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RESEARCH

Interests	Applied Spectroscopy · Biomedical Optics · Biophysics · Machine Learning · Environmental Gas Monitoring
Areas	Analytical Chemistry · Molecular Biology · Biophysics · Biomedical Engineering · Animal Science and Zoology · Food Science

RESEARCH SUMMARY

48	477	10	11	1.35	12%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 48 publications listed below, 2011–2026. 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. 5 of the 42 papers scored for it are among the world's most cited tenth for their field, type and year.

PUBLICATIONS

Journal articles 41

1. **Charles Lloyd Yeboah Amuah**, Francis Padi Lamptey, Vida Gyimah Boadu, Jerry Opoku-Ansah, Elliot Kwaku Anyidoho, Haruna Gado Yakubu, Olivia Dzifa Peace Vordoagu, Samuel Sonko Sackey, Ernest Teye (2026). Detection of defective cocoa beans using machine learning techniques and NIR spectral data fusion. *Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy*. https://doi.org/10.1016/j.saa.2026.127792
2. Juliana Opoku Yeboah, Roseline Love MacArthur, Francis Padi Lamptey, Jerry Opoku-Ansah, **Charles Lloyd Yeboah Amuah**, Robert Agbemafle, Caleb Mawuli Agbale, Ernest Teye (2026). Exploring deep learning potential to authenticate vegetable oils and detect fraud using a micro-spectroscopic technique and chemometrics. *Analytical Methods*. https://doi.org/10.1039/d6ay00555a
3. Francis Padi Lamptey, Ernest Teye, Flavio Odoi-Yorke, Gifty Serwaa Otoo, Ernest Ekow Abano, **Charles L. Y. Amuah**, Sandra Ama Kaburi (2026). Two decades of near infrared spectroscopy in fruit quality analysis: A bibliometric review of trends, innovations, and future directions. *Journal of Near Infrared Spectroscopy*. https://doi.org/10.1177/09670335261434638
4. Andrew Huzortey, **CLY Amuah**, J Opoku-Ansah, POW Adueming (2025). Classification of organic and conventional cocoa beans using laser-induced fluorescence spectroscopy combined with chemometric techniques. *Journal of Fluorescence*.
5. Francis Padi Lamptey, Ernest Teye, Sandra Ama Kaburi, Flavio Odoi-Yorke, **Charles Lloyd Yeboah Amuah**, Ernest Ekow Abano, Gifty Serwaa Otoo (2025). Feasibility study on fingerprinting organic and conventional mango fruits, chips, and juice using portable near-infrared spectroscopy. *Analytical Methods*. https://doi.org/10.1039/d4ay01813c
6. Jerry Opoku-Ansah, Rabbi Boateng, **Charles Lloyd Yeboah Amuah**, Peter Osei-Wusu Adueming, Justice Allotey Pappoe, Jonathan Ntow, Kwesi Quagraine, Shemmira Yunus, Benjamin Anderson, Moses Jojo Eghan (2025). Identification of Spectral Fingerprints in Different Batches of Antimalarial Herbal Drugs Using Laser-Induced Autofluorescence and Chemometric Techniques. *Journal of Fluorescence*. https://doi.org/10.1007/s10895-025-04192-3
7. Rabbi Boateng, Jerry Opoku-Ansah, **Charles Lloyd Yeboah Amuah**, Peter Osei-Wusu Adueming, Andrew

Huzortey, Kingsley Taah, Moses Jojo Eghan (2025). Laser-induced fluorescence spectroscopy combined with multivariate analysis for rice seeds and grains discrimination. *Applied Optics*. https://doi.org/10.1364/ao.546627

