

G. CURRICULUM VITAE

OKONKWO, WILFRED IFEANYI

A. PERSONAL DATA

DATE AND PLACE OF BIRTH: 16th Dec. 1964, Ihioma, Orlu,
NATIONALITY: Nigerian
STATE OF ORIGIN: Imo State
SEX: Male
MARITAL STATUS: Married with children
CONTACT ADDRESS: Department of Agricultural and Bioresources Engineering
University of Nigeria, Nsukka
E-mail: wilfred.okonkwo@unn.edu.ng, Phone: +2348033264401
PERMANENT ADDRESS: Ezinkwo Umuezenachi, Ihioma, Orlu, Imo State

B. EDUCATIONAL QUALIFICATIONS WITH DATES

Professor, Agricultural and Bioresources Engineering, University of Nigeria	2008
Ph.D, Agricultural Engineering, University of Nigeria, Nsukka, Nigeria	2000
M.Eng., Agricultural Engineering, University of Nigeria, Nsukka, Nigeria	1993
National Youth Service Corps	1990
B. Eng. (Second class lower division), University of Agricultural, Makurdi, Benue State, Nigeria	1989
West African School Certificate, Boys High School, Ihtenansa, Imo State	1982

B. EMPLOYMENT RECORDS/LEADERSHIP POSITIONS

- (i) **Professor** **2008 – Date**
Department of Agricultural and Bioresources Engineering
- (ii) **Head of Department** **2013 – 2016**
Responsibilities include administration, teaching and supervision of postgraduate and under graduate students.
- (iii) **Adjunct Professor (2014 – Date):** Department of Agricultural and Environmental Engineering, Rivers State University of Science and Technology, Rivers State, Port Harcourt. Responsibilities include teaching and supervision of graduate and under graduate students. Subjects handle: Farm Electrification (AEN 534, undergraduate course) and Hazardous Waste Management and Risk Assessment (EEN 656, Postgraduate course).
- (iv) **Adjunct Senior Lecturer (2008 – 2014):** Department of Agricultural and Environmental Engineering, Rivers State University of Science and Technology, Rivers State, Port Harcourt. Responsibilities include teaching and supervision of graduate and under graduate students. Subjects handle: Farm Electrification (AEN 534, undergraduate course) and Hazardous Waste Management and Risk Assessment (EEN 656, Postgraduate course).
- (v) **Ag. Head of Department:** **2012 - 2013**
Responsibilities include administration, teaching and supervision of graduate and under graduate students.

- (vi) **Head of Unit: Solar/Geothermal** **2008 - 2012**
National Centre for Energy Research and Development, University of Nigeria, Nsukka.
Responsibilities: Day to day running of the unit, research and development, teaching, administration, supervision of undergraduate and postgraduate works in the Department of Agricultural and Bioresources
- (vii) **Visiting Lecturer (2005 – 2007):** Department of Agricultural and Environmental Engineering, Rivers State University of Science and Technology, Rivers State, Port Harcourt, Nigeria (2006 -2007). Responsibilities include teaching of courses and supervision of students projects.
- (viii) **External Examiner (Renewable Energy Option):** Department of Physics, Federal University of Technology, Akure, Nigeria (2005 – 2007).
- (ix) **Head of Unit: Solar/Geothermal** **2005 – 2006**
National Centre for Energy Research and Development, University of Nigeria, Nsukka.
Responsibilities: Day to day running of the unit, research and development, teaching, administration, supervision of undergraduate and postgraduate works in the Department of Agricultural and Bioresources
- (x) **Senior Research Fellow/Senior Lecturer** **2001 – 2008.**
National Centre for Energy Research and Development, University of Nigeria, Nsukka.
Responsibilities include research and development in renewable and alternative energy sources, teaching and supervision of undergraduate and postgraduate students in the Department of Agricultural and Bioresources Engineering, University of Nigeria, Nsukka.
- (xi) **Research Fellow 1/Lecturer 1** **1998 -2001**
National Centre for Energy Research and Development, University of Nigeria, Nsukka.
Responsibilities: Research and development at the National Centre for Energy Research and Development and teaching in the Department of Agricultural and Bioresources Engineering, University of Nigeria, Nsukka.
- (xii) **Assistant Research Fellow/Assistant Lecturer** **1993 – 1998.**
National Centre for Energy Research and Development, University of Nigeria, Nsukka.
Responsibilities: Teaching, research and development
- (xiii) **Research Assistant** **April 1993 – Nov. 1993**
National Centre for Energy Research and Development, University of Nigeria, Nsukka.
- (xiv) **Finanacial Secretay** **1991 – 1993**
Postgraduate Students Union, University of Nigeria, Nsukka
- (xv) **Vice President** **2009 –2012**
Divine Grace Men’s Fellowship International
- (xvi) **President, Campus Cooperative Farmers Association** **2011 - Date**

