

CURRICULUM VITAE

- I** (a) Name: Nelson Okpako **Obi-Egbedi**
(b) Date of Birth: 5 April, 1957
(c) Department: Chemistry
(d) Faculty: Science
(e) State of Origin: Delta
- II** (a) First Academic Appointment: Graduate Assistant (02 Jan, 1982)
(b) Present Post (date): Professor (1 October, 2016)
(c) Date of Last Promotion: 1 October, 2016
- III** University Education (with dates)
(a) University of Ibadan, Ibadan. 1977 – 1980
(b) University of Ibadan, Ibadan. 1981 - 1983
(c) University of Ibadan, Ibadan. 1983 - 1995
- IV** Academic Qualifications (with dates and granting bodies)
(a) B.Sc. (Hons), Chemistry, University of Ibadan: July, 1980
(b) M.Sc. Physical Chemistry, University of Ibadan, Ibadan: November, 1983
(c) Ph.D. University of Ibadan, Ibadan: March, 1995
- V** Professional Qualification and Diplomas: Nil
- VI** Scholarships, Fellowships and Prizes (with dates) in respect of Undergraduate and Postgraduate work only:
(a) UNIDO/ICS Fellow, Trieste-Italy 15-27 June, 1992
(b) UNIDO/ICS Fellow, Trieste-Italy 15-19 Nov., 1993
- VII** Honours, Distinctions and Membership of Learned Societies:
(a) Member, Chemical Society of Nigeria (CSN)
(b) Fellow, Institute of Chartered Chemists of Nigeria (ICCON)
- VIII** Details of Teaching/Work Experience:
(a) Work Experience:
(i) Graduate Assistant (January 1982 to January 1987), University of Ibadan.
(ii) Assistant Lecturer (May 1990 to October 1994), University of Ibadan.
(iii) Lecturer II (October 1994 to October 1997), University of Ibadan.
(iv) Lecturer I (October 1997 to October 2007), University of Ibadan.
(v) Senior Lecturer (October 2007 to 2013), University of Ibadan.
(vi) Reader (October 2013 to 2016), University of Ibadan.
(vii) Professor (October 2016 to date), University of Ibadan.

(viii) Number of years of teaching at the University level: 34 years (1990-2024)

(b) Teaching Experience:

I have participated in teaching the following courses between 1990 and 2024.

Undergraduate Courses:

Courses	Description	Periods
CHE 191	Practical Chemistry	1990 - 2007
CHE 156	Physical Chemistry I	1992 – date
CHE 256	Physical Chemistry II	1991 – 1994
CHE 259	Physical Chemistry for life sciences	1992 – 1997
CHE 356	Physical Chemistry III: Quantum Chemistry, Statistical Thermodynamics	2011 – date
CHE 452	Molecular Spectroscopy: (UV-Visible, IR, NMR & ESR)	1995 – date
CHE 456	Physical Chemistry IV: Quantum Mechanical Treatment of Chemical Bonding and Kinetics	2001 – date
CHE 458	Symmetry and Group Theory	2001 – date
CHE 495	B.Sc. Thesis Projects	1991 - date

Postgraduate Courses:

Courses	Description	Periods
CHE 801	Research Methodology in Chemistry	2022-date
CHE 748	Molecular Spectroscopy	2022-date
CHE 754	Special Topics in Physical Chemistry	1996 – date
CHE 784	Chemical Environmental Pollution Studies I	2007 –2008

Supervision of Research:

Undergraduate	-	B.Sc project	- 100
Postgraduate	-	M.Sc project	- 40
		Ph.D Thesis	- 4

(a) Administrative Experience:	
Member, Department Examination Committee	1996 – 1998, 2003 – 2005
Member, Equipment and Instrumental Committee	1996 – 1998
Tutorial Officer	1996 – 2003
Coordinator, CHE 191 practical	2004 – 2007
Keys Officer	2001 – 2005
Member, Finance Committee	1996 – 2002, 2006 – 2011
Member, Committee for recommendation of Books	2004 – 2005
Secretary, Departmental 50 th Anniversary Planning Committee	1998
Coordinator, Physical Chemistry Unit	2007 – 2008
Member, Senior Staff Housing Committee	2007 – 2009
Faculty of Science representative Post Jamb screening	2008 – 2010
Store Officer (Chemical Store)	2012 – 2013
Member, Departmental Examination Committee	2012 – 2014
Examinations Officer (Chemistry)	2014 – 2017
Member of Senate (University of Ibadan)	2013 - date

