Lahiru Abeykoon

Research Scientist
Materials Technology Section

Qualifications

- **M.Phil.** (University of Peradeniya, Chemical sciences, 2022)
- **BSc.** (Sabaragamuwa University, Applied Physics, 2015)
- Diploma in Ceramic Technology (Sri Lanka Ceramics Council 2022)
- National Certificate in Engineering Draughtsmanship (2009)

Contacts

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Research Experience

- **Research Scientist** – Industrial Technology Institute (ITI) (2019 – Present)
  Materials Technology Section
  http://www.iti.lk

- **Research Assistant -** National Institute of Fundamental Studies (NIFS) (2016 – 2019)
  Energy and Advanced Material Chemistry Research Group
  https://www.nifs.ac.lk/

- **Development Officer –** Sri Lanka Sustainable Energy Authority (SLSEA) (2015 – 2016)
  Solar Energy Park Hambantota
  http://www.energy.gov.lk/index.php/en/

Interest Areas

Materials synthesis: Thin films deposition, Vacuum thermal evaporation, E- beam evaporation, Spin coating, Spray pyrolysis, Electrodeposition, nano material synthesis, graphene synthesis, 2D materials

Characterization: XRD, SEM, FTIR, UV-Visible spectroscopy, Electrochemical analysis, PEC, IV characterization, IPCE

Device fabrication: PEC device for water electrolysis**,** Thin films solar cells**,** photocatalyst, battery technology, Hydrogen production, super capacitors, sensors

Publications

SCI and Peer Review Journal Articles

- Bandara, D.B.H.I., Lakshani, S.D.M., De Silva, R.C.L., Abeykoon, A.M.K.L., Dulaj, M.H.T., Gofer, Y. and Kottegoda, I.R.M. (2024) 'Spectroscopic analysis of Sri Lankan vein graphite, industrially purified using green and chemical approaches', *Sri Lankan Journal of Physics*, 25(2), p. 86-101. Available at: https://doi.org/10.4038/sljp.v25i2.8136.

- Abeykoon, A.M.K.L., De Silva, R.C.L., Kottegoda, I.R.M., Gofer, Y. and Shmerling, B. (2024) 'Spectroscopic analysis of mass-scale prepared GO and rGO from vein graphite through compositional improvement', *Sri Lankan Journal of Physics*, 25(1), p. 13–34. Available at: https://doi.org/10.4038/sljp.v25i1.8148.

- Dissanayeka, R.J., Buddhika, W.G.K.S., Randika, K.K.P., Madushan, M.K.T., De Silva, R.C.L., Abeykoon, A.M.K.L. and Kottegoda, I.R.M. (2024) 'rGO and carbon black embedded positive electrode for lead-acid battery', *Sri Lankan Journal of Physics*, 25(1), p. 64–77. Available at: https://doi.org/10.4038/sljp.v25i1.8137.

- Lakshani, S.D.M., Bandara, D.B.H.I., De Silva, R.C.L., Abeykoon, A.M.K.L., Dulaj, M.H.T. and Kottegoda, I.R.M., 2023. Mass scale production and purification of graphite oxide from Sri Lankan vein graphite and spectroscopic characterization. Sri Lankan Journal of Physics, 24(2), p.98-109.
  DOI: https://doi.org/10.4038/sljp.v24i2.8134

- De Silva, R.C.L., Abeykoon, A.M.K.L. and Kottegoda, I.R.M., 2023. A review on synthesis of graphene-based materials for energy storage devices. Sri Lankan Journal of Physics, 24(2), p.135-159.
  DOI: https://doi.org/10.4038/sljp.v24i2.8132

- Chathuranga D. N. P. I, Silva R. C. L. D, Nayanajith L. D. C, Abeykoon A. M. K. L, Colombage H. C. D. P, Dulaj M. H. T, Kottegoda I. R. M. Effects of rGO Concentration on Electrical and Mechanical Properties of rGO Natural Rubber Nanocomposite. Mat. Sci. Res. India; 20(2).
  DOI: http://dx.doi.org/10.13005/msri/200203

- A.M.K.L. Abeykoon, R.C.L. De Silva, L.D.C. Nayanajith, and I.R.M. Kottegoda, Appropriate graphene synthesis methods for divers applications, Sri Lanka Journal of Physics (IPSL), Vol. 23 (2) (2022) 125-141. DOI: http://doi.org/10.4038/sljp.v23i2.8116

- Lahiru K. Abeykoon, Hongyi Tan, Chang Feng Yan, Jayasundera Bandara, "Significant role of the initial precursor sulfur concentration in the photoelectrochemical hydrogen production of Cu_2ZnSnS_4 photocathode prepared by thermal evaporation," J. Nanophoton. 16(1) 016001 (5 January 2022) DOI:

https://doi.org/10.1117/1.JNP.16.016001

- Hong-yi Tan, Liang Zhan, Chang-feng Yan, Lahiru. K. Abeykoon, Nuwan L. De Silva and J. Bandara, Enhancement of the conversion of mechanical energy into chemical energy by using piezoelectric $KNbO_{3-x}$ with oxygen vacancies as a novel piezocatalyst, Nano Express. (2020).
  DOI: http://iopscience.iop.org/article/10.1088/2632-959X/abd290.