D. MEMBERSHIP OF PROFESSIONAL BODIES

- (i) Council for Registered Engineering Regulation of Nigeria (COREN) 2014

(ii)	Acoustical Association of Nigeria	2013
(iii)	Asian-Pacific Chemical, Biological and Environmental Engineering (APCBEES)	2012
(ii)	Renewable and Alternative Energy Society of Nigeria	2013
(iii)	Fellow, Solar Energy Society of Nigeria, (FSESN)	2010
(iv)	International Solar Energy Society (ISES)	2005
(ii)	Nigerian Society of Engineers (NSE)	2000
(iii)	Solar Energy Society of Nigeria (SESN)	1999
(vi)	Nigerian Institution of Agricultural Engineers (NIAE)	1995

E. SHORT COURSES ATTENDED

- (i) Regional Training Course (RTC) on Electric Power System Expansion Planning using Responsibilities include administration, teaching and supervision of graduate and under graduate students.
- (ii) Responsibilities include administration, teaching and supervision of graduate and under graduate students.
- (iii) Responsibilities include administration, teaching and supervision of graduate and under graduate students.
- (iv) Wien Automatic System Planning Package (WASP) organized by International Atomic Energy Agency (IAEA), 30th June – 25th July, 2003, Abuja, Nigeria
- (v) Course on Distributed Laboratory Instrumentation Systems, ICTP, Trieste, Italy, 26 November – 21 December 2001.
- (vi) Courses on Crafting and Evaluation of Tenders and proposals Organized by Nigeria Society of Engineers, Nsukka Branch, University of Nigeria, Nsukka, 16 – 20 June, 1998.
- (vii) 6th International Training course on Solar Energy Application, Gansu Natural Energy research Institute, China, 6 – 30th, August, 1997.

F. ADMINISTRATIVE EXPERIENCES.

Head of Department: Department of Agricultural and Bioresources Engineering, University of Nigeria Nsukka (2013 – 2016)

Ag. Head of Department: Department of Agricultural and Bioresources Engineering, University Nigeria, Nsukka (2012 – 2013)

Head of Unit (Solar/Geothermal): National Centre for Energy Research and Development (NCERD), University of Nigeria, Nsukka (2004 – 2006, 2008 - 20012).

Co-ordinator: National Centre for Energy Research and Development (NCERD) Agric. Farm, University of Nigeria, Nsukka (2008 – 2012).

Co-ordinator: Students' on Industrial Training (IT), National Centre for Energy Research and Development, University of Nigeria, Nsukka, Students' (1999 – 2006).

G. SERVICES TO COMMITTEES, INTERNAL/EXTERNAL APPOINTMENTS

Ga. Internal Appointments Position

- (i) Faculty of Engineering Postgraduate Representative (2016 – Date) Member

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|--------|---|-----------|
| (ii) | Committee on Cassava Processing and Bioethanol Production, University of Nigeria, Nsukka (2016) | Secretary |
| (iii) | Academic Board, Department of Agricultural and Bioresources Engineering, University of Nigeria, Nsukka (2012 to 2016). | Chairman |
| (iv) | University of Nigeria Senate (2012 – Date). | Member |
| (v) | NCERD Committee for Selection of Candidates for written test For the post of Security personel (2009) | Chairman |
| (vi) | Committee on the Nigerian Universities Research and Development fair, University of Nigeria, Nsukka (2009) | Member |
| (vii) | National Centre for Energy Research and Development Agric Land Development, University of Nigeria (2008 – 2012) | Chairman |
| (viii) | Committe on Project Implementation and Monitoring, NCERD, University of Nigeria, Nsukka, (February 2008 – 2012). | Chairman |
| (ix) | Committee on Consultancy Services, NCERD (2008) | Member |
| (x) | Philosophy of Doctorial (Ph.D) Degree Committee, A. A. Satimehim, Agric. and Bioresources Engineering, University of Nigeria, Nsukka (2006 – 2008) | Member |
| (x) | Small & Medium Enterprises Development Agency, National Centre for Energy Research and Development, Universit of Nigeria, Nsukka (2006) | Chairman |
| (xi) | Project Implementation Committee, National Centre for Energy Research and Development, University of Nigeria, Nsukka (2005) | Chairman |
| (xii) | Library Development Committee, National Centre for Energy Research and Development, University of Nigeria, Nsukka (2005) | Member |
| (xiii) | University of Nigeria Senate Research Grant Committee (2004 – 2007) | Member |

Gb. External Appointments

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|-------|--|-------------------|
| (xv) | Committee for the Development of the ECN-NYSC Renewable Energy Project training Manual, Energy Commission of Nigeria (2009). | Member |
| (xvi) | National Committee on National Energy Master Plan, Energy Utilization Sub-Committee (2005 – 2007) | Assist. Secretary |