IX Research:

(a) Completed:

- (i) Theory of intensity of absorbing molecules in solution or condensed media has been investigated. Expressions are formulated to accommodate various field models and molecular shapes that best describes a spectroscopic properties of physical conditions of molecular ensemble.
- (ii) Experimental determination of excited state properties. The dipole moment and polarizabilities of Aniline and some of its derivatives in different solvents have been determined.
- (iii) Corrosion inhibitive potential of drugs and xanthone derivatives. The Corrosion inhibitive potential of fluconazole, ketoconazole, Itraconazole, xanthone, xanthane, xanthione has been established.
- (iv) Fluorescent properties of 2 – (1H- imidazole-2-yl) phenols and their neutral Zn (II) complexes have been investigated.

(b) In Progress:

- (i) Synthesis, characterization, photoluminescence properties of fused aromatic Schiff Bases with donor-acceptor substituents:
The fused aromatic Schiff Bases are rich in π -electrons and non-bonding electrons, have large polarizabilities, first and second order hyperpolarizabilities. They can exhibit high quantum yields and large multiphotons absorption. They have a wide range of applications in biological systems, pharmaceutical, industrial fields, opto-electronic devices, and fluorescence labelling. The research started in 2014 and thirty (30) compounds have been synthesized and characterized. About 68 % of the research has been completed.
- (ii) Investigation of the effect of solvents, inhibition properties and quantum chemical calculation of fused aromatic Schiff Bases.
Fused aromatic Schiff Bases with different donor acceptor have large optical response, and are potential materials for non-linear optics. It is of interest to investigate their electronic and quantum chemical properties. The absorption and fluorescence spectra of synthesized Schiff Bases in different solvents have been recorded. This aspect of the research started in 2015. About 68 % has been completed.

(c) Project, Dissertations and Thesis:

- (i) Obi-Egbedi, N. O. (1983) Perturbation of Spectral Properties of Aminobenzene by Substituents and Non-Polar Solvent – M.Sc. Project, University of Ibadan.
- (ii) Obi-Egbedi, N. O. (1995) An Investigation of Solvent and Substituent Effects on Electronic Spectroscopy, Structures and Molecular Properties of some Aromatic Amines. Ph.D. Thesis, March 1995, University of Ibadan.

X Publications:

(a) Books Already Published

- (1) Iweibo, I., Okonjo, K. and **Obi-Egbedi, N. O.** (Eds) (2007). *Fundamental Physical Chemistry (Revised Edition)* Ibadan: Ibadan University Press. ISBN: 978-121-423-6, 978-978-121-432-3. (Editorial Work).
- (2) Raji-Oyelade, A., Olapade-Olaopa, E.O., Aderinto, A. and **Obi-Egbedi, N.O.** (2010). *University of Ibadan The Flagship: Six Decades of Postgraduate Education in Nigeria.* ISBN: 978-978-488855-5-3.

(b) Chapters in Books Already Published

- (3) **Obi-Egbedi, N. O.** (2005). Chemical Kinetics. In Okonjo, K.(Eds). *Fundamental Physical Chemistry.* Ibadan: Ibadan University Press. 149-166 pp. ISBN: 978-121-4074.

(c) Articles that have already appeared in Referred Conference Proceedings: Nil

(d) Patents: Nil

(e) Articles that have already appeared in learned journals:

