell and solar cell materials research in East and Central Africa region.
- 14.4 **Co-Editor**, Proceedings of the International Workshop on Nanotechnology: Present Status and Future Prospects in Developing Countries. 18 – 20 May 2009, Kashan, Iran (Publishers NAM S&T Centre)
- 14.5 **Editor-in-Chief**, Kenya National Academy of Sciences
- 14.6 **Subject (Physics) & Regional Sub-Editor**, *Africa Journal of Science and Technology* (2003 – to date)
- 14.7 **Has served as External Examiner**, Egerton University, Kenyatta University, Makerere University; University of Fort Hare, Dar es Salaam University College of Education (DUCE)
- 14.8 **Reviewer** for several International Journals, e.g., *Journal of Materials Science*; *Journal of Materials Research*; *Journal of Photobiology and Photoenergy*

15. NATIONAL CONTRIBUTIONS

- 15.1 **Member of Council**, National Council for Science and Technology (NCST) (2010 - 2013)
- 15.2 **Member of Council Member**, Kenya Polytechnic University College (2009 – 2013)
- 15.3 **Editor**, Proceedings of the “Workshop on Science and Technology Park Development for Sustainable Industrial Growth” by the Kenya National Academy of Sciences (KNAS) Conference, June, 2004.
- 15.4 **Editor**, Proceedings of the KNAS “National Symposium on Science, Technology, Innovation and Society: The African Perspectives and Experiences”, June 2006.
- 15.5 **Editor**, Proceedings of the KNAS Workshop on Science/Mathematics Teacher Professional Development and Testing, 13th – 14th December 2006
- 15.6 **Editor**, Final Report on “The Role of Parliamentary Office of Science and Technology (POST) and Pairing Scheme,” a Workshop organized by KNAS, June 2007
- 15.7 **Member** of the local organizing committee (LOC) of KPS/ANSTI Regional Conference, Nairobi, Kenya, 19th-23rd Sept. 1994.
- 15.8 **Member** of Local Organizing Committee and Chairman of the Conference Scientific Committee of the 1st ARCNDT, Nairobi, June 22-24, 1994
- 15.9 **Chairman**, Organizing Committee of Kenya Physical Society (KPS) Regional Conference (2000)
- 15.10 **Chairman**, Organizing Committee of Kenya Physical Society (KPS) Local Workshop (2001)
- 15.11 Member of the Committee that drew the Kenya National Academy of Sciences (KNAS) Strategic Plan (2006 – 2011)
- 15.12 **Chairman**, Organizing Committee of the Conference on “Opto-electronic devices: Potential for sustainable development”, University of Nairobi, 8 – 9th July 2010
- 15.13 **External examiner**, University of Port Hare – South Africa, Maseno University, Egerton University, Kenyatta University, Jomo Kenyatta University, Makerere University - Uganda, Dar es Salaam University College of Education (DUCE) - Tanzania,
- 15.14 **Chairman**, Ad Hoc Committee on Nanotechnology of NCST that produced the Report titled “NANOTECHNOLOGY DEVELOPMENT IN KENYA”, A Report to the National Council for Science and Technology (NCST), Ministry of Higher Education Science and Technology (September, 2009)
- 15.15 **Peer Reviewer**, National Research and Development Journal (A journal of the Ministry of Higher Education, Science and Technology), 2009

FUNDRAISING

16. RESEARCH GRANTS

- 16.1 International Programme in Physical Sciences: (2000 – 2018): SEK 13,650,000,000 (**Approx. KSh 164,000,000/**)
- 16.2 MSSEESA: **KSh 9 million** (2018/2019)
- 16.3 Nuffic Foundation (Netherlands): Euros 100,000 (**KSh. 10,500,000**) for Tailor Made Training of PV Systems (TMT) – November 2013 (10 technologists and academic staff members trained in Netherlands for 2 weeks)
- 16.4 University of Nairobi (2006) (**KSh 2,500,000**) towards purchase of spectrophotometer
- 16.5 Deans’ Committee Grant (in collaboration with the late Prof. B.O. Kola) 1994: **KSh112,200/** (To develop and test a system to study the elastic properties of solids)
- 16.6 National Council for Science and Technology, 1998: **KSh 100,000/** for Ultrasonic characterization of Kenyan refractories.
- 16.7 Member of a four-nation consortium bidding for the Phase II Royal Society (RS-UK)/DFiD call for proposal (2014/15)

