

YUSHANI ALAHAKOON

☎ : Mobile: +9471 42 37 031 / Phone: +9481 23 95 454

✉ : yushaniamyw@gmail.com / yushani@agri.pdn.ac.lk

🏠 : 19/18 G, Mahara Prison Road, Ragama, Sri Lanka



PROFILE

A passionate researcher and a lecturer with 6+ years of experience in the field of Agricultural and Biosystems Engineering. Research interests are specifically in the fields of biomass valorization, waste management, biomass thermal chemical treatment, biochar, material flow modelling, together with computer aided designing. Committed to continuous learning and professional development with a genuine interest in research and development related work. Seeking to leverage a study abroad experience to utilize the gained knowledge, experience, and skills.

CORE SKILLS

- ◆ CAD – AutoCAD, Solidworks
- ◆ Software – STAN2web, e!Sankey, COMSOL Multiphysics
- ◆ Computer programming – Python
- ◆ Arduino programming
- ◆ Good editor skills – Microsoft office
- ◆ English Language skills (TOEFL iBT 2021 – 96)
- ◆ Teaching and Presentation skills
- ◆ Self-learning

EDUCATION

Master of Philosophy (M.Phil.) in Agricultural and Biosystems Engineering (August 2021)

Postgraduate Institute of Agriculture, University of Peradeniya

Final GPA – 3.87/4.00

Thesis Title: Development of an efficient biochar production technology for recycling of rice husk

Bachelor of Science in Agricultural Technology and Management (November 2015)

Faculty of Agriculture, University of Peradeniya

Advanced Module: Agricultural and Biosystems Engineering

Final GPA – 3.37/4.00 (Second class honors upper division)

Thesis Title: Modeling of post-consumer plastic flow in municipal solid waste stream: A case study from Kandy and Akkaraipattu Municipalities

RESEARCH AND WORK EXPERIENCE

Project Assistant – AHEAD / ICE Project, University of Peradeniya

From 2019 to 2020

Project: Development and commercializing of a medium scale biochar production technology

Research Associate (Voluntary) - Waste to Energy Technologies Limited

From 2017 to 2020

Projects:

- Healthcare Waste Generation Survey in Western Province of Sri Lanka (under the project “Formulation of Western Province Solid Waste Management Master Plan - Sri Lanka”)

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- Designing a Sewage Treatment Facility for Ipalogama Local Authority, Sri Lanka
 - Manure & Nutrient Management Plan (CMNMP) for Modernized Dairy Farm Facilities in Ambewela Farms, Sri Lanka
 - Initial Environmental Examination (IEE) Study for proposed Town East of Polonnaruwa Water Supply Project, Sri Lanka

Research Assistant - National Research Council

From 10/01/2017 to 31/03/2019 (Under the project NRC Grant TO 16 – 07.)

Project: Development of an efficient biochar production technology for recycling of rice husk

Part-Time Academic Sub-Warden – “Sangamiththa” Student Residential Hall, University of Peradeniya.

From 15/04/2016 to 31/12/2016

TEACHING EXPERIENCE

Lecturer in Agricultural and Biosystems Engineering

Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya

Since September 2020

Main Subjects: Thermodynamics, Energy and Waste Management, Animal Waste Management, Structural Design for commercial Farming, Engineering Mathematics and supervising undergraduate research students

Resource Person – Postgraduate Institute of Agriculture

20 – 24th, November 2018

Instructor to the Short Course on Application of Engineering Technology in Dairy Farm Management for Livestock Development Instructors from North-western Province

Temporary Lecturer - Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya.

From 01/03/2016 to 31/12/2016

Duties: Conducting student practical classes, Assisting lecturers during teaching, coordination of the academic program.

PUBLICATIONS

Book chapters/ Journal articles

Illankoon, W. A. M. A. N., Chiara Milanese, A. K. Karunaratna, Kumuditha D. Hikkaduwa Epa Liyanage, **A. M. Y. W. Alahakoon**, Puhulwella G. Rathnasiri, Maria Cristina Collivignarelli, and Sabrina Sorlini. (2023). Evaluating Sustainable Options for Valorization of Rice By-Products in Sri Lanka: An Approach for a Circular Business Model. *Agronomy*. 13(3):803. <https://doi.org/10.3390/agronomy13030803>.