- (4) Iweibo, I., **Obi-Egbedi, N. O.**, Chongwain, P.T., Lesi, A. F and Abe, T. (1990). The theory of Electronic Intensity in Solution or Condensed Media. *Journal of Chemical Physics* Vol. 93. No. 4: 2238-2245.
- (5) Iweibo, I., Chongwain, P.T., **Obi-Egbedi, N. O.** and Lesi, A. F. (1991). Excited State Electronic Dipole Polarizabilities and Moments by Solvent Spectra Frequency Shifts: Aniline, Phenol and Naphthalene. *Spectrochimica Acta* Vol. 47A. No. 6: 705-712.
- (6) **Obi-Egbedi, N. O.** and Iweibo, I. (1992). Electronic Spectra in Solution and Excited state Electronic Dipole Polarizabilities and Moments of the Nitroanilines and Nitrobenzene. *Spectrochimica Acta* Vol. 48A. No. 2: 257.
- (7) **Obi-Egbedi, N. O.**, Chongwain, P. T. and Iweibo, I. (1998). Solvent and Substituent Effects on the Longest Wavelength Vibronic Absorption Band Shape or Contour of Aniline. *Nigerian Journal of Science* Vol. 32. : 183-187.
- (8) Abdulraheem, A. M. O., **Obi-Egbedi, N. O.** and Bello, I. A. (2005). Solvents and Substituents Effects on the Electronic Absorption Spectra of Toluene and some of its Halo Derivatives. *Sciences Focus* Vol. 10. No 1: 159-169.

- (9) Adeogun, A. I., Odozi, N. W., **Obi-Egbedi, N. O.** and Bello, O. S. (2008). Solvents effect on $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$ transitions of 9-fluorenone. *African Journal of Biotechnology* Vol. 7. No. 15: 2736-2738.
- (10) Umoren, S. A., Obot I. B., Ebenso, E. E. and **Obi-Egbedi, N. O.** (2008). Studies on the Inhibitive Effect of Exudate Gum from *Dacryodes edulis* on the Acid Corrosion of Aluminium. *Portugaliae Electrochimica Acta* Vol. 26. : 199-209.
- (11) Obot, I.B. and **Obi-Egbedi, N. O.** (2008). Fluconazole as an inhibitor for aluminum corrosion in 0.1 M HCL. *Colloides and Surfaces A: Physicochemical and Engineering Aspects* Vol. 330. : 207-212.
- (12) Obot, I.B., **Obi-Egbedi, N. O.** and Umoren, S.A (2009). The synergistic inhibitive effect and some quantum chemical parameters of 2, 3-diaminonaphthalene and iodide ions on the hydrochloric acid corrosion of aluminum. *Corrosion Science* Vol. 51. : 276-282.
- (13) Obot, I. B and **Obi-Egbedi, N. O.** (2009). Ipomoea Involcrata as an eco-friendly Inhibitor for Aluminum in Alkaline Medium. *Portugaliae Electrochimica Acta* Vol. 27. No. 4: 517-524.
- (14) Obot, I. B. and **Obi-Egbedi, N. O.** (2009). Ginseng Root: A new Efficient and Effective Eco-Friendly Corrosion Inhibitor for Aluminum Alloy of type AA 1060 in Hydrochloric Acid Solution. *International Journal of Electrochemical Science* Vol. 4: 1277-1288.
- (15) Eseola, A. O., Li, W., Gao, R., Zhang, M., Hao, X., Liang, T., **Obi-Egbedi, N. O.** and Sun, W.H. (2009). Syntheses, Structures, and Fluorescent Properties of 2-(1H-Imidazole-2-y1) phenols and Their Neutral Zn(II) Complexes. *Inorganic Chemistry* Vol. 48. No. 19: 9133-9146.
- (16) Eseola, A. O. and **Obi-Egbedi, N. O.** (2009): Spectroscopic study of 2-, 4- and 5-substituents on Pka values of Imidazole Heterocycles Prone to Intramolecular Proton-Electron Transfer. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* Vol. 75. No. 2: 923-926.
- (17) Obot, I. B. and **Obi-Egbedi, N. O.** (2010). Adsorption properties and inhibition of mild steel corrosion in sulphuric acid solution by ketoconazole: Experimental and theoretical investigation. *Corrosion Science* Vol. 52: 198-204.

