Emmanuel Gikunoo

Faculty of Mechanical and Chemical Engineering
Kwame Nkrumah University of Science and Technology

ORCID 0000-0003-4382-9997 · Homepage webapps.knust.edu.gh/staff/dirsearch/profile/summary/bebe3fc173d7.html · Google Scholar scholar.google.com/citations?user=wPXHP-MAAAAJ&hl=en · Profile knust.peerford.com/staff/b8f0f578-cbb0-4468-868d-3e507882dda9

RESEARCH

Interests	Composites · Characterisation · Biomaterials · Extractive/Physical metallurgy · Waste Management
Areas	Electronic, Optical and Magnetic Materials · Pollution · Materials Chemistry · Electrical and Electronic Engineering · Mechanical Engineering · Artificial Intelligence

RESEARCH SUMMARY

53	718	18	23	0.92	2%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 53 publications listed below, 2004–2026. Field-weighted impact is the mean over the 42 works scored for it; 1.00 is the world average for works of the same field, type and year. 1 of the 42 papers scored for it are among the world's most cited tenth for their field, type and year.

POSITIONS

Professor 2006–present
Materials and Metallurgical Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

EDUCATION AND QUALIFICATIONS

PhD 2010–2014
Mechanical Engineering, Louisiana State University, Baton Rouge, United States

MS 2001–2004
Mechanical Engineering, University of Saskatchewan, Saskatoon, Canada

BSc Metallurgical Engineering 1995–1999
Materials and Metallurgical Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

PUBLICATIONS

Journal articles 49

1. John Adjah, Perseverance Dzikunu, Benjamin Agyei-Tuffour, Reisya Ichwani, Yongdan Hou, Kwadwo Mensah-Darkwa, **Emmanuel Gikunoo**, Yongchen Xiong, Winston O. Soboyejo (2026). Pressure engineering in perovskite solar cells: From lattice distortion to device stability. *Materials Today Physics*. https://doi.org/10.1016/j.mtphys.2026.102231
2. Perseverance Dzikunu, Emmanuel Kwesi Arthur, Samuel Olukayode Akinwamide, **Emmanuel Gikunoo**, Joseph Gati, Kwadwo Mensah-Darkwa, Eric A.K. Fangnon (2026). Stress-Engineered Nickel Current Collectors as Active Components for High-Performance Supercapacitors. *ACS Applied Engineering Materials*. https://doi.org/10.1021/acsaenm.6c00712
3. Emmanuel Afriyie, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Asiwome Boateng (2025). Bentonite-

assisted carbonisation of waste polyethylene terephthalate bottles for the removal of heavy metals from polluted water. *Results in Surfaces and Interfaces*. https://doi.org/10.1016/j.rsurfi.2024.100406

4. A Boateng, EK Arthur, **E Gikunoo**, E Afriyie (2025). Corrosion inhibition efficiency of expired antimalarial drugs on stainless steels in acidic and basic media. *Results in Surfaces and Interfaces*. https://www.sciencedirect.com/science/article/pii/S2666845925000017

5. Perseverance Dzikunu, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Elike Bleppony, Daniel Nframah Ampong, Frank Ofori Agyemang, Ruth Ebela Kwofie, Kwadwo Mensah-Darkwa (2025). Energy storage capabilities of spent pot lining and ZnO composite for supercapacitor applications. *Next Materials*. https://doi.org/10.1016/j.nxmate.2025.100727

6. Seth Adusei, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, William Amponsah, Frank Ofori Agyemang, Godfred Ohemeng-Boahen (2025). Heavy Metal Pollution From Illegal Mining 'Galamsey ' Activities on the Viability of Clarias gariepinus in the Oda River, Ghana. *Aquaculture Fish and Fisheries*. https://doi.org/10.1002/aff2.70076

7. Elorm Fiawotoafor, Solomon S.R. Gidigasu, **Emmanuel Gikunoo**, Jonathan A.Q. Ballard, Bright Andoh-Baidoo (2025). Shoreline changes and its impact on coastal communities: A case study of Senya Beraku, Ghana. *Scientific African*. https://doi.org/10.1016/j.sciaf.2025.e02901