- Rushdi D. Senevirathne, Lahiru K. Abeykoon, Nuwan L. De Silva, Chang-Feng Yan, Jayasundera Bandara, "Sono-photocatalytic production of hydrogen by interface modified metal oxide insulators", Ultrasonics - Sonochemistry 45 (2018) 279–285.
  DOI: https://doi.org/10.1016/j.ultsonch.2018.03.016

Conference Proceedings and Communications

- Silva, A.N.H., De Silva, K.N.N., Abeykoon, A.M.K.L1., Silva, G.N., De Silva, R.C.L. and Kottegoda, I.R.M "Facile and sustainable reduction of graphene oxide via Euphorbia hirta L. phytoconstituents" Proceedings of the 2nd International/7th Biennial Research Symposium – 2025– Industrial Technology Institute (ITI), Sri Lanka (2025) 97

- Uthpalawanna, H.S.S, Wijewickrama, S.I , Abeykoon, A.M.K L and Kottegoda, I.R. M, "Characterization of purified graphite oxide obtained from Sri Lankan vein graphite using a filtering-based purification method" Proceedings of the 2nd International/7th Biennial Research Symposium – 2025– Industrial Technology Institute (ITI), Sri Lanka (2025) 95

- N.G.S Nimesha, K.A Nimasha, D.I Sewwandi, I.R.M Kottegoda, A.M.K.L Abeykoon, J.A.C.P Jayasinghe, M.I Mallikarachchi and R.C.L De Silva, "Surfactant-assisted (Tween 80) dispersion of graphene at low concentrations in lubricant oil" Proceedings of the 2nd International/7th Biennial Research Symposium – 2025– Industrial Technology Institute (ITI), Sri Lanka (2025) 52

- K.N.N De Silva, A.N.H Silva, A.M.K.L Abeykoon, R.C.L De Silva and I.R.M Kottegoda "Characterization of rGO-enhanced positive plates in lead-acid batteries" Proceedings of the 2nd International/7th Biennial Research Symposium – 2025– Industrial Technology Institute (ITI), Sri Lanka (2025) 48

- W.H.S.N Jayaweera, K.N.N De Silva, R.C.L De Silva, A.M.K.L Abeykoon and I. R.M Kottegoda, "Comparison of lead-acid battery capacitance upon addition of rGO and $BaCl_2$ to the positive electrode" Proceedings of the 2nd International/7th Biennial Research Symposium – 2025– Industrial Technology Institute (ITI), Sri Lanka (2025) 34

- S.I Wijewickrama, H.S.S Uthpalawanna, A.M.K.L Abeykoon and I.R.M Kottegoda, “Enhanced purification and structural characterization of graphite oxide via the stirred diffusion method” Proceedings of the 2nd International/7th Biennial Research Symposium – 2025– Industrial Technology Institute (ITI), Sri Lanka (2025) 29

- K.G.M.M Dhananjaya, R.C.L De Silva, A.M.K.L. Abeykoon, and I.R.M Kottegoda, “Use of RGO and BaCl2 as additives in positive electrode to enhance properties of lead-acid batteries” Proceedings of the 80th Annual Sessions- Sri Lanka Association for the Advancement of Science (SLAAS), Sri Lanka (2024) 41

- S.D.M. Lakshani, D.B.H.I. Bandara, T.N. Senapathi, R.C.L De Silva, A.M.K.L. Abeykoon, M.H.T. Dulaj, and I.R.M Kottegoda, "XRD, FTIR and SEM characterization of graphite oxide synthesized using Sri Lankan vein graphite" Proceedings of the 79th Annual Sessions- Sri Lanka Association for the Advancement of Science (SLAAS), Sri Lanka (2023) 86

- R.J.Dissanayeka, W.G.K.S Buddhika, K.K Pipun Randika, M.K.T Madushan, C.Manathunga, R.C.L. De Silva, A.M.K.L Abeykoon, and I.R.M Kottegoda, “XRD and SEM characterization and performance analysis of rGO/carbon black incorporated positive electrode in lead acid battery” Proceedings of the 79th Annual Sessions- Sri Lanka Association for the Advancement of Science (SLAAS), Sri Lanka (2023) 75

- D.B.H.I. Bandara, S.D.M. Lakshani, A.D.K.I. Weeraratne, R.C.L De Silva, A.M.K.L. Abeykoon, M.H.T. Dulaj and I.R.M Kottegoda, “Purification and characterization of Sri Lankan vein graphite obtained by acid leaching method” Proceedings of the 79th Annual Sessions- Sri Lanka Association for the Advancement of Science (SLAAS), Sri Lanka (2023) 85