- (18) Eseola, A. O., Li, W., Adeyemi, O. G., **Obi-Egbedi, N. O.** and Woods, J. A.O. (2010). Hemilability of 2-(1H – imidazole-2-yl) pyridine and 2-(oxazol-2-yl)pyridine ligands: Imidazole and oxazole ring Lewis basicity, Ni(II)/Pd(II) complex structures and spectra. *Polyhedron* Vol. 29. No. 8: 1891 – 1901.
- (19) Obot I. B., **Obi-Egbedi, N. O.** and Odozi, N. W. (2010). Acenaphtho [1, 2 – b] quinoxaline as a novel corrosion inhibitor for mild steel in 0.5 M H₂SO₄. *Corrosion Science* Vol. 52. No. 3: 923-926.
- (20) Obot, I. B. and **Obi-Egbedi, N. O.** (2010). Indeno-1-one [2, 3 –b] quinoxaline as an effective inhibitor for the corrosion of mild steel in 0.5 M H₂SO₄ solution. *Materials Chemistry and Physics* Vol. 122.: 325-328.
- (21) Obot, I. B. and **Obi-Egbedi, N. O.** (2010). An interesting and efficient green corrosion inhibitor for aluminum from extracts of *Chromolaena odorata* L. in acidic solution. *Journal Applied Electrochemistry* Vol. 40. No. 11: 1977-1984.
- (22) Obot, I. B. and **Obi-Egbedi, N. O.** (2011). Anti-corrosion properties of xanthone on mild steel corrosion in sulphuric acid: Experimental and theoretical investigations. *Current Applied Physics* Vol. 11. No. 3: 382-392.
- (23) **Obi-Egbedi, N. O.**, Essien, K. E., Obot, I. B and Ebenso. E. E. (2011). 1, 2-Diaminoanthraquinone as Corrosion Inhibitor for Mild Steel in Hydrochloric Acid: Weight Loss and Quantum Chemical Study. *International Journal of Electrochemical Science* Vol. 6. No. 4: 913-930.
- (24) **Obi-Egbedi, N.O.**, Obot, I.B. and El-Khaiary, M.I. (2011) Quantum chemical investigation and statistical analysis of the relationship between corrosion inhibition efficiency and molecular structure of xanthone and its derivatives on mild steel in sulphuric acid. *Journal of Molecular Structure* Vol. 1002(1-3): 86-96
- (25) **Obi-Egbedi, N. O.** and Obot I. B. (2011). Inhibitive properties, thermodynamic and quantum chemical studies of alloxazine on mild steel corrosion in H₂SO₄. *Corrosion Science* Vol. 53. : 263-275.
- (26) **Obi-Egbedi, N.O.**, Obot I.B., and El-Khaiary, M.I. (2011): Umoren, S.A., and Ebenso, E.E. (2011) Computational Simulation and Statistical Analysis on the Relationship Between Corrosion Inhibition Efficiency and Molecular Structure of Some Phenanthroline Derivatives on Mild Steel Surface, *International Journal of Electrochemical Science* Volume 6: 5649-5675.