17. OTHER FUNDS

- 17.1 **Solar Academy Training** (twice a year since 2012) - > **KSh 15,000,000**
- 17.2 **MSSEESA Funding** (2018): **KSh 1,000,000** and **KSh 4,000,000 (2019)**

18. AWARDS AND RECOGNITIONS

- 18.1 Certificate of Excellent Performance (2010/2011; 2011/2012, 2015/2016)
- 18.2 Certificate of Recognition (*Category: Diligent Academic and Administrative Leadership*), College of Biological and Physical Science, on Outstanding Work performance during the year 2006.
- 18.3 First prize in the category of 'Industrial Relevance' for a presentation based on the Ph.D. research work at the Materials Department's Postgraduate Research day (1991), Imperial College of Science and Technology and Medicine.
- 18.4 Third prize in the category of 'Best Scientific Content', (see 17.2).
- 18.5 Trophy in recognition of a presentation at the Young Speakers Meeting organized by the Institute of Ceramics South-East Branch, U.K. (1990).

RESEARCH PROFILE

19. RESEARCH ACTIVITIES AND INTERESTS

- 19.1 Microstructure-Property Relationships with emphasis on:
 - (i) Renewable Energy sources (wet solar cells, i.e., nanostructured TiO₂ and photovoltaics, and the environmental impact.
 - (ii) Electrophoretic deposition (EPD) of TiO₂ thin films for photocatalysis, and other uses.
 - (iii) Elastic wave propagation in materials, especially for nondestructive evaluation and characterization of materials.
 - (v) Internal friction and relaxation processes in materials.
 - (vi) Thermophysical properties of solids, in particular, ceramics and granular thermal insulators.
 - (iv) Nanotechnologies for sustainable development (e.g., water purification and solar cells).
- 19.2 Broad Education issues, e.g., Best Practices in Science Education in Kenya.
- 19.3 Nanotechnology knowledge brokerage and stakeholder participation in Kenya

20. COLLABORATIVE RESEARCH LINKAGES

- (1) Development of dye-sensitised nanostructured TiO₂ photoelectrochemical (PEC) solar cell. (In collaboration with Materials Department, Uppsala University, Sweden and Physics Department, Imperial College London, and Hahn-Meitner Institute - Germany).
- (2) Nanotechnologies for sustainable development (e.g., water purification and solar cells)
- (3) Nanotechnologies for development in India, Kenya and The Netherlands—towards a framework for democratic governance of risks in developing countries. An integrated project with ATPS (with Dr. Kevin Urama formerly of Africa Technology Policy Studies Network (ATPS)).

21. STUDENT SUPERVISION

MSc (Physics) (14 completed)

1) Mr. F. W. Nyongesa (1994), 2) Mr. R. Kinyanjui (1995), 3) Mr. J.W. Muliaro (1996), 4) Mr. S. Waita (1999), 5) Mr. T. Nyangonda (2000), 6) Mr. J. Simiyu (2001) 7) Mr. A. Ogacho (2002), 8. Mr. S. Njogu (2005), 9) Mr. B. Wafula (2006) 10). Mr. W. N. Gatimu (2007) 11. Mr. Paul Ajuoga (2012), 12. Mr. C.O. Ayieko, 13) J. Ndungu (2014), J. Obilla (2016)

PhD (Physics) Completed (9)

1) Dr. F.W. Nyongesa (2000), 2) Dr. J.N. Kimani (2002), 3) Dr. S. Waita (2008), 4) Dr. R.J. Musembi (2009), 5) Dr. A.A. Ogacho (2010) 6) Dr. J. Simiyu (2010), 7) Dr. T. Nyan'gonda (2014), 8) Dr. J.N. Nguu (2017), Dr. C.O. Ayieko (2017).

