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EDUCATION

Doctor of Philosophy Industrial Chemistry (Polymer Chemistry, Rubber Option)

Federal University Oye-Ekiti, Ekiti, Nigeria. 22nd January, 2026

Thesis focus: Influence of Blending Virgin and Mechanochemically Devulcanised Polyacrylonitrile Rubber on Physico-mechanical and Solubility Properties.

Master of Science in Chemical and Polymer Engineering

Lagos State University, Ojo, Lagos State, Nigeria. November 2011.

- Thesis Title: "Mathematical modelling of in-situ bioremediation of a heavy metal in different soil samples"
- Supervisor: Professor A.A. Susu
- Relevant Coursework: Polymer Chemistry, Latex and Rubber Technology,

Bachelor of Science in Chemical and Polymer Engineering

Lagos State University, Ojo, Nigeria, August 2004

- Relevant Coursework: Organic Chemistry, Physical Chemistry, Polymer Science, Thermodynamics, Chemical Kinetics

Languages

English: Native Language, Distinguished levels in Listening, Speaking.

RESEARCH EXPERIENCE

Graduate Research Assistant

Malo Rubber Research Group, Federal University Oye-Ekiti

Project: The Use of Recycled Natural Rubber Powder as Filler in Natural Rubber Compounding

- Characterize recycled rubber for its moisture content, ash content, carbon and nitrogen content

- Modified recycled rubber and used as filler to improve mechanical properties of natural rubber composites by 24%
- Utilized analytical techniques including FT-IR, and SEM-EDX to characterize rubber composites

Project: Preparation, Characterization and Physico-mechanical Properties of Natural Rubber Vulcanizates filled with Carbonized Palm Kernel Shell and Carbon Black.

- Carbonized palm kernel under different conditions as an additive for natural rubber composites
- Activated carbonized palm kernel to create active sites for good filler –matrix interaction
- Addition of carbonized palm kernel as filler in natural rubber compound improved tensile strength by 29%
- Utilize FTIR and SEM-EDX techniques to determine the functional groups and morphology of carbonized palm kernel

Project: Mechanical and Solubility Properties of Vulcanizates Produced from Modified Ground Tire Rubber - RPE

- Modified and characterized ground tire rubber
- Prepared blends with recycled PE and evaluated the mechanical and solubility properties
- Mechanical properties achieved were quite lower though solubility properties were improved by 22%

Project: Egg Shell waste as a potential filler for natural rubber vulcanisates

- Carbonized and characterize egg shell to ascertain its functionality as an additive in natural rubber compounds
- Prepared composites with improvement of 36% in mechanical properties of natural rubber vulcanisates
- Utilize FTIR, SEM-EDX and TGA techniques to establish the potential of egg shell as as additive filler in natural rubber vulcanisates

Project: Influence of Blending Virgin and Mechanochemically Devulcanised Polyacrylonitrile Rubber on Physico-mechanical and Solubility Properties.

- Devulcanised industrial waste rubber using a two-mill with devulcanisation aid to optimize devulcanisation parameters
- Characterize the devulcanised rubber with SEM-EDX, FTIR, TGA and DSC techniques
- Established devulcanisation efficiency with Horikx Analysis and achieved 84% reversal of crosslinks with minimal chain degradation
- Prepared blends up to 50phr with pristine polyacrylonitrile butadiene rubber and mechanical properties retention was as high as 112%
- Blends had good oil resistance in engine oil, ATF and brake fluid with maximum swelling after 240 hours of 4%

PUBLICATIONS

J.O. Odubunmi, Awosanya. A., Adekeye T.A, Akindiya .I.O, and Umukoro Albert, ‘Thermal Stability and Morphological Characteristics of Thermoplastic Vulcanizates Filled with Sepiolite/Calcium Carbonate Hybrid Filler’ APWEN Journal of Engineering Science and Technology, AJEST, Volume 9, Issue 1, 2026 Accepted for publication,