H. ORGANIZATIONAL SERVICES

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|-------|--|--|
| (i) | Journal of Acoustical Association of Nigeria | <u>POST HELD</u>
Editor-in-Chief |
| (ii) | Nigerian Institution of Agricultural Engineers South-East Region (2011 – Date) | Technical Secretary |
| (iii) | Solar Energy Society of Nigeria (2006 – 2011) | Public Relation Officer |

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|------|---|-------------------------------|
| (iv) | Solar Energy Society of Nigeria (2003 – 2006) | Assistant Secretary |
| (v) | Solar Energy Society of Nigeria (2000 – 2003) | Assistant Technical Secretary |

I. AREAS OF RESEARCH INTEREST

AREAS OF RESEARCH INTERESTS

- (i) Solar Energy Application/technologies
- (ii) Biomass/Biogas Production
- (iii) Structures and Environmental Engineering/Climate
- (iv) Food and Bioprocess Engineering

J. EXPERIENCES IN RESEARCH, DEVELOPMENT AND CONSULTANCY SERVICES

- (i) **USAID National Consultant:** Alternative Energy Policy Draft for Cross River State, Nigeria (2009)
- (ii) Pioneered research into the use of solar energy for poultry egg incubation (hatching of eggs), funded by the National Centre for Energy Research and Development, University of Nigeria, Nsukka (2009)
- (iii) Design and Construction of NCERD Commercial Solar Energy Crop Dryer (2008)
- (iv) **UNIDO National Consultant:** Ebonyi State Solar Energy Salt Extraction from Okposi and Uburu Lake Waters (2005).
- (v) Design and Construction of Solar Desalination System for Salt Production for Ebonyi State Come Cooperative Society (2005)
- (vi) Design and Construction of the NCERD Trombe Wall 2000 birds capacity solar pultry chick brooder (2004)
- (vii) Design and Construction of the Eziani Commercial Solar Energy Powered Trombe Wall Poultry Farm, Eziani, Nsukka L.G.A. Enugu State (2002)
- (viii) Design, Construction and Performance Evaluation of 150 capacity Trombe Wall Poultry Chick Brooding System at NCERD, UNN, Ph.D Research work (2000).
- (ix) Construction of Prototypes of Passive Solar Energy Poultry Chick Brooding Systems for Commercial Trials in Enugu State, Nigeria, funded by the United Nations Educational, Scientific and Cultural Organization (UNESCO) under the University Industrial – Science Partnership (UNISPAR) programme (2000)
- (x) Pioneered research into the utilization of solar energy for poultry chick brooding, funded by the National Centre for Energy Research and Development, and the University of Nigeria Senate Research Grant, University of Nigeria, Nsukka (1993)

K. POSTGRADUATE SUPERVISION STATUS

Has supervised many postgraduate students' Theses Many Completed & on going

L. AWARDS AND PRIZES

- (i) Award of Financial Assistance/Grant on Invention and Innovation – Solar Brooding System (external),
Presidential Standing Committee on Inventions and Innovation (2011).
- (ii) Fellow, Solar Energy Society of Nigeria (2010)
- (iii) Optimization of a passive solar energy poultry chick brooder (Internal)
Senate research grant No. 94/144.
- (iv) Solar poultry chick brooding (external)
UNISPAR grant 1999.
- (v) Solar Brooding, Excellent Contribution in Science and Technology, National Universities Fair, 2005, Organized by the National Universities Commission (NUC).

M. PUBLICATIONS

Ma. Journal Articles

1. **Okonkwo W. I.** (2016). Nigeria Should Embark on Climate Smart Agriculture Now. The Nigerian Guardian, pp 51 10th January 2016.
2. Owo I. P; **Okonkwo W. I.** and Nwoke O. O. (2015). Development and Testing of a Prototype Parabolic Trough Solar Collector for Steam Generation at Nsukka, South East, Nigeria.
3. **Okonkwo W. I.**; E. A. Echiegu; J. N. Ogbuisi and T. J. Liberty (2015). Characterization of a Fibre reinforced Concentrated Solar Cooker, International Journal of Innovation and Applied Studies, Pp 1058 – 1064.
4. Chukwuma E. C. and **Okonkwo W. I.** (2013). Kinetic Assessment of Biogas Production of Co-Digestion of Cattle Paunch Manure With Cow Dung, J. Agric. Engineering and Technology (JAET), Vol. 21 (No 1) June 2013.
5. Liberty J. T; **Okonkwo W. I.** and Echiegu E. A. (3013). Evaporative Cooling: A Postharvest Technology for Fruits and Vegetables Preservation, International Journal of Scientific and Engineering Research, Vol. 4, Issue 8, August 2013.
6. Obi, O. F; Akubuo, C. O. and **Okonkwo, W. I.** (2013). Development of an Appropriate Briquetting Machine for Use in Rural Communities, International Journal of Engineering and Advanced Technology (IJEAT), Vol. 2(4), pp. 2249 – 8958.
7. **Okonkwo W. I.**, Uzodinma E. O. and Ojike O. (2012). Performance Evaluation of a Hybrid Solar Dryer using Drying Characteristics of COD Fish (*Gadus Morhua*), Nig. Journal of Solar Energy , Vol. 23, 2012, pp. 17 – 22.
8. P. N. nwsu, O. U. Oparaku, **W. I. Okonkwo**, G. O. Unachukwu and D. Agbiogwu (2011). Experimental Study of a Thermosyphon Solar water Heater Coupled to a Fibre-Reinforced Plastic (FRP) Storage Tank, Applied Solar Energy, Vol. 47. No. 3. Pp. 207 – 212.
9. Nwoke O. O; Ojike O, Onwualu A. P. and **Okonkwo W. I.** (2011). Development and

