

CURRICULUM VITAE



A. PERSONAL DATA

Name: Chigbo Aghaegbusi Mgbemene
Sex: Male
Home Town: Ajalli, Orumba North L. G. A
State of Origin: Anambra
Nationality: Nigerian
Date of Birth: May 30, 1969
Place of Birth: Ajalli
Marital Status: Married (with 2 children)

Contact Address: Department Mechanical Engineering
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Languages Spoken and Written: Igbo (Mother tongue) and English (Fluently)

B. INSTITUTIONS ATTENDED

1. Premier Primary School, Onitsha 1975-1980
2. Bishop Crowther Junior Seminary, Awka 1980-1983
3. Archdeacon Dennis Junior Seminary, Mbieri 1983-1986
4. University of Nigeria, Nsukka 1986-1991, 1998-2002, 2005- Jan.2011
5. Nigerian Institute of Safety Professionals,
General Health, Safety and Environment Course Feb. 1993
6. University of Massachusetts, Lowell MA, USA Sept. 2006-June 2007
7. Bern University of Applied Sciences, Burgdorf, Switzerland Oct. - Dec. 2010
8. Newcastle University, Newcastle-upon- Tyne, UK Feb – May 2011
9. Massachusetts Institute of Technology, Cambridge MA, USA Feb – May 2014

C. ACADEMIC QUALIFICATIONS

1. West African School Certificate (Ordinary Level 1986)
2. Bachelor of Engineering in Mechanical Engineering (Second Class Honours Lower Division 1991)

3. Master of Engineering in Mechanical Engineering (2002)
4. PhD in Mechanical Engineering (Jan. 2011)
5. Postgraduate Certificate in Advanced Studies in Academic Practice (2012)
6. MIT Certificate of Completion of Teaching Certificate Programme (2014)

D. DIPLOMAS AND PROFESSIONAL QUALIFICATIONS

1. Certificate of National Service (NYSC 1992)
2. Nigerian Institute of Safety Professionals Certificate (1993)
3. Member, Nigerian Society of Engineers (2005)
4. Member, Nigerian Institute of Mechanical Engineers (2006)
5. Registered Member COREN (2006)
6. J.FULBRIGHT Scholar (2006)
7. Member, American Society of Mechanical Engineers (2006)
8. Member, Northeast Sustainable Energy Association USA (2007)
9. Member, National Aeronautics Research Association of Nigeria (2007)
10. Member, Solar Energy Society of Nigeria (2010)
11. Member, Environmental Division Nigerian Society of Engineers (2011)
12. Fellow of Higher Education Academy UK (2013)
13. MIT ETT Fellow (2014)

E. WORK EXPERIENCE

1. EMPLOYER: Premier Breweries PLC, Onitsha, Anambra State
 POSITION HELD: Industrial Attachee with the Engineering Department (1989).
 WORK DESCRIPTION: Repair and maintenance of compressors, pumps, boilers etc.
 2. EMPLOYER: Ebunso (Nig) Limited, Nnewi, Anambra State
 POSITION HELD: Industrial Attachee (1990)
 WORK DESCRIPTION: Design and fabrication of machines.
 3. EMPLOYER: Nigeria Breweries PLC, Kaduna, Kaduna State
 POSITION HELD: N.Y.S.C. with the Engineering Department (1991-1992)
 WORK DESCRIPTION: Repair and maintenance of boilers, condensers, heat exchangers, compressors, etc.
 4. EMPLOYER: Premier Breweries PLC, Onitsha, Anambra State
 POSITION HELD: Senior Supervisor (Mechanical) (1992-1993)
 WORK DESCRIPTION: Repair and maintenance of boilers, condensers, heat exchangers, compressors, etc.
 5. EMPLOYER: Anambra State Primary Education Board, Awka
 POSITION HELD: Contractor (1994-1998)
 WORK DESCRIPTION: Construction and rehabilitation of buildings.
- PRESENT EMPLOYER: University of Nigeria, Nsukka, Enugu State**
POSITION HELD: Senior Lecturer
WORK DESCRIPTION: Researching and teaching.

F. COURSES TAUGHT

MEC 351	Mechanics of Fluids I (3 rd Year Level)
MEC 451	Applied Fluid Mechanics (4 th Year Level)
MEC 569	Basic Principles of Energy Conversion (5 th Year Level)
MEC 605	Direct Energy Conversion (Postgraduate Level)
PGC 601	Research Methodology and Application of ICT in Research (Postgraduate Level)
PGC 701	Synopsis and Grant Writing (Postgraduate Level)

Supervisor for Master's and Ph.D candidates.