Odubunmi J.O, Awosanya A, Oladiran F.O, Adekeye T.O and 5Oladipo G.O ‘Performance Of Metal Soap Prepared from Extracted Almond Seed Oil as Oxidative Driers In Alkyd Resin Paints Evaluated by Braive Dry-Time Recorder’Journal of Management, Applied Sciences and Technology (JOMAT) Volume 4 Issue 1 | September 2025, 57-64 ISSN: 2705 – 3555 www.dsapjomat.com

J .O. Odubunmi, Dosu Malomo., Reginald Umunakwe, “Efficiency of Mechanical Devulcanisation of Industrial Rubber Waste for Enhanced Material Reutilization” FUOYE Journal of Engineering and Technology, Vol 10 No 3 (2025)

J.O Odubunmi, Akindiya I.O, Adekeye T.O., Oladiran F.O and Atuegwu S.C, ‘Physico-Mechanical Properties of Hybrid Wood Plastic Composite’ Bulletins of Natural and Applied Sciences, Vol.1 (1): 123 -131, 2024 ISSN: 23027-1762

J.O. Odubunmi, D. Malomo, C. Akintayo , S. Abimbade ,S.T. Abidemi , O. Egharevba, A. D. Olasupo , S.O. Adewuyi , “Production and properties of composites from scrap-tyre-rubber modified bitumen” Nigerian Journal of Applied Sciences, Vol. 41, pp 8-15 (2023A)

Awosanya, A, Odubunmi, J.O, Adebayo, A.O, and Adekomaya, M.A” Characterization of cellulose extracted from rice husk (agricultural waste) for industrial application” ***YabaTech Journal of Science & Technology Vol. 8 No. 1, 2022 ISSN: 2736-0601***

Alebiosu, S.O., Odubunmi J.O., Muhammed Raji, A., and Samson J.O., “Evaluation of Physical and Mechanical Properties of Polypropylene and Cockle Seashell Composite,” International Journal of Engineering Research & Technology (IJERT), Vol 10, Issue 12, December **2021. DOI: 10.17577/IJERTV10IS120159**

Dosu Malomo,Abdulhakeem D. Olasupo, Abayomi M. Adesigbin, Owen Egharevba, Sulaiman O. Adewuyi, **Joy O. Odubunmi** and Lawrence Idemmudia “Studies on the Physicochemical and Physico-Mechanical Properties of Activated Palm Kernel Shell blended with Carbon Black filled NR Vulcanizates”. FUOYE Journal of Engineering and Technology (FUOYEJET), Volume 5, Issue 1, March 2020 ISSN: 2579-0625 (Online), 2579-0617

CONFERENCE PRESENTATIONS

- **Odubunmi, J.O, Malomo .D. and Umunakwe .R.** “Impact of process parameters on crosslink densities of waste Polyacrylonitrile butadiene rubber”, A paper presented at the 7th international conference of Faculty of Science, Federal University Oye-Ekiti, May 14th – May 16th, 2024.
- **Odubunmi J.O, Malomo.D. and Umunakwe.R.** “Mechanical properties of devulcanized polyacrylonitrile butadiene rubber”. A paper presented at Material Science and

Technology Society of Nigeria, NIMACON 2024 and Special Materials Lecture, November 25th – November 29th, 2024.