Evaluation of a Solar Powered Rice Packaging Machine, *Agricultural Engineering International: CIGR Journal*, No. 1646. Vol. 13, No. 1, 2011.

10. Ojike O, Nwoke O. O. and **Okonkwo W. I.** (2011). Influence of Different Solar Drying Systems on the Vitamin Content of Pawpaw, *Austrian Journal of Agricultural Engineering*, pp. 8 – 11.
11. Ikejiofor M. C. and Okonkwo W. I. (2010). Design and Development of an active solar dryer with adjustable air flow rates for agricultural products, *J. Agricultural Engineering Technology (JAET)*, Vol. 18 No. 2, Pp 70 – 76.
12. **Okonkwo W. I.**, O. U. Oparaku and P.N. Nwosu (2010). Mathematical Modeling of a Trombe Wall System for Poultry Brooding Application in the Tropics (with Sub-Saharan Climate), in press, *Solar Energy*.
13. Agunwamba J. C, Utsev J. T. And **Okonkwo W. I.** (2009). Solar Enhanced Wastewater Treatment in Waste Stabilization Ponds, *Water Environment Research*, Vol. 81. No. 5, pp 540 - 545
14. Nwosu P. N. and **Okonkwo W. I.** (2008). Effect of an Absorptive Coating on Solar Energy Storage in a Trombe Wall System, *Energy and Buildings*, Vol. 40 (3)Pp. 371 - 374.
15. Anyawu C. N. and **Okonkwo W. I.** (2008). Experimental Determination of the Drying Rate of Yellow Pepper (*Capsicum annum*), *Nig. J. Solar Energy*, Vol. 19. No.1. Pp. 18 - 24.
16. Nwoke O. O, **Okonkwo W. I.** and O. U. Oparaku (2008). Solar Energy Use in Nigeria: Constraints and Possible Solutions, *Nig. J. Solar Energy*, Pp. 90 – 93.
17. **Okonkwo W. I.** and Nwoke O. O. (2008). Family Size Green House Solar Energy Crop Dryer, *Nig. J. Solar Energy*, Vol. 19 No.2 pp 6 – 10.
18. **Okonkwo W. I.** and C. O. Akubuo (2007). Trombe Wall System for Poultry Brooding, *International Journal of Poultry Science*, 6 (2), pp. 125 - 130.
19. Falayi E. O; Rabiou A. B. and **Okonkwo W. I.** (2006). Relationship Between Global Solar Radiation and Surface Temperature in the Tropics, *Journal of Research in Physical Sciences*, Vol. 2. pp. 59 – 63.
20. Oparaku N. F and **Okonkwo W. I.** (2006). Comparative Studies of Kerosene Stove and Sawdust Stoves, *Nigerian Journal of Solar Energy*, Vol. 16, pp. 54 – 60
21. Nwoke O. O. and **Okonkwo W. I.** (2006). Biogas Technology: A Sustainable Energy and Waste Management Option for Rural Development in Nigeria, *Nigerian Journal of Solar Energy*, Vol. 16, pp. 195 – 199
22. **Okonkwo W. I.** and E. C. Okoye (2005). Integrated Pebble Bed Passive Solar Energy Storage Crop Dryer, *Nigerian Journal of Technology* Vol. 2, Pp. 67 – 73.
23. **Okonkwo W. I.** (2004). Thermosyphon Solar Energy Egg Incubator for Tropical Countries, *Journal of Agricultural Engineering and Technology* Vol. 12