On-going Supervision

MSc (3), PhD (2)

22. PUBLICATIONS

22.1 REFEREED JOURNALS

- (1) John Nguu, Francis Nyongesa, Robinson Musembi, **Bernard Aduda**. Electrophoretic Deposition and Characterization of TiO₂/Nb₂O₅ Composite Thin Films for Dye Sensitized Solar Cells, *Journal of Materials Physics and Chemistry*, 2018, Vol. 6, No. 1, 1-8. DOI:10.12691/jmpc-6-1-1
- (2) Mulati DM, Nyang'onda TN, **Aduda BO**. "Raman Crystallinity and Hall Effect Studies of Microcrystalline Silicon Seed Layers." *Journal of Agricultural Science and Technology*. 2017; 16(1):106-118.
- (3) Francis Nyongesa, **Bernard Aduda**. Electrophoretic Deposition of Titanium Dioxide Thin Films for Photocatalytic Water Purification Systems. *Advances in Materials*. Vol. 6, No. 4, 2017, pp. 31-37. doi: 10.11648/j.am.20170604.11
- (4) John Nguu, Francis Nyongesa, Robinson Musembi, **Bernard Aduda**, Electrophoretic Deposition and Characterization of TiO₂/Nb₂O₅ Composite Thin Films for Dye Sensitized Solar Cells. *Journal of Materials Physics and Chemistry*, 2018, Vol. 6, No. 1, 1-8. DOI:10.12691/jmpc-6-1-1
- (5) Justine Sageka Nyarige, Sebastian Waita, Justus Simiyu, Silas Mureramanzi, **Bernard Aduda**, Structural and Optical Properties of Phosphorous and Antimony doped ZnO thin films Deposited by Spray Pyrolysis: A Comparative Study, *International Advanced Research Journal in Science, Engineering and Technology*, Vol. 4, Issue 11, November 2017, 149 – 154. DOI 10.17148/IARJSET.2017.411121
- (6) Sebastian Waita and **Bernard Aduda** (2016). Emphasis on Photovoltaic (PV) Solar System Installation Training: A case study of a PV Solar System Installed in Makeni County, Kenya, *International Advanced Research Journal in Science, Engineering and Technology*, 3(8), 2016, 231 – 234, DOI 10.17148/IARJSET.2016.3843
- (7) Sebastian Waita and **Bernard Aduda** (2016). Photovoltaic (PV) Solar System Sizing for Off Grid Solar Home Systems, *International Journal of Applied and Natural Sciences (IJANS)* 5(5) 2016, 73 – 78, ISSN(P): 2319-4014; ISSN(E): 2319-4022
- (8) Ogacho A., **Aduda B. O.** (2016) Structural, Optical and Photoelectrochemical Properties of Cuprous Oxide Synthesized by Low Temperature Thermal Oxidation. *Mat.Sci.Res.India*;13(1)
- (9) C. O. Ayieko, R. J. Musembi1, A. A. Ogacho, **B. O. Aduda**, B. M. Muthoka, P. K. Jain (2016) Optical Characterization of TiO₂-bound (CuFeMnO₄) Absorber Paint for Solar Thermal Applications, *American Journal of Energy Research*, 2016, Vol. 4, No. 1, 11-15
- (10) C.A. Opiyo, R.J. Musembi, A.A. Ogacho, **B.O. Aduda**, B.M. Muthoka, P. K. Jain (2015), Controlled texturing of Aluminum Sheet for Solar Energy Applications, *Advances in Materials Physics and Chemistry*, 2015, 5 458 – 466