8. Rabbi Boateng, Hampus Månefjord, Jerry Opoku-Ansah, Peter Osei-Wusu Adueming, Andrew Huzortey, Moses Jojo Eghan, Benjamin Anderson, Kingsley Taah, **Charles Lloyd Yeboah Amuah** (2025). Modular 3D-printed biophotonic platform for cost-effective hyperspectral and polarimetric imaging. *Optics Continuum*. https://doi.org/10.1364/optcon.575071
9. Ernest Teye, **Charles Lloyd Yeboah Amuah**, Vida Gyimah Boadu, Kwadwo Anokye Dompreh, Maxwell Darko Asante, Francis Padi Lamptey, Stephen Narh, Daniel Dzorkpe Gamenyah, George Oduro Nkansah, Selorm Akaba (2025). Rice seed integrity evaluation: Developing a rapid onsite system to check seed fraud using a portable NIR spectroscopic device coupled with smartphone technology. *Food Physics*. https://doi.org/10.1016/j.foodp.2025.100059
10. Sylvia Owusua Donkor, Samuel Sonko Sackey, Michael Kwame Vowotor, **Charles Lloyd Yeboah Amuah**, Rabbi Boateng, Ebenezer Teye Tatchie, Jerry Opoku-Ansah, Peter Osei-Wusu Adueming (2024). Analysis of Colorfastness in Metallic Prints Using Absorption Spectroscopy. *Journal of Spectroscopy*. https://doi.org/10.1155/jspe/2632412
11. Ernest Teye, **Charles L.Y. Amuah**, Francis Padi Lamptey, Francisca Obeng, Regina Nyorkeh (2024). Artificial intelligence for honey integrity in Ghana: A feasibility study on the use of smartphone images coupled with multivariate algorithms. *Smart Agricultural Technology*. https://doi.org/10.1016/j.atech.2024.100453
12. Vida Gyimah Boadu, Ernest Teye, Francis Padi Lamptey, **Charles Lloyd Yeboah Amuah**, L.K. Sam-Amoah (2024). Novel authentication of African geographical coffee types (bean, roasted, powdered) by handheld NIR spectroscopic method. *Heliyon*. https://doi.org/10.1016/j.heliyon.2024.e35512
13. ABANO ERNEST EKOW, **CLY Amuah**, Ernest Teye (2024). Smart classification of organic and inorganic pineapple juice using dual NIR spectrometers combined with chemometric techniques. *Applied Food Research*. https://www.sciencedirect.com/science/article/pii/S2772502224000817
14. Peter Osei-Wusu Adueming, Jerry Opoku-Ansah, Andrew Atiogbe Huzortey, **Charles Lloyd Yeboah Amuah**, Kwasi Nyandey, Moses Jojo Eghan, Benjamin Anderson, Samuel Sonko Sackey (2023). A Feasibility Study on Monitoring Shelf Life of Bottled Natural Fruit Juice Using Laser-Induced Autofluorescence. *International Journal of Optics*. https://doi.org/10.1155/2023/7458190
15. Michael K. Vowotor, Samuel S. Sackey, **Charles L. Y. Amuah**, Andrew Huzortey, Irene K. Aboh, Andrews A. Druye (2023). Analysis of seven micronutrients in breast milk of lactating mothers from the Central Region of Ghana using epithermal neutron activation. *Integrated Health Research Journal*. https://doi.org/10.47963/ihrj.v1i1.1180
16. Francis Padi Lamptey, Ernest Teye, Ernest Ekow Abano, **Charles L.Y. Amuah** (2023). Application of handheld NIR spectrometer for simultaneous identification and quantification of quality parameters in intact mango fruits. *Smart Agricultural Technology*. https://doi.org/10.1016/j.atech.2023.100357
17. Justice Allotey Pappoe, Jerry Opoku-Ansah, **Charles Lloyd Yeboah Amuah**, Peter Osei-Wusu Adueming, Samuel Sonko Sackey, Rabbi Boateng, Justice Kwaku Addo, Moses Jojo Eghan, Patrick Mensah-Amoah, Benjamin Anderson (2023). Automatic Classification of Antimalarial Herbal Drugs Exposed to Ultraviolet Radiation from Unexposed Ones Using Laser-Induced Autofluorescence with Chemometric Techniques. *Journal of Fluorescence*. https://doi.org/10.1007/s10895-023-03281-5
18. Justice Allotey Pappoe, Olivia Mongson, **Charles Lloyd Yeboah Amuah**, Jerry Opoku-Ansah, Peter Osei-Wusu Adueming, Rabbi Boateng, Moses Jojo Eghan, Samuel Sonko Sackey, Elliot Kwaku Anyidoho, Andrew Atiogbe Huzortey, Benjamin Anderson, Michael Kwame Vowotor, Ernest Teye (2023). Classification of Organic and Conventional Cocoa Beans Using Laser-Induced Fluorescence Spectroscopy Combined with Chemometric Techniques. *Journal of Fluorescence*. https://doi.org/10.1007/s10895-023-03499-3
19. Rabbi Boateng, Jerry Opoku-Ansah, Moses Jojo Eghan, Peter Osei-Wusu Adueming, **Charles Lloyd Yeboah Amuah** (2023). Identification of Commercial Antimalarial Herbal Drugs Using Laser-Induced Autofluorescence Technique and Multivariate Algorithms. *Journal of Fluorescence*. https://doi.org/10.1007/s10895-023-03309-w