24. **Okonkwo W. I.** and S. N. Ukachukwu (2004). Effects of Passive Solar, Electric and Kerosene Brooding Systems on the Performance of Broiler Chickens, *Journal of Sustainable Agriculture and the Environment*, Vol. 6. No. 1, pp. 1- 6.
25. **Okonkwo W. I.** and A. P. Onwualu (2002). Design, Construction and evaluation of a Pyranometer for Solar Radiation measurement, *Journal of Pure and Sciences*, pp 234 -340 Vol. 5. No.2.
26. **Okonkwo W. I.** (2003). Attainment of Sustainable Electricity Supply in Nigeria: The Photovoltaic (PV) Option, *Journal of Science and Technology Research*; pp. 74 - 79.
27. **Okonkwo W. I.** and C. O. Akubuo (2001). Thermal Analysis and Evaluation of Heat Requirement of a Passive Solar Energy Poultry Chick Brooder, *Nigeria Journal of Renewable Energy*, Vol. 9, Nos. 1 & 2. pp.83 – 87.
28. **Okonkwo W. I.** and A. P. Onwualu (2000). Utilization of biogas Fuel in Internal Combustion Engine System, *Nigerian Journal of Renewable Energy* Vol. 8. No. 1 & 2 pp. 83 – 88.
29. **Okonkwo W. I.**, C. O. Akubuo and P. Mageswaran (1999). Development and Evaluation of a Concentrating Solar Cooker under Nsukka Climate, *J. Agricultural Engineering and Technology*, Vol. 7. Pp. 29 - 35
30. **Okonkwo W. I.** (1998). Energy for Sustainable Environment and Economic Growth, *Bullion*, Publication of Central bank of Nigeria, Oct./Dec. Edition 1998. Vol. 22. No. 4. Pp. 44 – 49.
31. **Okonkwo W. I.**; O. C. Iloeje, E. A. Echiegu and C. O. Akubuo (1993). Performance evaluation of a medium Scale Passive Solar energy Heated chick Brooder, *Nigerian Journal of Solar Energy*, Vol. 12. Pp. 51 – 60.
32. **Okonkwo W. I.**; U. G. N. Anazodo, , E. A. Echiegu, O. C. Iloeje and C. O. Akubuo (1992). The passive Solar energy Chick Brooder: Further Improvement and preliminary testing. *Nigeria Journal of Solar energy*, Vol. 11. Pp.32 – 40.

Mb. Conference Papers Refereed and Published

33. **W. I. Okonwo (2016).** Agricultural Reform: A panacea for Diversification of Nigeria Economy, A Pre-Convocation Lecture in Commemoration of the Kaduna Polytechnic 32nd Combined and Diamond Jubilee Ceremonies, at Kaduna polytechnic. Kaduna, 22nd July, 2016
34. Nwaoga J. A; Okonkwo W. I. and G. O. Unachukwu (2011). Exploring the Photo Sensitivities of *Mimosa Pudica* for Solar Cell Production, paper presented at 26th European Photovoltaic Solar Energy Conference and Exhibition, Hamburg, Germany, 5 – 9 September, 2011, pp 406 – 410.
35. Okonkwo W. I. (2010). Photovoltaic Technology in Agricultural Production: Nigeria, Workshop Proc; ISTIC-TWAS Workshop on Innovation in Science and technology for Developing Countries in the South, Penang, Malaysia, 6 – 7 September, 2010 pp. 171 – 175.eptember, 2011.
36. Ojike O, Nwoko O. O. and **Okonkwo W. I.** (2010). Comparative Evaluation of Passive Solar Dryers Using the Drying Rate Constants of Tomato as a Case Study, *Proceedings*

First World Congress on Research and Development, University of Port Harcourt, Rivers State, Nigeria, February 9 – 12, 2010, pp. 34 – 40.