- (11) A.A. Ogacho, P.B. Ajuoga and **B.O. Aduda** (2015), Suppression of Anatase to Rutile Phase Transformation of Niobium doped TiO₂ Synthesized by High Temperature Diffusion Technique, *International Journal for Innovation Education and Research* www.ijer.net Vol:-3 No-6, 2015 Online-ISSN 2411-2933, Print-ISSN 2411-3123
- (12) Patrick Mwinzi Mwathe, Robinson Musembi, Mathew Munji, Benjamin Odari, Lawrence Munguti, Alex Alfred Ntilakigwa, John Nguu, **Bernard Aduda**, Boniface Muthoka (2014), Influence of surface passivation on optical properties of spray pyrolysis deposited Pd-F:SnO₂, *International Journal of Materials Science and Applications*; 3(5) 137-142
- (13) P. M. Mwathe, R. Musembi, M. Munji, B. Odari, L. Munguti, A. A. Ntilakigwa, J. Mwabora, W. Njoroge, **B. Aduda**, and B. Muthoka (2014), Surface passivation effect on CO₂ sensitivity of spray pyrolysis deposited Pd-F:SnO₂ thin film gas sensor, *Advances in Materials*, 3(5), 38 - 44, DOI: 10.1164/j.am.20140305.12
- (14) J. Simiyu, S. Waita, R. Musembi, A. Ogacho, **B. Aduda** (2014). Promotion of PV Uptake and Sector Growth in Kenya through Value Added Training in PV Sizing, Installation and Maintenance, *Energy Procedia*, 57: 817 – 825, DOI: 10.1016/j.egypro.2014.10.290
- (15) John Nguu, Susan Ndivo, **Bernard Aduda**, Francis Nyongesa, Robinson Musembi (2014), Livestock Farmers' Perception on Generation of Cattle Waste-based Biogas Methane: the Case of Embu West District, Kenya, *Journal of Energy Technologies and Policy*, www.iiste.org ISSN 2224-3232 (Paper) ISSN 2225-0573 (Online), Vol.4, No.8, 2014
- (16) T. N. Nyan'gonda, D. M. Mulati, and **B.O. Aduda**, (2014) Raman Crystallinity and Hall Effect Studies of Microcrystalline Silicon Seed Layers, *JAGST* 16(1), 105 – 117.
- (17) J. N. Nguu, R. J. Musembi, F. W. Nyongesa and **B. O. Aduda**, Electrophoretic Deposition of TiO₂/Nb₂O₅ Composite Electrode Thin Films for Photovoltaic Application. *Jnl of Energy and Power Engineering* 8 (2014) 757 – 764.
- (18) John N. Nguu, Robinson J. Musembi, Francis W. Nyongesa and **Bernard O. Aduda**, Effect of Process-related Parameters on Band Gap of Electrophoretically Deposited TiO₂/Nb₂O₅ Composite Thin Films, *Africa Journal of Physical Sciences*, 1(1) June 2014, 43 - 48
- (19) Robinson Musembi, **Bernard Aduda**, Julius Mwabora, Marin Rusu, Konstantinos Fostirooulos, Martha Lux-Steiner, Effect of Recombination on Series Resistance in eta Solar Cell Modified with In(OH)_xSy Buffer Layer, *International Journal of Energy Engineering* 2013, 3(3): 183-189
- (20) C. O. Ayieko, R. J. Musembi, S. M. Waita, **B. O. Aduda**, P. K. Jain, Performance of TiO₂/In(OH)_iSj/Pb(OH)_xSy Composite ETA Solar Cell Fabricated from Nitrogen Doped TiO₂ Thin Film Window Layer, *International Journal of Materials Engineering* 2013, 3(2): 11-16 DOI: 10.5923/j.ijme.20130302.01
- (21) C. O. Ayieko, R. J. Musembi, S. M. Waita, **B. O. Aduda**, P. K. Jain, Structural and Optical Characterization of Nitrogen-doped TiO₂ Thin Films Deposited by Spray Pyrolysis on Fluorine Doped Tin Oxide (FTO) Coated Glass Slides, *International Journal of Energy Engineering* 2012, 2(3): 67-72
- (22) F. Nyongesa, N. Rahbar, S. Obwoya, J.imba, **B.O. Aduda** and W. Soboyejo, (2011), "An Investigation of Thermal Shock in Porous Clay Ceramics" *ISRN Mechanical Engineering* 2011, Article ID 816853; doi: 10.5402/2011/816853