8. Tabiri Kwayie Asumadu, Mobin Vandadi, Desmond Edem Primus Klenam, Kwadwo Mensah-Darkwa, Kwadwo Adinkrah-Appiah, **Emmanuel Gikunoo**, Nima Rahbar, Samuel Kwofie, Winston Oluwole Soboyejo (2025). Superlubricity enabled by graphene nanocomposite film on carbon-coated AISI 1045 steel. *Materials & Design*. https://doi.org/10.1016/j.matdes.2025.113916

9. Perseverance Dzikunu, Eugene Sefa Appiah, Emmanuel Kwesi Arthur, Samuel Olukayode Akinwamide, **Emmanuel Gikunoo**, Eric A. K. Fangnon, Kwadwo Mensah-Darkwa, Anthony Andrews, Pedro Vilaça (2025). Waste-to-carbon-based supercapacitors for renewable energy storage: progress and future perspectives. *Materials for Renewable and Sustainable Energy*. https://doi.org/10.1007/s40243-024-00285-4

10. Desmond Ankobiah Kusi, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Perseverance Dzikunu, Kwabena Koranteng Asiedu, Richard Armoo, Frank Ofori Agyemang (2024). Electrochemical performance of chemically treated pyrolytic carbon black from waste car tyres. *Energy Nexus*. https://doi.org/10.1016/j.nexus.2024.100297

11. Perseverance Dzikunu, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Kwadwo Mensah-Darkwa, Samuel Olukayode Akinwamide, Eric A.K. Fangnon, Pedro Vilaça (2024). Electrochemical performance of graphene oxide synthesized from graphitic spent potlining for energy storage application. *Journal of Energy Storage*. https://doi.org/10.1016/j.est.2024.113896

12. Daniel Nframah Ampong, Perseverance Dzikunu, Frank Ofori Agyemang, Patrick Aggrey, Martinson Addo Nartey, Amit Kumar Pal, **Emmanuel Gikunoo**, Anthony Andrews, Kwadwo Mensah-Darkwa, Ram K. Gupta (2024). Facile Synthesis of Colocasia esculenta Peels-Derived Activated Carbon for High-Performance Supercapacitor. *Energy Storage*. https://doi.org/10.1002/est2.70057

13. Frank Ofori Agyemang, Kwadwo Mensah-Darkwa, Nashiru Mahadeen Nanzumani, Eugene Sefa Appiah, Frederick Aziadzo, Patrick Aggrey, Daniel Nframah Ampong, Martinson Addo Nartey, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Ram K. Gupta (2024). Graphene oxide from coconut shells for high-performance supercapacitor application. *Discover Electrochemistry.*. https://doi.org/10.1007/s44373-024-00005-7

14. Perseverance Dzikunu, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Kwadwo Mensah-Darkwa, Samuel Olukayode Akinwamide, Pedro Vilaça (2024). Optimization of process parameters and kinetics of fluoride extraction from spent potlining using response surface methodology. *Journal of Environmental Management*. https://doi.org/10.1016/j.jenvman.2024.121896

15. Tabiri Kwayie Asumadu, Mobin Vandadi, Desmond Edem Primus Klenam, Kwadwo Mensah-Darkwa, **Emmanuel Gikunoo**, Samuel Kwofie, Nima Rahbar, Winston Oluwole Soboyejo (2024). Robust macroscale superlubricity on carbon-coated metallic surfaces. *Applied Materials Today*. https://doi.org/10.1016/j.apmt.2024.102140