- J. O. Odubunmi, D. Malomo, D. A. Oladebo, A. D. Olasupo, A.O Umuokoro', S. O. Adewuyi, R. A. Muhammed and U. Ugbune "Thermal and Morphological Properties of Thermoplastic Vulcanizates Filled with Sepiolite/Calcium Carbonate (CaCO₃)" a paper presented at the 6th international science conference, Faculty of Science, Federal University, Oye-Ekiti, 10th -12th May, 2023.
- J. O. Odubunmi, D. Malomo, T. M. Adeleye, A. D. Olasupo, S. O. Adewuyi and U. Ugbune "Surface Modification of Groud Tire Rubber as a Filler in Regenerated Polyethylene/Natural Rubber Blends" a paper presented at the 6th international science conference, Faculty of Science, Federal University, Oye-Ekiti, 10th -12th May, 2023.
- Awosanya. A., Odubunmi J.O., Adekeye. T.O., and Ichetaonye. S.I "Comparative Evaluation Performance of Drying Properties and Chemical Resistance of varied Oil lengths of synthesized Neem Seed Oil Alkyd resins". A paper presented at the 32nd Annual Technical conference and 4th international Conference of the Polymer Institute of Nigeria, November 2022.
- Awosanya. A., Odubunmi J.O., Adekeye. T.O., and Akindiya. I.O "Evaluation of Effects of varied Oil length on the Drying Performance and Chemical Resistance synthesized Jatropha Curcas Seed Oil Alkyd resins". A paper presented at the 32nd Annual Technical conference and 4th international Conference of the Polymer Institute of Nigeria, November 2022.
- Odubunmi J.O., Alebiosu. S.O., Adekeye T.A. and Ayinde O.A. "Extraction, Dyeing and Analysis of Fastness Properties of Fibres from Banana Stem" A paper presented at the 32nd Annual Technical conference and 4th international Conference of the Polymer Institute of Nigeria, November 2022.
- Odubunmi, J.O., Muhammed Raji, A., Alebiosu, S.O., Amosu, J.O., Alabi, F.O., and Okoye, S.O., "Improved Mechanical Properties of Maleic Anhydride Compatibilized Recycled Low-Density Polyethylene/Natural Rubber (r-LDPE/NR) Blends". A paper presented at the 4th International Conference on Science, Engineering and Social Science, November, 2021 (ICSESS 2021), organized by Universiti Teknologi Malaysia, Johor Bahru.
- Odubunmi. J.O., Alebiosu.S.O., Obiagio. A.I, Gbotifa.I.C and Mustapha. A. "Evaluation of Mechanical Properties of Natural rubber Using Pyrolytic Carbon Black Powder as fillers" presented at Textile Researchers Association of Nigeria, (TRAN) 8th international Conference and 11th Annual General meeting at Kano, Nigeria. October, 2021.
- Alebiosu S.O, Odubunmi J.O., Adekeye T.O and Oseni R.F. "Production and Evaluation of Physico-Mechanical Properties of Blended Banana Bunch Stem and Palm Tree Fronds Paper" presented at Textile Researchers Association of Nigeria, (TRAN) 8th international Conference and 11th Annual General meeting at Kano, Nigeria. October, 2021.

Abstracts accepted at Conferences

- Odubunmi J.O, Malomo D, and Umunakwe.R. Sustainable Valorization of Rubber Wastes: Mechanical Performance of Nitrile/Mechanically Devulcanized Rubber Blends. 2026 Spring Technical Meeting, Sustainable Raw Material Processes, [Rubber Division, ACS 2026 Spring Technical Meeting](#)
- Odubunmi J.O, Malomo D. and Umunakwe.R. Efficient Mechanochemical Devulcanization of Industrial Waste Rubber Using Diphenyl Disulfide: A Horikx Analysis Approach, 4th international conference of the Nigerian Society of Physical Sciences, ZZAZZU 2026, February 9th -14th at Ahmadu Bello University, Zaria, Nigeria

TECHNICAL SKILLS

Polymer & Rubber Characterization:

- Spectroscopy: FTIR, UV-Vis,
- Thermal Analysis: DSC, TGA,
- Microscopy: SEM, Optical Microscopy
- Mechanical Testing: Tensile, Compression, Hardness, Fatigue, Abrasion Resistance
- Rheology: Rotational Rheometry, Cure Characteristics (MDR)

Rubber Processing & Formulation:

- Mixing and Compounding (Two-Roll Mills)
- Vulcanization and Curing Processes
- Formulation Development and Optimization
- Accelerated Aging and Weathering Studies

Analytical & Computational:

- Data Analysis: Origin,
- Design of Experiments (DOE) and Statistical Analysis
- Literature Management: Mendeley,

Software & Programming:

- Microsoft Office Suite (Excel, Word, PowerPoint)
- ChemDraw,
- LaTeX

PROFESSIONAL MEMBERSHIPS

- Society of Plastics Engineers (SPE)]
- Polymer Institute of Nigeria
- **Association of Professional Women Engineers of Nigeria, (APWEN)**

TEACHING & MENTORING EXPERIENCE

- Lecturer I, Polymer and textile Technology, Yaba College of Technology, January 2024 - till date.
- Lecturer II, Polymer and textile Technology, Yaba College of Technology, January 2021- December 2023.
- Lecturer III, Polymer and Textile Technology, Yaba College of Technology, January 2018- December 2020.