37. Ojike O, Nwoke O. O. And **Okonkwo W. I.** (2009). Comparative Evaluation of Drying Efficiency of Passive Solar Dryers Using the Drying Rate Constants of Yellow Pepper and Okro as a case study, Proceedings Solar Energy Society of Nigeria, Makurdi, 2 – 5 December 2009.
38. **Okonkwo W. I.**, Oparaku O. U. And Chukwuezie O. C. (2009). Design, Construction and Characterization of a Photovoltaic Powered poultry Egg Incubator, Accepted for presentation and publication, Proceedings, Engineering Congress on Alternative Energy Applications, 2 – 6 November, 2009, Kuwait.
39. Nwagugu N. I. And **Okonkwo W. I.** (2009). Experimental Determination of Compressive Strength of Sweet Cassava (*Manihot Esculanta*), Proceedings of 3rd West African Society for Agricultural Engineering and 9th Nigeria Institution of Agricultural Engineers International Conference, Obafemi Awolowo University, Ile-Ife, Nigeria, January, 25 – 29th, 2009, pp. 192 – 196.
40. Michael Chendo, **Okonkwo W. I.** and A. B. Rabi (2008). Performance Characteristics of a Salt Recovery Solar Desalination Plant, Proceedings, World Renewable Energy Congress-X, Glasgow, Scotland, 19 -25 August 2008, pp. 1849 – 1852.
41. G. I. Okonkwo and W. I. Okonkwo (2008). Applications of Solar Energy Water Heating In Agriculture, Proceedings, 1st Annual Nigerian Institute of Agricultural Engineers South-East Regional Conference, Namdi Azikiwe University, Awka, Anambara State, Aug. 2008. Pp 152 – 161.
42. **Okonkwo W. I.** and C. J. Ohagwu (2008). Design, Construction and Performance Evaluation of a Batch Type Biogas Digester in Nsukka, Nigeria, Conf. Proc. the 6th International Conference and 29th Annual General Meeting of the Nigerian Institute of Agricultural Engineers, Vol. 29, Pp. 445 – 451; 28th January – 1st February 2008, Adamawa State Polythnic, Yola.
43. Anyawu C. N, N. O. Nwoko, **Okonkwo W. I.**, S. I. Eze and O. U. Oparaku (2007). Design, Construction and Performance Testing of an Active Solar Crop Dryer, Proc. The 37th Annual Conference of the Nigerian Society of Chemical Engineers, Enugu, 22 – 24 Nov. 2007, pp 1 – 9.
44. **Okonkwo W. I.**, O. O. Nwoke, J. T. Thomas and M. A. Chendo (2007). Techno-Economic Impact of Solar Crystallization of Salt Production, Proc. International Workshop on Renewable Energy for Sustainable Development in Africa (IWRESDA), National Centre for Energy Research and Development, University of Nigeria, Nsukka, 30th July – 1st August 2007, pp. 116 – 124.
45. **Okonkwo W. I.** (2007). Solar Heating for Sustainable Poultry Production, Proc. International Workshop on Renewable Energy for Sustainable Development in Africa (IWRESDA), National Centre for Energy Research and Development, University of Nigeria, Nsukka, 30th July – 1st August 2007, pp. 125 - 130.
46. **Okonkwo W. I.** (2005). Passive Solar Heating for Poultry Chick Brooding in Nigeria, workshop paper, Physics for Renewable Energy, The Abdus Salam International Center for Theoretical Physics, Trieste, Italy, 17 – 29 October, 2005.

47. Onuoha N. R. and **Okonkwo W. I.** (2005). Renewable Energy for sustainable Rural Livelihood in Nigeria. Proceedings of the Nigerian Institution of Agricultural Engineers, Yenagoa, 12 – 15 December, 2005.
48. **Okonkwo W. I.** and C. N. Anyawu (2004). NCERD Basin-type Passive Solar Still: Design, Construction and Performance Evaluation, Proc. The 5th International Conference and 26th Annual General Meeting of the Nigerian Institute of Agricultural Engineers, Vol. 26, Pp. 445 – 451; 2 – 6 December 2004, University of Ilorine, Nigeria.
49. **Okonkwo W. I.** and Agunwamba J. C. (1997). Socio-Economic Impact of Solar Energy Brooding System. Conf. Proc. 3rd International Conf. On Power Systems Operation and planning, Abidjan, Cote D’Ivoire, 13 – 17th Jan. 1997.

Mc **BOOKS/CHAPTERS IN A BOOK**

50. **Okonkwo W. I.** (1998). Solar Chick Brooding, Rural Renewable Energy Needs and Five Supply Technologies, Energy Commission of Nigeria (Federal Ministry of Science and Technology, pp. 61 – 71.

Md **TECHNICAL REPORTS**

51. Final Draft, Alternative Energy Policy for Cross River State. Report submitted to the United State Agency for International Development (USAID), 2009.
52. Social and Techno-Economic Aspect of Introducing Solar Crystallization Process to the Salt Manufacturing Communities of Uburu and Okposi Salt Lake, Eboyi State, Nigeria. Report submitted to the United Nations Industrial Development Organization (UNIDO), 2005.
53. Solar Energy Chick Brooding for Commercial Trials in Enugu State. Report submitted to the United Nation Educational, Scientific and Cultural Organization (UNESCO), 1999.

N. **CONFERENCES AND WORKSHOPS ATTENDED**

- (i) International Conference on Sound, Politic and Environment organized by the Acoustical Society of Nigeria, University of Nigeria, Nsukka, 8 – 11 June, 2015.
- (ii) National Solar Energy Forum and Exhibition organized by Solar Energy Society of Nigeria, paper read, Noise Pollution in Agricultural Mechanization in Farm Operations and the Environment Abuja, 6 – 7th May, 2015.
- (iii) A 2-Day National Training Workshop on Application of Renewable Energy Devices and Climate Change Mitigation for Rural Women, Farmers and Amnesty Youths within the Niger Delta States, Precious Palm Royal Hotel, Ugbowo, Benin City, Edo State, Organized by Energy Commission of Nigeria, UNESCO and Edo State Government: Paper read: Domestic Application of Photovoltaic Technologies for Sustainable Development, 9 – 10 March, 2011.
- (iv) International Workshop on Renewable Energy for Sustainable Development in Africa, National Centre for energy Research and Development, University of Nigeria, Nsukka, 27th - 29th July, 2010. Paper read, Kinetic Processes of Biogas Production in Biodigesters