16. Douglas Siaw Baah, Lucy Amissah, Gordon Foli, **Emmanuel Gikunoo**, James Atambire (2024). Water Quality Analysis and Risk Assessment of Potential Toxic Elements in Selected Surface Water Around Mining Sites in Abuakwa South Municipal, Ghana. *Environmental Quality Management*. https://doi.org/10.1002/tqem.22343
17. Douglas Siaw Baah, **Emmanuel Gikunoo**, Emmanuel Kwesi Arthur, Frank Ofori Agyemang, Gordon Foli, Bennetta Koomson, Philipa Opoku (2023). Anthropogenic Sources and Risk Assessment of Heavy Metals in Mine Soils: A Case Study of Bontesso in Amansie West District of Ghana. *Journal of Chemistry*. https://doi.org/10.1155/2023/6760154
18. Lois Pokuaa Adjei, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Gordon Foli, Jonathan Arthur Quaye-Ballard, Frank Ofori Agyemang, Rapheal Nsiah-Gyambibi, Douglas Siaw Baah (2023). Cyanide contamination assessment via target survey and physicochemical and bacteriological characterization: a case study of Akrofrom-Techiman cassava processing area in Ghana. *Environmental Monitoring and Assessment*. https://doi.org/10.1007/s10661-023-11037-8
19. Fuseini Abdallah, Emmanuel Kwesi Arthur, Kwadwo Mensah-Darkwa, **Emmanuel Gikunoo**, Samuel Agyei Baffour, Belinda Awudu Agamah, Martinson Addo Nartey, Frank Ofori Agyemang (2023). Electrochemical performance of corncob-derived activated carbon-graphene oxide and TiO2 ternary composite electrode for supercapacitor applications. *Journal of Energy Storage*. https://doi.org/10.1016/j.est.2023.107776
20. Elike Bleppony, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Perseverance Dzikunu, Frank Ofori Agyemang, Kwadwo Mensah-Darkwa (2023). Four-stage chemical treatment of spent pot lining carbon for titanium oxide doped high performance supercapacitor electrode material. *Next Materials*. https://doi.org/10.1016/j.nxmate.2023.100022
21. Rebecca Zida Afriyie, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Douglas Siaw Baah, Etornam Dziafa (2023). Potential health risk of heavy metals in some selected vegetable crops at an artisanal gold mining site: A case study at Moseaso in the Wassa Amenfi West District of Ghana. *Journal of Trace Elements and Minerals*. https://doi.org/10.1016/j.jtemin.2023.100075
22. T.K. Asumadu, K. Mensah-Darkwa, **E. Gikunoo**, D.E.P. Klenam, M. Vandadi, N. Rahbar, S. Kwofie, W.O. Soboyejo (2023). Strain gradient plasticity phenomenon in surface treated plain carbon steel. *Materials Science and Engineering A*. https://doi.org/10.1016/j.msea.2023.144806
23. Kwadwo Koram, **Emmanuel Gikunoo**, Emmanuel Kwesi Arthur, Daniel Adjah Anang, Frank Ofori Agyemang, Gordon Foli, Douglas Siaw Baah (2023). Synthesis of magnesium oxide from waste magnesium-rich Cucurbita pepo (pumpkin) seeds. *Sustainable Environment*. https://doi.org/10.1080/27658511.2023.2258473
24. Michelle Mimi Vandyck, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Frank Ofori Agyemang, Bennetta Koomson, Gordon Foli, Douglas Siaw Baah (2023). Use of limekiln dust in the stabilization of heavy metals in Ghanaian gold oxide ore mine tailings. *Environmental Monitoring and Assessment*. https://doi.org/10.1007/s10661-023-11306-6
25. Prince Baffour Awuah, Albert Amatey Adjaottor, **Emmanuel Gikunoo**, Emmanuel Kwesi Arthur, Frank Ofori Agyemang, Douglas Siaw Baah (2022). Dust Deposition and Associated Heavy Metal Contamination in the Neighborhood of a Cement Production Plant at Konongo, Ghana. *Journal of Chemistry*. https://doi.org/10.1155/2022/6370679
26. Nashiru Mahadeen Nanzumani, Frank Ofori Agyemang, Kwadwo Mensah-Darkwa, Eugene Sefa Appiah, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Bennetta Koomson, Amol R. Jadhav, Akeem Raji (2022). Molten salt synthesis of nitrogen-doped hierarchical porous carbon from plantain peels for high-performance supercapacitor. *Journal of Electroanalytical Chemistry*. https://doi.org/10.1016/j.jelechem.2022.116645
27. Douglas Siaw Baah, Gordon Foli, **Emmanuel Gikunoo**, Solomon S. R. Gidigasu (2022). Spatial Distribution and Potential Ecological Risk Assessment of Trace Metals in Reclaimed Mine Soils in Abuakwa South Municipal, Ghana. *Soil and Sediment Contamination An International Journal*. https://doi.org/10.1080/15320383.2022.2128301
28. **Emmanuel Gikunoo**, Anthony Andrews, Daniel Nframah Ampong, Pearl Narkie Korli (2022). Spent Tea

Leaves (Camellia sinensis), its Effect on the Leaching and Biosorption Characteristics of Lead from Waste Cupels. *Journal of Sustainable Metallurgy*. https://doi.org/10.1007/s40831-022-00550-8