- Assistant lecturer, Polymer and Textile technology department, Yaba College of technology, September 2014- December 2017.

Job Description for Assistant Lecturer - Lecturer 1

Job Description

- Prepare and deliver engaging lectures for students at National Diploma and Higher Diploma levels in Rubber technology, polymer chemistry, thermodynamics, heat and mass transfer and polymer recycling.
- Prepare, administer, and grade examinations, assignments, and practical reports promptly and fairly.
- Curriculum development: Develop, update, and review course syllabi, teaching materials, and laboratory manuals to align with current industry standards and the National Board for Technical Education (NBTE) requirements.
- Initiate and conduct original, high-quality research in Polymer and Textile Technology, focusing on areas relevant to national development and industry needs (e.g., rubber processing, polymer recycling, polymer synthesis, composite materials, and sustainable textiles).

ADDITIONAL EXPERIENCE

Member. Board of Trustees, KEMLAG SCHOOLS

January 2012 – till date

Member, Women in Technical Education.

January 2015 till Date

Member, School of Technology, Book review Committee

October 2016 – October 2018

Organizing committee member: Polymer Institute of Nigeria, 30th Annual Technical Conference/AGM “IBADAN - 2019 Polymer Wastes Management: A Source of Economic Recovery in Nigeria 23rd – 26th October 2019. Technical support, registration, and documentation of participants for the conference

PROFESSIONAL DEVELOPMENT TRAINING WORKSHOPS

MOC LLC/NBTE workshop July 26 2025 – November 15 2025

Foundational concepts in machine learning and Artificial Intelligence: An open-source LINUX frame work for Applied Interdisciplinary Engineering Technology Research with LATEX Documentation

Virtual workshop on Embedding Greening into Yaba College of Technology Curriculum, June 14th – 16th, 2021

Facilitating Online Courses, Cohort 8, Commonwealth of learning, October 24, 2019

Improving Teaching Skills: A two-day workshop organized by UNESCOS-NIGERIA TVE REVITALIZATION PROJECT at the South West (Nigeria) Staff Development Centre, YABATECH, Lagos on 10th – 11th February 2016.

SEMINARS/WEBINARS

Society of Plastic Engineers, Certificate of completion in “Build a strong Business Case for bringing 3D-Printing into Your plastic Injection Operation” 06/21/2023 – 08/16/2023

Society of Plastic Engineers, Certificate of completion in “UV Effects on Plastic Materials: Degradation, Testing and Protection” 05/25/2023 - 05/25/2023;

MAS GI-RESOURCES Research Clinic Webinar, February 18, 2023. “How to Write a Good Research Proposal”, delivered by Dr. Abdulwakil Olawale Saba, Universiti Putra Malaysia.

Elsevier Researcher Academy webinar, July 28, 2020. "Writing without plagiarism and proper Citations using Mendeley”

Post Graduate Lecture Series, Faculty of Engineering, Federal University, Oye-Ekiti. “Referencing Management for Thesis and Manuscripts”, February, 2020

REFEREES

Professor Dosu Malomo

Chair, Rubber Research Group, FUOYE
Department of Industrial Chemistry
Faculty of Science,
Federal University, Oye Ekiti
dosu.malomo@fuoye.edu.ng
Relationship: Ph.D. supervisor

Dr. Reginald Umunakwe, (Associate Professor)

Department of Materials and Metallurgical Engineering,
Faculty of Engineering,
Federal University Oye-Ekiti, Nigeria
reginald.umunakwe@fuoye.edu.ng
Relationship: Ph.D. Co- Supervisor

Dr Samuel Adekunle Adebajo

Sub-Dean, Faculty of Engineering
Lagos State University, Epe Campus
Kunlebanjo41@gmail.com
Relationship: BSc thesis supervisor and Lecturer.