20. E.K. Amewode, B. Sefa-Ntiri, A. Owusu, M. K. Vowotor, S. S. Sackey, F. Kumi, **C. L. Y Amuah** (2023). Investigation of Amended Sandy Soil's Water Retention Characteristics. *African Journal Of Applied Research*. https://doi.org/10.26437/ajar.v9i2.563

21. Ernest Teye, **Charles L. Y. Amuah**, Tai-Sheng Yeh, Regina Nyorkeh (2023). Nondestructive Detection of Moisture Content in Palm Oil by Using Portable Vibrational Spectroscopy and Optimal Prediction Algorithms. *Journal of Analytical Methods in Chemistry*. https://doi.org/10.1155/2023/3364720

22. Vida Gyimah Boadu, Ernest Teye, **Charles L. Y. Amuah**, Francis Padi Lamptey, Livingstone Kobina Sam-Amoah (2023). Portable NIR Spectroscopic Application for Coffee Integrity and Detection of Adulteration with Coffee Husk. *Processes*. https://doi.org/10.3390/pr11041140

23. Ernest Teye, **Charles L. Y. Amuah**, Kofi Atiah, Ransford Opoku Darko, Thomas Abindaw, Kwadwo Kusi Amoah, Michael Miyittah, Emmanuel Afutu, Rebecca Owusu (2023). Quick Determination of Soil Quality Using Portable Spectroscopy and Efficient Multivariate Techniques. *Journal of Spectroscopy*. https://doi.org/10.1155/2023/2024318

24. Edward Ken Essuman, Ernest Teye, Livingstone K. Sam-Amoah, **Charles L.Y. Amuah** (2023). Rapid and non-destructive prediction of adulterated chilli powder by employing pocket-sized NIR spectrometer and chemometrics. *Infrared Physics & Technology*. https://doi.org/10.1016/j.infrared.2023.104961

25. Jerry Opoku-Ansah, Ewura Seidu Yahaya, **Charles Lloyd Yeboah Amuah**, Regina Nyorkeh, Agnes Adom-Konadu, Peter Osei-Wusu Adueming, Ernest Teye (2022). A feasibility study on the use of a pocket-sized NIR spectrometer and multivariate algorithm to distinguish expired drugs from unexpired ones. *Analytical Methods*. https://doi.org/10.1039/d2ay00541g

26. Ernest Teye, **Charles L. Y. Amuah**, Kofi Atiah, Ransford Opoku Darko, Kwadwo Kusi Amoah, Emmanuel Afutu, Rebecca Owusu (2022). Feasibility Study on the Use of a Portable NIR Spectrometer and Multivariate Data Analysis to Discriminate and Quantify Adulteration in Fertilizer. *Journal of Spectroscopy*. https://doi.org/10.1155/2022/1412526

27. Vida Gyimah Boadu, Ernest Teye, **Charles L. Y. Amuah**, L. K. Sam-Amoah (2022). Rapid authentication of coffee bean varieties of different forms by using a pocket-sized spectrometer and multivariate data modelling. *Analytical Methods*. https://doi.org/10.1039/d2ay01480g