- (23) N. Rahbar, **B.O. Aduda**, J. Zimba, S.K. Obwoya, F.W. Nyongesa, I. Yakub and W.O. Soboyejo (2010), Thermal Shock Resistance of a Kyanite-Based (Aluminosilicate) Ceramic, *Experimental Mechanics*, DOI 10.1007/s11340-010-9345-3 (published online: 27 April 2010)
- (24) S.M. Waita, **B.O. Aduda**, J.M. Mwabora, G.A. Niklasson, C.G. Granqvist and G. Boschloo (2009), Electrochemical characterization of TiO₂ blocking layers prepared by reactive magnetron sputtering, *Journal of Electroanalytical Chemistry*, **637** 79 – 83
- (25) **Bernard Aduda**, Justus Simiyu, Julius Mwakondo Mwabora, Conduction Band Edge of (Ti,Sn)O₂ Solid Mixtures Tuning for Photoelectrochemical Applications, *MRS- Materials Research Society*, **Paper #:** 1171-S05-04, **DOI:** 10.1557/PROC-1171-S05-04, (2009)
- (26) R. J. Musembi, M. Rusu, J.M. Mwabora, **B.O. Aduda**, K. Fostiropoulos, M.C. Lux-Steiner (2008) Intensity and Temperature Dependent Characterization of eta Solar Cell, *Physics Status Solidi (a)* **205** (7) 1713 – 1718
- (27) S. Njogu, F.W. Nyongesa, **B.O. Aduda** (2008), Effect of plant-derived organic binders on fracture toughness and fatigue of kaolin-based refractories, *J. Mater. Sci.*, **43**, 4107 – 4111
- (28) H. B. Wafula, J. Simiyu, S. Waita, **B.O. Aduda** and J. M. Mwabora, (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
- (29) J. Simiyu, A.A. Ogacho, J.M. Mwabora, **B.O. Aduda**, S-E. Lindquist, A. Hagfeldt, G. Boschloo (July 2007), Titania Nanotubes Prepared by Synthesis Method for Dye Sensitised Electrochemical Solar Cells (Paper presented at the International Conference in Electroceramics (31st July – 3 August 2007, Arusha – Tanzania.
- (30) R.J. Musembi, **B.O. Aduda**, J.M. Mwabora, R. Bayon (Jan, 2007), Solar Cell With PbS Extremely Thin Absorber (eta) Based on Novel eta Concept, (*Africa Review Journal*).
- (31) S.M. Waita, **B.O. Aduda**, J.M. Mwabora, C.G. Granqvist, S-E Lindquist, G.A. Niklasson, A. Hagfeldt, G. Boschloo, (2007) Electron Transport and Recombination I Dye Sensitized Solar Cells Fabricated from Obliquely Sputter Deposited and Thermally Annealed TiO₂ Films *Journal of Electroanalytical Chemistry* **605**,151–156.
- (32) A.A. Ogacho, **B.O. Aduda** and F.W. Nyongesa (Dec. 2006), Thermal Shock Behaviour of a Kaolinite Refractory Prepared Using a Natural Organic Binder, *Journal of Materials Science*, **41**(24) 8276 – 8283.
- (33) S. M. Waita, J. M. Mwabora, **B.O. Aduda**, G. A. Niklasson, S – E. Lindquist and C. G. Granqvist (2006), Performance of Dye Sensitized Solar Cells Fabricated From Obliquely DC Sputtered TiO₂ Films, *Africa Jnl. of Science and Technology, Series*, **7**(2), 125–139.
- (34) **B.O. Aduda** (2006), Materials Science, *Promotion of Science and Technology (POST)*, Vol. XII No. 1, p19 – 22.
- (35) F.W. Nyongesa and **B.O. Aduda** (2004), Fracture Strength of Porous Ceramics: Stress concentration versus minimum solid area models, *Africa Journal of Science and Technology, Series A*, **5**(2), 19-27.
- (36) **B.O. Aduda**, P. Ravirajan, K.L. Choyi & J. Nelson (2004), 'Effect of Morphology on Electron Drift Mobility in Porous TiO₂, *International Journal of Photoenergy* Vol. **06**, 141- 147.