- M.V.R.P.D Senarath, W.P.J.L Premachandra, M.D.Y Milani, A.M.K.L Abeykoon, R.C.W Arachchige, H.M.B.I Gunathilaka, “Design and development of water ionizer” Proceedings of the 6th biennial research symposium – Industrial Technology Institute (ITI), Sri Lanka (2023) 46

- D.N.P.I. Chathuranga, N.G.S.S. Gamage, R.C.L. De Silva, A.M.K.L. Abeykoon, H.C.D.P. Colombage, M.H.T. Dulaj, L.D.C. Nayanajith, I.R.M. Kottegoda, “Synthesis and Characterization of composite with reduced graphene oxide and rubber: A value addition to Sri Lankan natural vein-graphite and rubber industries”, Proceedings of the Technical Sessions, Institute of Physics, Sri Lanka 39 (2023) 36-45
- H.M.B.N. Wickramasooriya, M.D.Y. Milani, A.M.K.L. Abeykoon, R.C.W. Arachchige, H.M.B.I. Gunathilaka,”The effect of membrane on the alkaline water production”, Young Scientists’ Conference Multidisciplinary Research (YSCMR), National Institute of Fundamental Studies, Sri Lanka (2022)
- A.M.K.L. Abeykoon, G.M.L.P. Aponsu, V.P.S. Perera, H.A. Vimal Nadeera and H.M.B.I. Gunathilaka, “Selfcleaning, hydrophobic, antifogging, TiO coating for photovoltaics solar panels”, Proceedings of the 76th Annual Sessions- Sri Lanka Association for the Advancement of Science (SLAAS), Sri Lanka (2020) 150

	• A.M.K.L. Abeykoon, J. Bandara, "A Comparative Study of CZTS Thin Films Deposited by Different Non Vacuum Techniques", proceedings of Advanced Materials for Clean Energy and Health Applications international conference, University of Jaffna, Sri Lanka (2019) 34 • A.M.K.L. Abeykoon, G.M.L.P. Aponsu, H.M.B.I. Gunathilaka, H.A. Vimal Nadeera, "Effect of Temperature on the Photovoltaic Characteristics of Polycrystalline Silicon Solar cells at Hambantota Solar Power Plant", proceedings of Solar Asia 2018 Int. Conf., Institute of Fundamental Studies, Kandy, Sri Lanka (2018) 270-275 • A.M.K.L. Abeykoon, J. Bandara,"Determination of fundamental properties of CZTS semiconductor material deposited by the spray pyrolysis method",Proceedings of the Postgraduate Institute of Science Research Congress, University of Peradeniya, Sri Lanka (2018) 76 **PATANTS** • D.S. Samarawickrama, A.M.K.L. Abeykoon, and I.R.M. Kottegoda, (Industrial Technology Institute). Method of purifying low grade graphite in mass scale using floatation technique, Sri Lanka Patent No.22170(2025) • R.C.L. De Silva, A. SooriyaArachchi, A.M.K.L. Abeykoon, D.S. Samarawickrama, Sooriyaarachchilage K.S., KathriArachchige L.G.L., I.R.M. Kottegoda, (Industrial Technology Institute). An apparatus and a method to convert low grade graphite below 80% carbon in to high purity graphite above 99.9% in mass scale using non-chemical method, Sri Lanka Patent No. 22282 (2025) • I.R.M. Kottegoda, A.M.K.L. Abeykoon, H. M. B. I. Gunathilaka, H.C.D.P. Colombage, An apparatus and process to convert low purity graphite into high purity graphite by low cost ecofriendly physical technique , Sri Lanka Patent No. 20921 (2023).
Awards memberships, Scholarships & Recognition	• Dasis award for apparatus for purification of graphite up to 99% carbon in mass scale, Sahasak Nimavum, Sri Lanka Inventors Commission 2022 • Gold medals for apparatus for purification of graphite up to 99% carbon in mass scale, Sahasak Nimavum 2022, Sri Lanka Inventors Commission 2022 • President's award for highly rated scientific research publication in 2018 • Best oral presenter final year annual research project presentation faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka. (2015) • A Life time member of Sri Lanka Association for Advancement of science (SLAAS)
Major Projects Undertaken	• Production process equipment and wastewater treatment plant for Graphene production process - Funded by Treasury Grants (TG) • Purification of graphite of Sri Lanka as a high value addition (NSF)

	• Designing and fabrication of a water ionizer (TG) • Demand driven automotive rechargeable cost efficient battery manufacturing Technology for SME startups (TG)
Major Technology Transfers and Commercialization	• Upgrading low grade graphite into high grade graphite • Purification of local graphite into high level as a value addition • Mass scale production of graphene and reduced graphene oxide (rGO) • Mass scale production of graphite oxide (GO) • Technology for producing conductive graphite