W. A. M. A. N. Illankoon, Chiara Milanese, A. K. Karunaratna, **A. M. Y. W. Alahakoon**, Puhulwella G. Rathnasiri, Maria Medina Llamas, Maria Cristina Collivignarelli, Sabrina Sorlini. (2023). Development of a Dual-chamber Pyrolizer for Biochar Production from Agricultural Waste in Sri Lanka. *Energies*. 16(4), 1819. <https://doi.org/10.3390/en16041819>.

Alahakoon, A. M. Y. W., Karunarathna, A. K., Dharmakeerthi, R. S., & Silva, F. H. C. A. (2022). Design and Development of a Double-chamber Down Draft (DcDD) Pyrolyzer for Biochar Production from Rice Husk. *Journal of Biosystems Engineering*, 47(4), 458-467. <https://doi.org/10.1007/s42853-022-00159-5>

Alahakoon, A. M. Y. W., Karunarathna, A. K., Dharmakeerthi, R. S. (2018). Performance Evaluation of a Down Draft Double Chamber Pyrolysis Reactor under Field Conditions. *Tropical Agriculture Research Journal*. 30 (1), 84 – 94. <https://tar.sljol.info/articles/abstract/10.4038/tar.v30i1.8280/>.

Alahakoon, Y., Karunarathna, A. (2020). Modelling of Post-Consumer Plastic Flow in Municipal Solid Waste Stream: A Case Study in Some Major Local Authorities of Sri Lanka. In *Urban Mining and Sustainable Waste Management*, (pp. 219 - 229). Springer, Singapore. https://doi.org/10.1007/978-981-15-0532-4_22

Vidanage, V. V. D. N. G., Karunarathna, A. K., **Alahakoon, A. M. Y. W.** and Jayawardene, S. M. N., (2020). Development of an Effective and Efficient Integrated Charcoal Filter Constructed Wetland System for Wastewater Treatment. In *Recent Trends in Wastewater Treatment and Water Resource Management* (pp. 47-56). Springer, Singapore. https://doi.org/10.1007/978-981-15-0706-9_5

Submitted:

Fernando, L. P. S. K., **Alahakoon, A. M. Y. W.,** Karunarathna, A. K. Development of Nutrient Enriched Hydrochar by Hydrothermal Pyrolysis of Food Waste. 2022

Sarachchandra, P. O., **Alahakoon, A. M. Y. W.,** Karunarathna, A. K. Phosphorus Enrichment of Waste Biomass Derived Biochar by Co-Pyrolysing with Rock Phosphate. 2022

Conference Proceedings – Full Papers

Karunarathna, A., Illesinghe, A., **Alahakoon, Y.,** Dissanayake, N., Basnayake, B. F. A. (2018). Post-Consumer Plastic Waste Material Flow Analysis: A Case Study in Kandy Municipal Council of Sri Lanka. *APLAS TOKYO The 10th Asia-Pacific Landfill Symposium (Japan)*. 24th – 26th November 2018. 402 – 407.

Karunarathna, A., Ranasinghe, T., Piyathilake, U., **Alahakoon, Y.,** Ariyawansa, R., Basnayake, B. F. A. (2018). Development of a Waste Plastic Based Construction Material for Outdoor Light Constructions. *APLAS TOKYO The 10th Asia-Pacific Landfill Symposium (Japan)*. 24th – 26th November 2018. 186 – 192.

Extended Abstracts/ Abstracts

Senarath K.K.D.M.D., **Alahakoon A.M.Y.W.** and Karunarathna A.K. Co-Pyrolysis of Rice Husk with Nitrogen-Rich Waste to Make Nitrogen Enrich Biochar. *Faculty of Agriculture Undergraduate Research Symposium (FAuRS 2021/22)*. 28th December 2022. 125.

Waththuhewage T.L., **Alahakoon A.M.Y.W.** and Karunarathna A.K. Valorization of Invasive Weed Biomass and Waste Plastic Mulch through Co-Pyrolysis into Biochar. *Faculty of Agriculture Undergraduate Research Symposium (FAuRS 2021/22)*. 28th December 2022. 152.

Sarachchandra, P. O., **Alahakoon, A. M. Y. W.,** Karunarathna, A. K. Phosphorus Enrichment of Waste Biomass Derived Biochar by Co-Pyrolysing with Rock Phosphate. *11th International Conference on Sustainable Waste Management and Circular Economy (11th IconSWM-CE & IPLA Global Forum 2021)*, India. 1st – 4th December 2021. 89.

Fernando, L. P. S. K., Karunarathna, A. K., **Alahakoon, A. M. Y. W.** Development of Nutrient Enriched Hydrochar by Hydrothermal Pyrolysis of Food Waste. Young Scientists' Conference on Multidisciplinary Research 2021 (YSCMR 2021). 21st October 2021. 125.