G. RESEARCH WORKS/PROJECTS EXECUTED

1. Design and fabrication of a simple grinder, (November, 1990)
2. The design and systems analysis of robot manipulator arm, (1991)
3. The improvement of quality of cooling obtained from a cooling tower, (December 1991- January 1992)
4. Design and fabrication of a shell and tube heat exchanger, (March 1992)
5. Design and construction of an airplane model, (1992-1995)
6. Design and fabrication of a model of a compressor unit of a gas turbine plant, (1993)
7. Construction of a 3-classroom block at Ndikelionwu, Anambra State for the Anambra State Primary Education Board, Awka, (1997)
8. Rehabilitation of Ibolo Central School, Oraifite, Anambra State for the National Primary Education Commission, Kaduna, (December 1997-March 1998)
9. Supervision of the construction of a wooden model of a life-size business-jet airplane (mid-section) and half life-size of the wing section (1999)
10. A research into the effect of the blade curvature in the failure of gas turbine blades (1998-2002)
11. Design and fabrication of a thermal pest control module using waste steam (2004)
12. Reconstruction of a solar powered airplane (University of Massachusetts, Lowell, MA, USA, 2007)
13. Electricity Generation from a Compound Parabolic Concentrator coupled to a Thermoelectric Module (University of Massachusetts, Lowell, MA, USA, 2007)
14. The use of agricultural waste products (maize cobs, rice husks and groundnut shells) in the production of building panels (Bern University of Applied Sciences, Switzerland, 2010)
15. Design and fabrication of soda can solar air heating systems (2014).

H. CONFERENCES, WORKSHOPS AND SYMPOSIA ATTENDED

Conferences attended, date and place	Papers read
1. Standard Organization of Nigeria Workshop on Automotive Cable (July 2004), Enugu.	Specifications for Autocontrol Cable
2. International Conference of the Nigerian Society of Engineers, (6 th – 8 th December 2005), Kano, Nigeria.	Participant
3. Fulbright Forum: International Perspectives on Contemporary Global Challenges, (10 th March 2007), John F. Kennedy School of Governance, Harvard	Renewable energy: Solar Hydrogen Production

University Cambridge MA, USA.	
4. Northeast Sustainable Energy Association, Building Energy Conference, (13 th - 15 th March 2007), World Trade Centre Boston MA, USA.	Participant
5. Council for the Regulation of Engineering in Nigeria (COREN) 16 th Engineering Assembly, (28 th – 29 th August 2007), International Conference Centre Abuja.	Participant
6. National Conference of the National Aeronautics Research Association of Nigeria in conjunction with the Federal University of Technology Owerri, (15 th – 16 th November 2007), Owerri, Nigeria.	Participant
7. American Society of Mechanical Engineers (ASME) 2 ND International Conference on Energy Sustainability ES 2008, (10 th – 14 th August 2008), Jacksonville Florida, USA.	Electricity Generation from a Compound Parabolic Concentrator Coupled to a Thermoelectric Module.
8. Two day National Symposium on Nuclear Research and Development, (1 st – 2 nd September 2008), University of Nigeria, Nsukka.	Participant
9. The Nigerian Society of Engineers’ National Engineering Conference and Annual General Meeting, (24 th – 28 th Nov. 2008), Bauchi, Nigeria.	Participant
10. Interactive Workshop on the Use of Agricultural Waste Product as Building Materials, (17 th November 2010), Berner Fachhochschule Architektur, Holz und Bau Biel, Switzerland.	The Use of Agricultural Waste Products in the Production of Building Materials
11. One day Symposium on Heat Recovery, (7 th April, 2011) Energy Institute North Eastern Branch, Gateshead, Tyne and Wear, UK.	Participant
12. Italic 6 - Science & Technology of Biomasses: Advances and Challenges (5 th – 8 th September 2011), Tuscia University, Viterbo, Italy.	Nigerian Agricultural Waste Products for the Production of Particleboard.
13. Fulbright Alumni Association of Nigeria 10 th Anniversary Conference, (12 th – 15 th September 2011), University of Ibadan, Ibadan.	1. The Effects of Industrialization on Climate Change 2. Alternative Energy Source a way to go in the Reduction of Climate Change Causing Agents
14. National Engineering Conference of the Nigerian Society of Engineers “Canaan 2011,”(5 th – 9 th December 2011), Tinapa Calabar, Nigeria.	Participant
15. Service Improvement Training Workshop for Evaluated Federal Universities, (6 th – 9 th March 2012),	Participant