- (v) A 3-Day National Seminar on Strategic Management for Engineers and Allied Professionals organized The Nigerian Society of Engineers in Association Helbon Associates Ltd, Abuja, 28 – 30 June, 2010, Abuja.
- (vi) Resource person, Training Workshop for youths on alternative and renewable energy Technologies organized by Small and Medium Scale Enterprises Development Agency of Nigeria (SMEDAN), Lagos, 17 – 22 May, 2010. Paper read, Solar Water Heating System.
- (vi) Resource person, Staff Training Programme of the National Centre for Energy Research and Development (NCERD), University of Nigeria, Nsukka, organized by NCERD, UNN, 11 – 25th February, 2010, Nsukka, Paper read, Solar Energy Brooding Technology.
- (vii) Executive Workshop on Development and Management of Industrial Projects in the Rural Areas for Accelerated Socio-Economic Transformation organized by National Centre for Technology Management (NACETEM), South-South Office, Bayelsa State. At International Management and Finance Institute (IMFI), Uyo, Akwa Ibom State, 2 – 3 December, 2009.
- (viii) National Solar Energy Forum (NASEF’ 2009) and Annual Conference organized by the Solar Energy Society of Nigeria, Makurdi, 2 - 5 December, 2009. Paper read, Comparative Evaluation of Drying Efficiency of Passive Solar Dryers Using the Drying Rate Constants of Yellow Pepper and Okro as a case study
- (ix) World Federation of Engineering Organization Assembly Meetings and Engineering Congress on Alternative Energy Applications: Options or Necessity? Organized by the Kuwait Society of Engineers, Kuwait, 1 – 6 November, 2009. Paper read, Design. Construction and Characterization of a Photovoltaic Powered poultry Egg Incubator
- (x) FUTO International Conference on Renewable and Alternative Energy, organized by FUTO Alternative Energy Group, Federal University of Technology, Owerri, March 29th – 2nd April, 2009. Paper read, Solar Desalination of Lake Water.
- (xi) “Securing Electricity and The Economic Future of our Rural Communities”, Sensitization workshop on Alternative Energy organized by United States Agency for International Development (USAID), Calabar, Cross River State, 21st April, 2009. Papers read Creating Demand and Removing Barriers for Alternative Energy Development and Renewable Energy Policy and Institutional Framework.
- (xii) “Securing Electricity and The Economic Future of our Rural Communities”, Sensitization workshop on Alternative Energy organized by United States Agency for International Development (USAID), Abakiliki, Ebonyi State, 23rd April, 2009. Papers read Creating Demand and Removing Barriers for Alternative Energy Development and Renewable Energy Policy and Institutional Framework.
- (xiii) National Solar Energy Forum (NASEF’ 2008) and Annual Conference/Seminar organized by Solar Energy Society of Nigeria, University ibadan, ibadan, 5 -6 November, 2008. Paper read, Applications of Solar Thermal Energy in Agriculture.
- (xiv) World Renewable Energy Congress-X, Glasgow, Scotl, UK, 19 – 26th August, 2008. Paper read, Performance Characteristics of a Salt Recovery Solar Desalination Plant

- (xv) 6th International Conference and 29th AGM of the Nigerian Institution of Agricultural Engineers, Adamawa Polythnic, Yola, Adamawa State, 28th January – 1st February, 2008, Paper read, Design, Construction and Performance Evaluation of a Batch Type Biogas Digester.
- (xvi) The 2007 National Energy Forum (NASEF'07) and Conference organized by the Solar Energy Society of Nigeria, Rockview Hotel, Abuja, 28 – 29th November, 2007. Paper read, Design, Construction and Characterization of a Photovoltaic Powered Poultry Egg Incubator.
- (xvii) International Workshop on Renewable Energy for Sustainable Development in Africa, National Centre for energy Research and Development, University of Nigeria, Nsukka, 29th July – 1st August, 2007. Paper read, Techno-Economic Importance of Solar Crystallization Process of Salt Production.
- (xviii) National Solar Energy Forum 2006 (NASEF' 06) Annual Conference organized by Solar Energy Society of Nnamdi Azikiwe University, Awka, 6th – 9th December, 2006. Paper read, Family size Green House Solar Energy Crop Dryer, and Solar Desalination system for Salt extraction.
- (xix) 6th International Conference and 27th Annual General Meeting of the Nigeria Institution of Agricultural Engineers, Yenagoa, 12 – 15 December, 2006. Paper read, Renewable Energy for sustainable Rural Livelihood in Nigeria. Proceedings of the Nigerian Institution of Agricultural Engineers, Yenagoa,
- (xx) National Solar Energy Forum 2005 (NASEF' 05) Annual Conference organized by Solar Energy Society of University of Benin, 4 – 7 December, 2005. Paper read, Trombe Wall Surface Area Size for Poultry Brooding House.
- (xxi) The 5th International Conference and 26th Annual General Meeting of the Nigerian Institute of Agricultural Engineers, 2 – 6 December 2004, University of Ilorine, Nigeria. Paper read, NCERD Basin-type Passive Solar Still: Design, Construction and Performance Evaluation.
- (xxii) National Solar Energy Forum 2003 (NASEF' 03) and 23rd Annual Conference organized by Solar Energy Society of Nigeria, University of Nigeria, Nsukka, 3rd – 6th December, 2003. Paper read, Solar Energy Poultry Chick Brooding Technology: A Survey of Poultry Farms in Enugu State.
- (xxiii) National Solar Energy Forum 2001 (NASEF' 2001) and Annual Conference organized by Solar Energy Society of Nigeria, Obafemi Awolowo University, Ile-Ife, 22 – 25 November, 2001. Paper read, Utilization of Biogas Fuel in Internal Combustion Engine System.
- (xxiv) The International Conference and Annual General Meeting, Enugu 2001 of the Nigerian Institute of Agricultural Engineers, 10 – 14 September, 2001. Papers read, Thermal Analysis and Evaluation of Heat Requirement of a Passive Solar Energy Poultry Chick Brooder, and Design, Development and Evaluation of a Concentrating Solar Cooker under Nsukka Climate.
- (xxv) International Workshop, Exhibition/Training Programme organized by the Association for Popularization of Solar Energy for Domestic and Industrial Use, Imo State University, Owerri, 27 – 30 August 2001. Paper read, Application of Solar Energy in Poultry Brooding Technology.