Fernando, L. P. S. K., Karunarathna, A. K., **Alahakoon, A. M. Y. W.** Development of Nutrient Enriched Hydrochar by Hydrothermal Pyrolysis of Food Waste. Faculty of Agriculture Undergraduate Research Symposium (FAuRS 2020). 13th August 2021.

Fernando, L. P. S. K., Karunarathna, A. K., **Alahakoon, A. M. Y. W.** Development of Nutrient Enriched Hydrochar by Hydrothermal Pyrolysis of Food Waste. Online International Multidisciplinary Conference on Recent Trends in Environmental Science and Management (IMCRTESSM - 2021), India. 6th – 7th August 2021.

Alahakoon, A. M. Y. W., Nilmalgoda, E. P. R. H. H. W., Karunarathna, A. K., Dharmakeerthi, R. S. (2019). Paddy Husk Pyrolysis in a Small Scale Down Draft Double Chamber (DDDC) Pyrolyser: Heat of Pyrolysis. Peradeniya University International Research Sessions (iPurse 2019). 11th – 12th September 2019. 76.

Gamagedara, K. Y. B., **Alahakoon, A. M. Y. W.**, Karunarathna, A. K., Kirindage, K. G. I. S., Attanayake, C. P. (2019). Thermo-pyrolysis Conversion of Sewage Sludge into Biochar and its Characterization. Peradeniya University International Research Sessions (iPurse 2019). 11th – 12th September 2019. 50.

Alahakoon, A. M. Y. W., Karunarathna, A. K., Rathnayake, R. M. P. C., Dissanayake, N. D. (2016). Modelling of Post-Consumer Plastic Flow in Municipal Solid Waste Stream: Case Study from Kandy Municipal Council. NSF Research Summit (Colombo), 07th – 08th July 2016. 101.

PROFESSIONAL QUALIFICATIONS

150-hour course on **Certificate in Teaching in Higher Education** at Staff Development Center, University of Peradeniya, Sri Lanka. (From 27th April to 30th June 2021)

10 days (30 hours) Live Online Instructor-led course on **Applied Machine Learning & Its Applications with Python** at EduXLabs (Esoir Business Solutions LLP in association with E-Cell IIT Hyderabad, India. (From 27th January to 7th February 2021)

Six-month course on Effective Use of **AutoCAD for Drafting and 3D Modelling** at Institute of Computer Aided Engineering. (From 1st March to 30th August 2017)

TRAININGS AND WORKSHOPS

Training session on “**Fourier Transform Infrared Spectroscopy (FTIR)**” organized by University Research Council, University of Peradeniya. (18th March 2021).

Pre-congress Workshop on “**From Manuscript to a Camera-ready Article**” organized in parallel with 30th PGIA Annual Congress by Postgraduate Institute of Agriculture, University of Peradeniya. (November 2018).

Five days training session on “**Developing Business in Resource Recovery and Reuse**” conducted by the International Water Management Institute (IWMI) and the International Centre for Water Management Services (cewas), Colombo, Sri Lanka. (2018/07/23 to 2018/07/27).

ACHIEVEMENTS

“Prize for the Best Poster” in Energy and Environment theme in the NSF Research Summit 2016, organized by National Science Foundation, Ministry of Science, Technology & Research, Sri Lanka

University Full Colours for the performance in the University Carrom team 2014

University Colours for the performance in the University Carrom team 2013

Champion - Inter University games 2015 (Carrom)

2nd runner-up - Inter University games 2014 (Carrom)

Champion - “Grip to Grip” Carrom tournament in University of Kelaniya 2015

1st runner-up - Inter Agriculture Faculty Carrom Tournament 2014

REFEREES

Dr. Anurudda Karunarathna

Senior Lecturer

Department of Agricultural Engineering,

Faculty of Agriculture

University of Peradeniya

+9477 2976234

anujica@yahoo.com/ anujica@agri.pdn.ac.lk

Prof. Benedict Basnayake

Emeritus Professor

Department of Agricultural Engineering,

Faculty of Agriculture

University of Peradeniya

+9477 7808932

nri.srilanka@gmail.com/ benb@pdn.ac.lk

Prof. Mohammed Mowjood

Senior Professor

Department of Agricultural Engineering

Faculty of Agriculture

University of Peradeniya

+9477 7356342

mowjood@agri.pdn.ac.lk/ mowjood2010@gmail.com