29. Perseverance Dzikunu, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Elike Bleppony, Frank Ofori Agyemang, Kwadwo Mensah-Darkwa (2022). Successive selective leaching procedures for valorization of spent pot lining carbon. *Process Safety and Environmental Protection*. https://doi.org/10.1016/j.psep.2022.11.008
30. Andrews Amoako Atta, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Frank Ofori Agyemang, Kwadwo Mensah-Darkwa (2022). Thermochromic properties of composite materials made from polylactic acid reinforced with recovered liquid crystals from waste LCD/LED laptops screens. *Optical Materials*. https://doi.org/10.1016/j.optmat.2022.112485
31. Kwadwo Mensah-Darkwa, Frank Ofori Agyemang, Stefania Akromah, Emmanuel Kwesi Arthur, Fuseini Abdallah, **Emmanuel Gikunoo** (2021). A comparative study on the performance of activated carbon electrodes and activated carbon/titanium dioxide nanotubes hybrid electrodes. *Scientific African*. https://doi.org/10.1016/j.sciaf.2021.e00786
32. Desmond E. P. Klenam, Michael O. Bodunrin, Stefania Akromah, **Emmanuel Gikunoo**, Anthony Andrews, Fred McBagonluri (2021). Ferrous materials degradation: characterisation of rust by colour – an overview. *Corrosion Reviews*. https://doi.org/10.1515/corrrev-2021-0005
33. Douglas Siaw Baah, **Emmanuel Gikunoo**, Gordon Foli, Emmanuel Kwesi Arthur, Philomena Entsie (2021). Health risk assessment of trace metals in selected food crops at Abuakwa South Municipal, Ghana. *Environmental Monitoring and Assessment*. https://doi.org/10.1007/s10661-021-09373-8
34. Felix Odom, **Emmanuel Gikunoo**, Emmanuel Kwesi Arthur, Frank Ofori Agyemang, Kwadwo Mensah-Darkwa (2021). Stabilization of heavy metals in soil and leachate at Dompoase landfill site in Ghana. *Environmental Challenges*. https://doi.org/10.1016/j.envc.2021.100308
35. Rita Namoe Tabi, Frank Ofori Agyemang, Kwadwo Mensah-Darkwa, Emmanuel Kwesi Arthur, **Emmanuel Gikunoo**, Francis Momade (2021). Zeolite synthesis and its application in water defluorination. *Materials Chemistry and Physics*. https://doi.org/10.1016/j.matchemphys.2021.124229
36. Emmanuel K. Arthur, **Emmanuel Gikunoo**, Stefania Akromah, Salifu T. Azeko, Perseverance Dzikunu (2020). Alternative materials for grey cast iron corn-mill plates by computer-aided selection and weighted property methods: the case of Ghana. *SN Applied Sciences*. https://doi.org/10.1007/s42452-020-3174-5
37. Douglas Baah Siaw, Solomon S.R. Gidigasu, Anthony Andrews, **Emmanuel Gikunoo**, Gordon Foli (2020). GEOCHEMICAL ASSESSMENT OF TRACE METALS IN SOIL, STREAM WATER AND SELECTED FOOD CROPS AT KIBI GOLDFIELDS ENVIRONMENT, GHANA. *Earth Science Malaysia*. https://doi.org/10.26480/esmy.01.2020.71.76
38. EK Arthur, **E Gikunoo**, FO Agyemang, A Andrews (2020). Material selection for water pipes by the multi-objective decision-making method: the case of alternative materials for PVC pipes. *J. Sci. Technol*. https://www.researchgate.net/profile/Salifu-Azeko/publication/341120909_Material_Selection_for_Water_Pipes_by_the_Multi-Objective_Decision-Making_Method_The_Case_of_Alternative_Materials_for_PVC_Pipes/links/5eafef6592851cb267731354/Material-Selection-for-Water-Pipes-by-the-Multi-Objective-Decision-Making-Method-The-Case-of-Alternative-Materials-for-PVC-Pipes.pdf
39. E. K. Arthur, **E. Gikunoo** (2020). Property analysis of thermal insulating materials made from Ghanaian anthill clay deposits. *Cogent Engineering*. https://doi.org/10.1080/23311916.2020.1827493
40. Philipa Opoku, **Emmanuel Gikunoo**, Emmanuel Kwesi Arthur, Gordon Foli (2020). Removal of selected heavy metals and metalloids from an artisanal gold mining site in Ghana using indigenous plant species. *Sustainable Environment*. https://doi.org/10.1080/23311843.2020.1840863
41. **E Gikunoo** (2014). A novel carbon nanofibers grown on glass microballoons immunosensor: A tool for early diagnosis of malaria. *Sensors*. https://www.mdpi.com/1424-8220/14/8/14686
42. **Emmanuel Gikunoo**, Adeyabeba Abera, Eyassu Woldesenbet (2014). Achieving Ultra-Low Detection Limit Using Nanofiber Labels for Rapid Disease Detection. *Advances in Infectious Diseases*. https://doi.org/10.4236/aid.2014.44030