28. Ernest Teye, **Charles L.Y. Amuah** (2022). Rice varietal integrity and adulteration fraud detection by chemometrical analysis of pocket-sized NIR spectra data. *Applied Food Research*. https://doi.org/10.1016/j.afres.2022.100218

29. Elliot K. Anyidoho, Ernest Teye, Robert Agbemafle, **Charles L. Y. Amuah**, Vida Gyimah Boadu (2021). Application of portable near infrared spectroscopy for classifying and quantifying cocoa bean quality parameters. *Journal of Food Processing and Preservation*. https://doi.org/10.1111/jfpp.15445

30. Michael Kwame Vowotor, George Amoako, Baah Sefa-Ntiri, Samuel Amoah, Samuel Sonko Sackey, **Charles Lloyd Yeboah Amuah** (2020). Assessment of Nine Micronutrients in Jasmine 85 Rice Grown in Ghana Using Neutron Activation Analysis. *Environment and Pollution*. https://doi.org/10.5539/ep.v9n2p29

31. MK Vowotor, SS Sackey, G Amoako, B Sefa-Ntiri, **CLY Amuah**, KK Mireku (2020). Epithermal Instrumental Neutron Activation Analysis Technique in Determining Bromine, Chlorine, and Iodine in Sarotherodon Melanotheron from the Benya Lagoon, Ghana. *International Journal of Science and Engineering Investigations*. https://ir.ucc.edu.gh/server/api/core/bitstreams/f2fc889d-3b53-48ec-b59e-10db1248d6bd/content

32. Peter Osei-Wusu Adueming, Moses Jojo Eghan, Benjamin Anderson, Samuel Kyei, Jerry Opoku-Ansah, **Charles Lloyd Yeboah Amuah**, Charles Darko Takyi, Paul Kingsley Buah-Bassuah (2020). Laser-induced autofluorescence assisted by multivariate techniques discriminates a cataractous lens from healthy lens tissues of Sprague–Dawley rats. *Journal of the Optical Society of America A*. https://doi.org/10.1364/josaa.394555

33. **Charles Lloyd Yeboah Amuah**, Moses Jojo Eghan, Benjamin Anderson, Peter Osei-Wusu Adueming, Jerry Opoku-Ansah, Paul Kingsley Buah-Bassuah (2020). Laser-induced fluorescence combined with multivariate techniques identifies the geographical origin of antimalarial herbal plants. *Journal of the Optical Society of America A*. https://doi.org/10.1364/josaa.396701

34. **Charles L. Y. Amuah**, Ernest Teye, Francis Padi Lamptey, Kwasi Nyandey, Jerry Opoku-Ansah, Peter Osei-Wusu Adueming (2019). Feasibility Study of the Use of Handheld NIR Spectrometer for Simultaneous Authentication and Quantification of Quality Parameters in Intact Pineapple Fruits. *Journal of Spectroscopy*. https://doi.org/10.1155/2019/5975461

35. Ernest Teye, **Charles L.Y. Amuah**, Terry McGrath, Christopher Elliott (2019). Innovative and rapid analysis for rice authenticity using hand-held NIR spectrometry and chemometrics. *Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy*. https://doi.org/10.1016/j.saa.2019.03.085

36. Michael K. Vowotor, Samuel S. Sackey, **Charles L. Y. Amuah**, Andrew Huzortey, Dennis M. Ahorlu, Godwin Kortey, Dickson Kuvedzi (2019). Neutron Activation Analysis as a tool to Determine Concentration of Selected Metals in Table Salt Mined from Benya Lagoon, Ghana. *chemistry and materials research*. https://doi.org/10.7176/cmr/11-8-06

37. Jerry Opoku-Ansah, Moses Jojo Eghan, Benjamin Anderson, Johnson Nyarko Boampong, Raymond Edziah, Peter Osei-Wusu Adueming, **Charles Lloyd Yeboah Amuah** (2019). Optical Identification of Plasmodium falciparum Malarial Byproduct for Parasite Density Estimation. *International Journal of Optics*. https://doi.org/10.1155/2019/8782567