SERVICOM Institute Maitama – Abuja.	
16. One Day Workshop of the University Women Association in collaboration with the UNN SERVICOM Office (June 21, 2012), Princess Alexandria Auditorium University of Nigeria, Nsukka.	Effective Service Delivery: Understanding Our Role In the Change Process (Co-presentation)
17. 11 TH Fulbright Alumni Association of Nigeria Conference, Covenant University (10 th – 13 th September 2012), University of Ibadan, Ibadan.	Participant
18. Nigerian Society of Engineers/Midas Information Technology of South Korea’s 3-Day National Practical Workshop on “Designing with Midas Solutions” 8 th - 10 th October 2012, Rockview Hotels (Royale), Abuja.	Participant
19. One Day Workshop on Photovoltaic Power Generation, (30 th July 2013), Faculty of Engineering, University of Nigeria, Nsukka.	Basic Theory of Photovoltaic Energy Conversion, Causes of System Failures and the Panaceas
20. 4 TH Annual MIT Africa Innovate Conference, (11 th - 12 th April 2014), MIT Media Lab, Building E14, MIT Cambridge MA, USA.	Participant
21. Swissnex Boston Conference on Robots, ROBOTS: From Imagination to Market, (17 th April 2014), MIT Tang Centre, MIT Cambridge MA, USA.	Participant

I. PUBLICATIONS

JOURNALS

1. Mgbemene, C. A., Agwubilo, I. O., and Okafor, F.C., 2006, “A Module for Thermal Pest Control in Stored Raw Materials used in Feed Mills/Food Manufacturing Industries,” *Animal Research International*, 3(1), pp. 434 – 438, <http://www.zoo-unn.org/index.php/published-volumes/2-uncategorised/21-vol3-1>
2. Mgbemene, C. A., Duffy, J., Sun, H., and Onyegegbu, S. O., 2010, “Electricity Generation from a Compound Parabolic Concentrator Coupled to a Thermoelectric Module,” *ASME Journal of Solar Engineering*, 132(3), 031015. Published online, 28 June 2010, <http://link.aip.org/link/?SLE/132/031015>
3. Mgbemene, C. A., 2010, “The Need to Embrace Renewable Energy Technologies in Nigeria,” *Nigerian Journal of Solar Energy*, 21, pp.187 – 195. <http://sesn-ng.org/journals.php?volswap=21>
4. Ekeocha, P. and Mgbemene, C. A., 2010, “Power Sector Reform and National Development: Time to Commercialize the Use of Renewable Energy Technologies,” *Nigerian Journal of Legislative Affairs*, 3(1- 2), pp. 102 – 123.
5. Mgbemene, C. A., 2012, “Poor Blade Curvature – A Contributor in the Loss of Performance in the Compressor Unit of Gas Turbine Systems,” *Journal of Energy*

Technologies and Policy, 2(4), pp. 26 – 39. Published online, 1 July 2012, www.iiste.org/Journals.

6. Mgbemene, C. A., 2012, “The Design and Fabrication of Low Speed Axial-Flow Compressor Blades by Joukowski Transformation of a Circle,” International Journal of Engineering Research and Technology, 1(8), pp. 1 – 17. Published online, 1 October 2012, <http://www.ijert.org/browse/october-2012-edition?start=30>.
7. Mgbemene, C., Rosenkranz, A., Pichelin, F., Lehmann, M., Job, C., Kimeng, H., Mustapha, S., and Nduka, O., 2014. “A Feasibility Study on the Production of Particleboard from Maize Cobs, Rice Husks, and Groundnut Shells Using Acacia Mimosa Tannin Extract as the Bonding Adhesive.” Journal of Architectural Engineering, 20(1), 04013006. Published online, Sep. 21, 2013, [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)AE.1943-5568.0000135](http://ascelibrary.org/doi/abs/10.1061/(ASCE)AE.1943-5568.0000135)
8. Akpan, P. U., Yeung, H., Jones, S., Njoku, H. and Mgbemene, C. A., 2014. “Mathematical Models of Air Vessels Pressure Transient Control in Water Pipelines – A Review.” International Journal of Current Research, 6(2), pp. 5267 – 5272, Available online, 28th February, 2014, <http://www.journalcra.com> .
9. Chigbo A. Mgbemene, Chidozie C. Nnaji and Chekwubechukwu Nwozor, 2016. “Industrialization and its backlash: Focus on climate change and its consequences.” Journal of Environmental Science and Technology, 9(4), pp. 301-316, <http://scialert.net/fulltext/?doi=jest.2016.301.316> DOI: [10.3923/jest.2016.301.316](https://doi.org/10.3923/jest.2016.301.316)