43. A. Andrews, **E. Gikunoo**, B. K. Kyei-Fram, R. Sarfo (2012). Characterization of Spent Prebaked Aluminium Carbon Anode as a Source of Fuel for Foundrymen. *Journal of Minerals and Materials Characterization and Engineering*. https://doi.org/10.4236/jmmce.2012.111003

44. A. Andrews, **E. Gikunoo**, L. Ofosu-Mensah, H. Tofah, S. Bansah (2012). Chemical and Mineralogical Characterization of Ghanaian Foundry Slags. *Journal of Minerals and Materials Characterization and Engineering*. https://doi.org/10.4236/jmmce.2012.112015

45. A Andrews, **E Gikunoo** (2011). Small scale foundries in Ghana: the challenges. *Leonardo Electronic Journal of Practices and Technologies*. https://lejpt.utcluj.ro/A19/001_012.pdf

46. W A Uju, **E Gikunoo**, I N A Oguocha (2011). XRD and XANES study of reactions in particulate Al–Mg alloy composites. *Canadian Metallurgical Quarterly*. https://doi.org/10.1179/000844311x552313

47. **E Gikunoo**[1] (2006). Investigation of fly ash-aluminum alloy reaction using XRD and XFS. *Design, Manufacturing and Applications of Composites: Proceedings of the Sixth Joint Canada-Japan Workshop on Composites*. https://books.google.com/books?hl=en&lr=&id=Eqj4cmEmDlkC&oi=fnd&pg=PA387&dq=info:_ftGM4LlQc8J:scholar.google.com&ots=9Qc0BZ2ijI&sig=pn-J7pB9O7TFYJUUSZ4zoflrHYA

48. **E Gikunoo** (2005). Effect of fly ash particles on the mechanical properties of aluminium casting alloy A535. *Materials science and technology*. https://doi.org/10.1179/174328405x18601

49. **E Gikunoo** (2004). Effect of fly ash addition on the magnesium content of casting aluminum alloy A535. *Journal of materials science*. https://openurl.ebsco.com/contentitem/gcd:14700946?sid=ebsco:plink:crawler-gcd&id=ebsco:gcd:14700946&crl=c&jrnl=00222461

Reports 1

1. **Emmanuel Gikunoo**, AFA Marfo, A Brobbey, AO Antwi, MK Baah, E Bessah, Gordon A Awandare (2021). Scientific African. *Scientific African*. https://www.researchgate.net/profile/Temitope-D-Timothy-Oyedotun/publication/356402866_Household_Waste_Generation_Change_in_Waste_Composition_and_the_Exposure_to_COVID-19_in_Guyana_and_Nigeria/links/619fb8b1d7d1af224b241a9b/Household-Waste-Generation-Change-in-Waste-Composition-and-the-Exposure-to-COVID-19-in-Guyana-and-Nigeria.pdf?_sg%5B0%5D=started_experiment_milestone&origin=journalDetail

Theses 3

1. **E Gikunoo** (2014). Utilization of Carbon Nanofibers Grown on Glass Microballoons (NMBs) in Point-of-Care Diagnostic Devices. *Louisiana State University and Agricultural & Mechanical College*. https://search.proquest.com/openview/8d1be590e409938fabbaab635cac93c1/1?pq-origsite=gscholar&cbl=18750&diss=y

2. **E Gikunoo** (2004). Effect of Fly Ash Particles on the Mechanical Properties and Microstructure of Aluminium Casting Alloy A535 [electronic Resource]. *Regina: University of Saskatchewan*. https://scholar.google.com/scholar?cluster=11185569488854739380&hl=en&oi=scholarr

3. **E Gikunoo** (2004). Effect of fly ash particles on the mechanical properties and microstructure of aluminium casting alloy A535. *University of Saskatchewan*. https://harvest.usask.ca/bitstream/10388/etd-12072004-152524/1/Thesis_Gikunoo.pdf