38. Jerry Opoku-Ansah, Benjamin Anderson, Moses J. Eghan, Peter Osei-Wusu Adueming, **Charles L.Y. Amuah**, Samuel S. Sackey (2017). A Retrofitted Metallurgical Microscope Using Light Emitting Diodes for Multi-Spectral Imaging. *Modern Applied Science*. https://doi.org/10.5539/mas.v11n9p30

39. Peter Osei-Wusu Adueming, Moses Jojo Eghan, Benjamin Anderson, Samuel Kyei, Jerry Opoku-Ansah, **Charles L. Y. Amuah**, Samuel Sonko Sackey, Paul Kingsley Buah-Bassuah (2017). Multispectral Imaging in Combination with Multivariate Analysis Discriminates Selenite Induced Cataractous Lenses from Healthy Lenses of Sprague-Dawley Rats. *Open Journal of Biophysics*. https://doi.org/10.4236/ojbiphy.2017.73011

40. **Charles Lloyd Yeboah Amuah**, J. M. Eghan, Johnson Nyarko Boampong (2013). Automated Protocol for Counting Malaria Parasites (P. falciparum) from Digital Microscopic Image Based on L* a* b* Colour Model and K-Means Clustering. *International Journal of Computer Science and Security (IJCSS)*. https://mail.cscjournals.org/library/manuscriptinfo.php?mc=IJCSS-887

41. Sulemana S. Abukari, Samuel Y. Mensah, Kofi W. Adu, Natalia G. Mensah, Kwadwo A. Dompreh, Anthony Twum, **Chales L. Y. Amuah**, Matthew Amekpewu, Musah Rabiu (2012). Domain Suppression in the Negative Differential Conductivity Region of Carbon Nanotubes by Applied AC Electric Field. *World Journal of Condensed Matter Physics*. https://doi.org/10.4236/wjcmp.2012.24045

Book chapters 2

1. Ernest Teye, **Charles Lloyd Yeboah Amuah** (2025). Data Pre-processing Techniques. *Application of Fluorescence Spectroscopy in Food Quality and Control*. https://doi.org/10.1007/978-3-031-89681-1_2

2. Ernest Teye, **Charles Lloyd Yeboah Amuah** (2025). Multivariate Statistical Analyses. *Application of Fluorescence Spectroscopy in Food Quality and Control*. https://doi.org/10.1007/978-3-031-89681-1_3

Conference papers 3

1. Andrew Atiogbe Huzortey, Benjamin Anderson, Jonathan Ntow, Samuel Sonko Sackey, Rofela Combey, Joseph Kwasi Adu, **Charles Lloyd Yeboah Amuah**, Peter Kofi Kwapong, Alfred Owusu (2022). 445 nm Laser-Induced Fluorescence monitoring of 5-Hydroxymethylfurfural in Honey. *Conference on Lasers and Electro-Optics*. https://doi.org/10.1364/cleo_at.2022.am2m.5

2. **C L Y Amuah**, J M Eghan, B Anderson, P Osei Wusu Adueming, J Opoku-Ansah (2017). Laser Induced Fluorescence in combination with Multivariate analysis classifies anti-malarial herbal plants. https://doi.org/10.1364/fio.2017.jtu2a.71

3. Ekua N. Bentil, **Charles Amuah**, Anna P. M. Michel, Moses J. Eghan, James A. Smith, Claire F. Gmachl (2011). Deployment of a Quantum Cascade Laser Open- Path Gas Sensor for Water Vapor and Wood Smoke Analysis. https://doi.org/10.1364/cleo_at.2011.jmc6

Theses 2

1. **Charles Lloyd Yeboah Amuah** (2020). Spectroscopic studies of some selected anti-malarial herbal plants sample combined with multivariate data analysis. *University of Cape Coast*. https://ir.ucc.edu.gh/items/d4263aa5-ac17-44af-b6ae-d6de3e9d3c35
2. **Charles Lloyd Yeboah Amuah** (2011). Detectionof trace gas (water vapour) using quantum cascade laser open-path system (qclops) version 2 sensor and the analysis of smoke from some selected wood species. *University of Cape Coast*. https://ir.ucc.edu.gh/server/api/core/bitstreams/726c533a-9559-4f39-a732-bf7b55d985bb/content