BOOKS AND MONOGRAPHS

Mgbemene, C. A., 2012, *Solar Thermoelectric Power Generation: Using Compound Parabolic Concentrators*, (Monograph), Saarbrucken, Germany, LAP LAMBERT Academic Publishing, ISBN-10: 3659196576, ISBN-13: 978-3659196577.

J. EXHIBITIONS/COMPETITIONS

1. First Nigerian Universities Research and Development Fair (NURESDEF), 2004, Abuja, Nigeria
2. Third International Holcim Awards Competition for Africa Middle East, 2010/11 (8 – 10 September 2011) Casablanca, Morocco.
3. Materialica Design + Technology Award 2012, Munich Germany, October 23, 2012.

K. AWARDS/RECOGNITIONS

1. Certificate of Merit, Nigerian Universities Engineering Students’ Association (NUESA), May 1988.
2. Certificate of Appreciation, Surgical Eye Expeditions International, Santa Barbara, California USA, July 2001.
3. Certification of Volunteer Participation, Ajalli Welfare Union, Nigeria, July 2001.
4. Award for Excellence, National Union of Ajalli Students Nigeria, December 2003.
5. Outstanding Membership Award, University of Nigeria Alumni Association of New England USA, May 2007.
6. Certificate of Appreciation, Graduate Student Association University of Massachusetts, Lowell MA, USA, May 2007.

7. ASME Top 10 Most Downloaded Articles in Solar Energy Engineering, July 2010 - **7th Position**, Mgbemene, C. A., Duffy J., Sun H., and Onyegegbu, S. O., 2010, "Electricity Generation from a Compound Parabolic Concentrator Coupled to a Thermoelectric Module,"
8. ASME Top 10 Most Downloaded Articles in Solar Energy Engineering, August 2010 - **6th Position**, Mgbemene, C. A., Duffy J., Sun H., and Onyegegbu, S. O., 2010, "Electricity Generation from a Compound Parabolic Concentrator Coupled to a Thermoelectric Module,"
9. Holcim Awards for Sustainable Construction Africa Middle East, September 2011 **Acknowledgement Prize** for the work "Recycling Agricultural Waste to Produce Affordable Housing."
10. Meritorious Award from Ugwumba Age Grade Ajalli, Nigeria, December 2011.
11. **Gold Award** in the "Materialica Design + Technology Award October 2012" in Munich (Germany) for the work "Tannin bonded composite panels from recycled agricultural waste".
12. Most Punctual Academic Staff Award, Faculty of Engineering, University of Nigeria, Nsukka, July 2012.

L. SHORT COURSES ATTENDED

1. Nigerian Institute of Safety Professionals General Health Safety and Environment Course, (February 1993).
2. University Lecturers Skill Enhancement Training Programme Course, Newcastle University, United Kingdom (February – May 2011).
3. Teaching Certificate Programme, Massachusetts Institute of Technology, Cambridge, USA (February – May 2014).

M. FELLOWSHIPS/SCHOLARSHIPS OBTAINED

1. J. FULBRIGHT Scholarship, University of Massachusetts, Lowell, USA (September 2006 – June 2007).
2. Petroleum Development Trust Fund Sponsorship to University Lecturers Skills Enhancement Training Programme, Newcastle University, Newcastle-upon-Tyne, UK, (February – May 2011).
3. MIT International Science and Technology Initiatives (MISTI) Africa Empowering the Teachers Fellowship, Massachusetts Institute of Technology, Cambridge, USA (February – May 2014).

N. RESEARCH COLLABORATION

1. Collaborative research along with the Department of Architecture University of Nigeria, Enugu Campus, Ahmadu Bello University, Zaria and Bern University of Applied Sciences Switzerland on "Affordable Building Materials from Recycled Agricultural Waste," (October – December 2010).