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22.2 CONFERENCE AND SEMINARS PROCEEDINGS

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- (18) **B.O. Aduda (2005)**, Materials Science: A Spin-Off In Research And Development, *The KNAS National Workshop on Science and Technology Capacity in The Framework of Millennium Development Goals: A Commemoration of Scientific Revival Day of Africa 7th-9th December 2005, Nairobi Kenya*.
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- (21) R.J. Musembi, **B.O. Aduda**, J.M. Mwabora, R. Bayon (Jan, 2007), Solar Cell With PbS Extremely Thin Absorber (eta) Based on Novel eta Concept, 6th EBASI International Conference on Physics and Technology for Sustainable Development in Africa, Cape Town, South Africa, 24th – 26th Jan 2007 (submitted to *Africa Review Journal*).
- (22) R.J. Musembi, **B.O. Aduda**, J.M. Mwabora, M.Rusu, K. Fostiropoulos, M.Ch. Lux-Steiner (June/July 2007) Temperature dependent characterization of TiO₂/In(OH)_xS_y/PbS/PEDOT:PSS eta Solar Cell, Poster presented at 17th International Vacuum Congress(IVC-17), 13th International Conference on Surface Science(ICSS-13) and International Conference on Nanoscience and Technology (ICN+T) Congress, Stockholm, Sweden, 2nd – 6th July 2007.
- (23) S.M. Waita, A.A. Ogacho, **B.O. Aduda (July 2007)**, Charge Transport in Bare and MgO-Coated TiO₂ Thin Films and in Dye-Sensitized Solar Cells: Effect of Film Thickness (Invited paper presented at the International Conference in Electroceramics (31st July – 3 August 2007, Arusha – Tanzania).
- (24) **Bernard O. Aduda** (2009), Status of Nanoscience and Nanotechnology in Kenya International Workshop on Nanotechnology: Present Status and Future Prospects in Developing Countries. 18 – 20 May 2009, Kashan, Iran
- (25) **Bernard O. Aduda (2010)**, Energy Demand, Usage and Consequences: The Kenyan Case, Conclave of Afro Asia Young Scientists: February 11 – 13, 2010 on the theme "Energy, Climate and Development", Jawaharlal Nehru Centre for Advanced Scientific Research; Jakukur, Bangalore-560 64, India

- (26) C. Opiyo Ayieko, **B.O. Aduda**, S. Waita, R.J. Musembi (2010), Effect of Nitration of TiO₂ Thin Film on the Efficiency of TiO₂/In(OH)_xS_y/Pb(OH)_xS_y ETA Solar Cell. 48th Annual Conference of Microcopy Society of Southern Africa, University of Limpopo, 26th – 29th October, 2010
- (27) **Bernard O. Aduda** (2011) “Review of the Current State of Nanotechnologies Research and Policy Making in Kenya”, Nanotechnologies for Kenya’s Development: Questions of Knowledge Brokerage and Risk Governance Workshop, 12 – 13 December, 2011. Silversprings Hotel, Nairobi.
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- (29) Sebastian Waita and **Bernard Aduda**, Structural and Optical Characterization of Polymer based TiO₂ films for Photovoltaic Applications, 9th International Conference of African Materials Research Society, December 11 – 14, Gaborone, Botswana