- (27) Ahmed, S.A., **Obi-Egbedi, N.O.**, Odozi, N.W., Iweibo, I. and Adeoye, M.D. (2011). Effects of solvent on the UV-visible absorption spectra of Acenaphtho(1,2-b) quinoxaline and Acenaphtho(1,2-b) benzo(g) quinoxaline. *African Journal of pure and Applied Chemistry* Vol. 5(11): 393-397
- (28) **Obi-Egbedi, N. O.** and Obot I.B. (2012). Adsorption behavior and corrosion inhibitive potential of xanthene on mild steel/sulphuric acid interface. *Arabian Journal of Chemistry* Vol. 5. : 121-133.
- (29) **Obi-Egbedi, N. O.**, Obot, I. B. and Umoren, S. A. (2012). *Spondias mombin* L. as a green corrosion inhibitor for aluminum in sulphuric acid: Correlation between inhibitive effect and electronic properties of extracts major constituents using density functional theory. *Arabian Journal of Chemistry*. Vol. 5. : 361-373.
- (30) Ezeoke, A. U., **Obi-Egbedi, N. O.**, Adeosun, C. B. and Adeyemi, O. G. (2012). Synergistic Effect of Leaf Extracts of *Cordia sebestena* L. and Iodide Ions on the Corrosion Inhibition of Mild Steel in Sulphuric Acid. *International Journal of Electrochemical Science* Vol. 7. : 5339-5355.
- (31) Obot, I. B., Ebenso, E. E., **Obi-Egbedi, N. O.**, Afolabi, A. S. and Z. M. Gasem (2012). Experimental and theoretical investigations of adsorption characteristics of itraconazole as green corrosion inhibitor at a mild steel/hydrochloric acid interface. *Research on Chemical Intermediates* Vol. 38. No. 8: 1761-1779.
- (32) Ezeoke, A. U., Adeyemi, O. G., Akerele, O. A. and **Obi-Egbedi, N. O.** (2012). Computational and Experimental Studies of 4-Aminoantipyrine as Corrosion Inhibitor for Mild Steel in Sulphuric Acid Solution. *International Journal of Electrochemical Science* Vol. 7. : 534-553.
- (33) Nnaji, N. J., **Obi-Egbedi, N. O.** and Nnabugwu, M. A. (2012). Kinetics and thermodynamics of aluminium corrosion inhibition by *Anthhocleista djalonensis* leaf extract in hydrochloric acid solution. *Journal of Chemical Sciences* Vol. 10. No. 1: 182-194.
- (34) **Obi-Egbedi, N. O.** and Obot, I. B. (2013). Xanthione: A new and effective corrosion inhibitor for mild steel in sulphuric acid solution. *Arabian Journal of Chemistry* Vol. 6. : 211-223.
- (35) Nnaji, N. J. N., Okoye, C. O. B., **Obi-Egbedi, N. O.**, Ezeokonkwo, M. A. and Ani, J. U.(2013). Spectroscopic Characterization of Red Onion Skin Tannin and It's use as Alternative Aluminium Corrosion Inhibitor in Hydrochloric Acid Solutions. *International Journal of Electrochemical Science* Vol. 8. : 1735-1758.
- (36) Adeoye, M. D., **Obi-Egbedi, N. O.** and Iweibo, I. (2013). Substituent and solvent effect on the solvatochromic properties of some thiophene derivatives. *An Indian Journal of Physical Chemistry* Vol. 8. No. 1:17 – 26.

- (37) Msugh, T., **Obi-Egbedi, N.O.** and Adeoye, M.D. (2013). Molecular structure and Solvent effect on the dipole moment and polarizabilities of some aniline derivatives. *Journal of Computational and Theoretical Chemistry* Vol. 1012: 27-53.
- (38) Omoregie, H. O., **Obi-Egbedi, N. O.** and Woods, J. A. O. (2014). Synthesis, Spectroscopic Properties and Structural Studies of Copper (II) Complexes of 2-Substituted- 1, 3-Diphenyl-1,3-Propanedione, Their 2,2'-Bipyridine and 1,10-Phenanthroline Adducts. *International Journal of Chemistry* Vol. 6. No 1: 71-82.
- (39) Nnaji, J. N., **Obi-Egbedi, N. O.** and Okoye, C. O. B. (2014). Cashew Nut Testa Tannin; Assessing its effects on the corrosion of Aluminium in HCl. *Portugalice Electrochemical Acta* Vol. 32. No. 2: 157-182.
- (40) **Obi-Egbedi, N. O.**, Obot I. B. and Eseola, A. O. (2014). Synthesis, characterization and corrosion inhibition efficiency of 2 – (6 – methylpyridin – 2 –yl) – 14 – imidazo (4, 5 – f) (1, 10) phenanthroline on mild steel in Sulphuric acid. *Arabian Journal of Chemistry* Vol. 7. : 197-207.
- (41) **Obi-Egbedi, N. O.**, Targema, M., Adeoye, M. D. and Gbangban, S. T. (2015). Calculation of Electronic properties of some 4 – Nitroaniline Derivatives: Molecular structure and Solvent Effects. *International Research Journal of Pure and Applied Chemistry* Vol. 8. No 3: 165 – 174.
- (42) **Obi-Egbedi, N. O.** and Ojo N. D. (2015). Computational studies of the corrosion inhibition potentials of some derivatives of 1H – Imidazo [4, 5 – f] [1, 10] Phenanthroline. *Journal of Science Research* Vol. 12. : 49-55.
- (43) Adebessin, T. T., Oladosu, I., **Obi-Egbedi, N. O.** and Odiaka, T. I. (2016). Demetallation, Antimicrobial and computational studies of methoxy – 1, 3 – dione substituted products from addition of natural products to tricarbonyl (2 – methoxycyclohexadienyl) iron tetrafluoroborate. *Journal of organometallic Chemistry* Vol. 819. : 87 – 94.
- (44) Adekunle, O. F., **Obi-Egbedi, N. O.**, Semire, B. and Odunola, O. A. (2016). Synthesis characterization and theoretical studies of mixed ligands complexes of [(Cu (bipy)₂ (4 – methylimidazole – 5 –carboxaldehyde) (ClO₄)₂ and (Cu(bipy)₂ (Indole – 3 – Carboxaldehyde)] (ClO₄)₂. *Elixir Applied Chemistry* Vol. 95. : 40583 – 40588.
- (45) Adekunle, O. F., **Obi-Egbedi, N. O.**, Semire, B. and Odunola, O. A. (2016). Synthesis characterization and quantum chemical studies of mixed ligand complex of [Cu (bipy)₂ S₈] (ClO₄)₂. *Elixir Computational Chemistry* Vol. 95. : 40727 – 40731.