O. RESEARCHES IN PROGRESS

1. Electricity generation using thermoelectric modules and compound parabolic concentrators.
2. Hybrid electric power generation from concentrated PV and thermoelectric module.
3. The use of agricultural waste products (maize cobs, rice husks and groundnut shells) in the production of building panels.

4. The feasibility of having radial impellers mounted on the tip of axial impellers.
5. Solar power as a safety measure for lifts during power outage.
6. The feasibility of generating electricity from a free flowing stream using multiple in-situ surface turbines.
7. Improvement on the design of a thermoelectric vaccine box.
8. The effect of additives to the mechanical properties of clay.
9. Solar air heating systems using waste soda cans.

P. PROMOTIONS/APPOINTMENTS

Promoted to Lecturer 1 – 1st October 2007
 Appointed University Development Officer – December 2009
 Promoted to Senior Lecturer – 1st October 2012
 Appointed Head of Department – 1st August 2015

Q. ADMINISTRATIVE EXPERIENCE

Academic Coordinating Positions

- | | |
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| 1. Departmental SIWES Coordinator | 2004 – 2006 |
| 2. Departmental Examination Officer | 2005/2006 Session |
| 3. Final Year Projects Coordinator | 2006 – 2014 |
| 4. University Development Officer | 2009 – 2014 |
| 5. Departmental Postgraduate Programme Coordinator | 2011- Feb. 2012; August 2013 till date |
| 6. Head of Department | August 2015 till date |

Elective Departmental/Faculty Standing Committees

- | | |
|---|------------------|
| 1. Staff Adviser Department of Mechanical Engineering Students Association | 2004 - 2005 |
| 2. Staff Adviser Nigerian Society of Engineers Student Chapter Faculty of Engineering | 2005 – 2007 |
| 3. Chairman Committee on Refresher Courses Faculty of Engineering | 2010 – Present |
| 4. Member Committee on Auto Mechanic Maintenance Workshop, Faculty of Engineering | 2010 – Feb. 2012 |

University Committees

- | | |
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| 1. Secretary UNN NUGA 2008 Sports Facilities Subcommittee | 2006 – 2008 |
| 2. Expert Central Assessment Committee | February 2008 |
| 3. Member Committee on Investigation on Cases of Examination Malpractice/Investigation | July – Aug. 2011 |
| 4. Member University Senate Ceremonials Committee | 2009 – 2014 |

R. BOARD MEMBERSHIPS

1. Secretary Board of Management, A.E.D. Mgbemene Foundations, 2005 till date.
2. Member Board of Management, Hillcrest Preparatory and Primary School, Nsukka, 2010 till date.
3. Member Board of Management, Goodness and Mercy Foundations Medical Centre Ajalli, February 2011 till date.

S. COMMUNITY SERVICE

1. Publicity Secretary 1987 – 1988, Nigerian Universities Engineering Students' Association (NUESA).
2. Secretary General 1999 – 2005, Ajalli Welfare Union, Nigeria and International.
3. Staff Adviser 2001 – 2003, National Union of Ajalli Students, Nigeria.
4. President General 2000 – 2002, Ugwumba Age Grade, Ajalli, Nigeria.
5. Volunteer for Free Medical Missions in Ajalli by Surgical Eye Expeditions International, Santa Barbara, California USA, July 2001.
6. Volunteer for Free Medical Missions, Ajalli Welfare Union, Nigeria, 2000 till date.
7. Treasurer 2006 – 2007, Graduate Student Association, University of Massachusetts, Lowell USA.
8. Secretary 2005 – 2010, Nigerian Society of Engineers (NSE) Nsukka Branch.
9. Member of Chapel Council 2009 – 2011, August 2013 till date, Christ Church Chapel University of Nigeria, Nsukka.
10. Coordinator Fulbright Alumni Association of Nigerian (FAAN) Nsukka Chapter, 2010 till date.
11. Chairman 2010 - July 2014, Nigerian Society of Engineers (NSE) Nsukka Branch.

T. HOBBIES: Playing Volleyball, Reading Books, Jogging and Creativity.

U. REFEREES:

1. Engr. Prof. S. O. Onyegegbu
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3. Charles Job, MA. Dip. Arch. RIBA
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