- (xxvi) Sharjah International Solar Energy Conference and Regional World Renewable Energy Congress, University of Sharjah, United Arab Emirates, 19 – 22 Feb. 2001. Paper read, Trombe Wall System as a Sources of Energy for Poultry Brooding
- (xxvii) National Solar Energy Forum NASEF'2000 and Conference, organized by the Solar Energy Society of Nigeria, Usmanu Danfodiyo University, 19th – 21st October, 2000. Paper read, Comparative Effects of Passive Solar, Electric and Kerosene Systems on Performance of broiler Chicks.
- (xxviii) National Solar Energy Forum 1999 (NASEF' 99) and Annual Conference organized by Solar Energy Society of Nigeria, University of Ilorin, Kwara State, 24th – 27th November, 1999. Paper read, Design, Construction and evaluation of a Pyranometer for Solar Radiation measurement.
- (xxix) National Solar Energy Forum 1998 (NASEF' 98) and 15th Annual Conference organized by Solar Energy Society of Nigeria, University of Port Harcourt, 15th – 18th September, 1998. Paper read, Prospects of Design, Construction and evaluation of a Pyranometer for Solar Radiation measurement.
- (xxx) International Solar Energy Applications and Training Workshop, Gansu Natural Energy Research Institute, China, 6 August – 4 September, 1997. Paper read, Current Energy status and Prospects of Solar Energy Applications in Nigeria.
- (xxxi) 3rd International Conf. On Power Systems Operation and planning, Abidjan, Cote D'Voire, 13 – 17th Jan. 1997. Paper read, Socio-Economic Impact of Solar Energy Brooding System.
- (xxxii) International Conference on Implementation of Alternative and Renewable Energy Technologies, Energy Centre, University of Nigeria, Nsukka, Dec. 4 – 8, 1995. Paper read, Wastewater Treatment by Accelerated Solar Radiation: Economy and Efficiency.
- (xxxiii) International Solar Energy Application Training Workshop, Gansu Natural Energy Research Institute, China, 16 August – 10 September, 1995. Paper read, Energy for Sustainable Environment and Economic Growth
- (xxxiv) National Solar Energy Forum 1993 (NASEF' 93) and Annual Conference organized by Solar Energy Society of Nigeria, Zaranda Hotel, Buachi, buachi State. Paper read, Performance evaluation of a medium Scale Passive Solar energy Heated chick Brooder.
- (xxvi) National Solar Energy Forum 1992 (NASEF' 92) and Annual Conference organized by Solar Energy Society of Nigeria, Energy Centre, University of Nigeria, Nsukka, September 1992. Paper read, The passive Solar energy Chick Brooder: Further Improvement and preliminary testing.

O. REFEREES:

- (i) Prof. S. O. Enibe
Dean,
Faculty of Engineering
University of Nigeria, Nsukka.
Sam.enibe@unn.edu.ng.
- (ii) Prof. J. C. Agunwamba
Department of Civil Engineering
Faculty of Engineering
University of Nigeria, Nsukka.
Jona.agunwamba@unn.edu.ng

- (ii) Prof. C. O. Akubuo
Department of Agricultural & Bioresources Engineering
Faculty of Engineering
University of Nigeria, Nsukka.