- (46) Adeoye, M. D., **Obi-Egbedi, N.O.** and Iweibo, I. (2017). Solvent effect and photophysical properties of 2,3-diphenylcyclopropenone. *Arabian Journal of Chemistry* Vol. 10, S134-S140.
- (47) Akande, A.A., **Obi-Egbedi, N.O.** and Ojo, N.D. (2019). Effects of Solvents on the Electronic and Molecular Properties of 4-((2-Methyl-4-Nitrophenyl) Imino Methyl) Phenol. Vol. 5, No 8: 102-108. *International Journal of Advances in Scientific Research and Engineering*.
- (48) Ojo, N.D., Krause, R. W. and **Obi-Egbedi, N.O.** (2020). Electronic and nonlinear optical properties of 2-(((5-aminonaphthalen-yl)imino)methyl)phenol: Experimental and time-dependent density functional studies. *Journal of Molecular Liquids* Vol. 319, 1-8
- (49) Ojo, N.D., Krause, R.U. and **Obi-Egbedi, N.O.** (2020). Electronic and nonlinear optical properties of 3-(((2-substituted-4-nitrophenyl)imino)methyl)phenol *Computational and Theoretical Chemistry* Vol. 1192, 1-8
- (50) **Obi-Egbedi, N.O.** and Ojo, N.D. (2021) Synthesis, Light Harvesting Efficiency, Photophysical and Nonlinear Optical Properties of 3-(5-(4-hydroxybenzylideneamino)naphthalen-1-yliminomethyl)phenol: Spectroscopic and Quantum chemical approach. *Research on Chemical Intermediates* Vol. 47: 5249-5266.
- (51) Oladipo, S. D., **Obi-Egbedi, N. O.**, Adeoye, M. D., Ojo, N. D. and Badeji, A. A. (2023). Studies on the effect of solvents on the electronic absorption spectra of 4-phenylmorpholine and 1-phenylpyrrole. *Scientia Africana*, Vol 22 No. 1: 243–254.
- (52) Ojo, N. D., Adekusibe, O. D., Odozi N. W., **Obi-Egbedi, N. O.** (2024) N-(1H-Benzo[d]imidazol-2-yl)-1-(3-substituted phenyl) methanimines as optoelectronic and nonlinear optical materials: spectroscopic and computational approaches. *Chemical Papers*. (Accepted July 22, 2024).

XI Major Conference Attended with Paper Read :

- (1) 54th Annual (Hybrid) Conference and 60th Anniversary Celebration of the Science Association of Nigeria, “OLUYOLE 2021”, Faculty of Science, University of Ibadan, Ibadan, Nigeria. June 20-24, 2021.

Paper read – Oral – **Ojo N. D.** and Obi-Egbedi N. O. Benzimidazole Schiff bases as optoelectronic and nonlinear optical materials: spectroscopic and computational approach.

- (2) 4th Commonwealth Chemistry Conference, October 4-5, 2023.

Paper read – Oral – Ojo N. D., Adekusibe O. D. and Obi-Egbedi N. O. N-(1H-benzo[d]imidazol-2-yl)-1-(3-substituted phenyl) methanimines as optoelectronic and nonlinear optical materials: spectroscopic and computational