22.3 CONFERENCES AND WORKSHOPS ATTENDED

- 1 The Working Party on the Mechanical Properties of Materials, ICTP, Trieste, Italy (23rd Aug.-3rd Sept, 1993).
- 2 The Workshop on Physics and Material Science of Nonconventional Energy Sources, at ICTP, Trieste, Italy- 28th Aug. - 17th Sept., 1993).
- 3 The Regional Workshop on Qualification and Certification of NDT Personnel, Nairobi, Kenya, (22nd - 26th. Nov., 1993).
- 4 The Workshop on Archaeometry and Preservation of Work of Art, ICTP, Trieste, Italy, (17th - 28th, Oct., 1994).
- 5 The Workshop on Industrial Composites: Design and Application, ICTP, Trieste, Italy, (31st Oct. - 5th Nov. 1994).
- 6 The Training of trainers Workshop at IMTR, Nairobi, Kenya (26th Feb- 6th March 2001).
- 7 The 7th International conference on Solar Energy and Applied Photochemistry (SOLAR '03) 23-28th February 2003, Luxor Egypt.
- 8 National workshop on Science and Technology Parks Development for sustainable industrial growth: In commemoration of the Scientific Revival Day of Africa. June 30th 2004, Holiday Inn, Nairobi.
- 9 The East Africa Materials Research Society (EAMRS), University of Dar es Salaam, August 2004.
- 10 The African Virtual University (AVU) Teacher Education Curriculum Design Workshop, Nairobi, Kenya 24th-29th October 2005.
- 11 The International Conference in Electroceramics (31st July – 3 August 2007, Arusha – Tanzania).
- 12 Math–Physics Information Workshop: Finding Online Information on Research and Teaching in Mathematics and Physics, 5th – 11th August 2007, University of Dar es Salaam.
- 13 The 4th AMRS International Conference, 9th – 15th Dec. 2007, Dar es Salaam.
- 14 Innovative approaches to higher education and research in Africa”, Lome, Togo, 26th to 28th November, 2014
- 15 Uganda National Academy of Sciences, Network of African Science Academies (NASAC) and the U.S. National Academies (USNAS) international conference on ‘Ensuring Country Ownership of Africa's Development Agenda Beyond 2015’, Kampala, Uganda 10th – 12th November 2014 at Serena Resort Hotel.
- 16 Joint MSSEESA and DAAD International Conference on Materials Science Research for Sustainable Energy in Africa, Held at University of Nairobi, School of Physical Sciences on 26-27 September 2018, Nairobi, Kenya

22.4. BOOKS/MANUSCRIPTS

- (1) Structure and Properties of Matter (2004) (2nd Year UoN Course book B. Ed/ B. Sc (ODL Programme))
- (2) Physics of Materials (2007) (4th Year UoN Course book B. Ed/ B. Sc (ODL Programme))

23. COMMUNITY SERVICE

Sponsorship of disadvantaged students to high schools and colleges

24. CONSULTANCIES AND OTHER ACTIVITIES

- (1) 1987: A consultant Kenya Energy Non Governmental Organization (KENGO), on thermal properties of insulating materials used in the Kenya Ceramic Jiko.
- (2) Resource Person (University Physics Curriculum evaluation), Commission for Higher Education (CHE) – now Commission for University Education (CUE) (2003 – to date).
- (3) Reviewer, *Journal of Materials Science*; *Journal of Photobiology and Photoenergy*, and other local journals.
- (4) Sub-Editor (Physics) and East Africa Region - *African Journal of Science and Technology* (AJST).
- (5) Editor, Kenya National Academy of Sciences (KNAS) 2004, 2005 and 2006 Workshop Proceedings
- (6) Member of the committee that developed the KNAS Strategic plan (2006).
- (7) Reviewer, African Virtual University (AVU) Physics modules (2008 – 2010)
- (8) Proposals Reviewer in **Energy and Industry** thematic area, National Council for Science and Technology (January, 2010).

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