



Curriculum Vitae

Sanja Hemamalie Pujitha Gunawardena

BSc Eng (Moratuwa), PhD (B'ham)

Professor

Department of Chemical and Process Engineering

University of Moratuwa, Sri Lanka

sanjag@uom.lk

Contact Information:

Name: Sanja Hemamalie Pujitha Gunawardena (Nee Wijesinghe)

Official Address:

Department of Chemical and Process Engineering
University of Moratuwa, Moratuwa
Sri Lanka

e mail: sanjag@uom.lk OR sanjagunawardena@yahoo.co.uk

Telephone: ++ 94-112-640338 OR ++ 94-112-650301 ext. 4106

Fax: ++94-112-650281 OR ++94-112-650622

Residential Address:

72/5, Vidharshana Mawatha
Galawilawatte
Homagama 10200
Sri Lanka

Telephone: ++94-112-748119 (Res) OR ++94-0777190465/0718477573 (Mobile)

Personal Data

Nationality : Sri Lankan
Date of Birth : 20 - 01 - 1967
Marital Status : Married with two daughters

Academic Qualifications

- Ph.D. – School of Chemical Engineering, University of Birmingham, Birmingham, U.K, 1998. The aim of my PhD project was to investigate, characterise and model the vacuole formation in the fungi *Penicillium chrysogenum* which was believed to have an effect on the production of penicillin by the fungi. The research title was “Image analysis for characterising *Penicillium chrysogenum* vacuolation”.
- B.Sc. (Eng.) (Honours.) - University of Moratuwa, Sri Lanka, 1993. Graduated with a first class (Honours) degree in Chemical Engineering with a Grade Point Average of 3.84/4.0

Fellowships/Awards

- Award of Excellence with Distinction in recognition of the Outstanding Research Performances for years 2017, 2018, 2019, 2020 University of Moratuwa, Sri Lanka.

- Award of Excellence in recognition of the Outstanding Research Performances for the year 2016 – University of Moratuwa, Sri Lanka.
- Best Paper Award - 4th Moratuwa Engineering Research Conference (MERCon 2018)
- Best Paper Award - 2nd Moratuwa Engineering Research Conference (MERCon 2016)
- Endeavour Research Fellowship - 2011
These are the Australian Government's internationally competitive, merit-based scholarship providing opportunities for research in Australia.
- Overseas Research Student Award, UK, October 1995 to October 1998
These are awarded by the Universities UK to overseas students undertaking a research degree.
- University of Moratuwa Exhibition, 1991
This was awarded to the student who scored the 2nd highest average at the first-year examination in the group II specialisation.

Professional affiliations

- Chartered (Professional) Engineer, The Institute of Engineers, Sri Lanka
- Member – Sri Lanka Association for the Advancement of Science

Present Employment

Professor, University of Moratuwa, Sri Lanka.

Responsibilities

- Conduct lectures for undergraduate and postgraduate students.
- Conduct tutorials and laboratory classes for BSc Engineering undergraduates
- Supervise postgraduate research students
- Supervise undergraduate projects
- Carry out Departmental administrative work, work entrusted by Dean, Engineering, and the Vice Chancellor.
- Serve in university sub committees

Work Experience

Dec. 2019 - present	Professor, Department of Chemical and Process Engineering, University of Moratuwa
April 2016 - April 2019	Head of Department, Department of Chemical and Process Engineering, University of Moratuwa
July 2006 – Nov. 2019	Senior Lecturer (Grade I), University of Moratuwa, Sri Lanka (on permanent basis)
July 2000 - July 2006	Senior Lecturer (Grade II), University of Moratuwa, Sri Lanka (on permanent basis)
Feb. 2000 - June 2000	Senior Lecturer, University of Moratuwa, Sri Lanka (on contract basis)
Sept 1995 – Dec. 1999	Research Student, University of Birmingham, UK
Sept. 1994 – Aug. 1995	Assistant Lecturer, University of Peradeniya, Sri Lanka (on temporary basis)
May 1993 - July 1994	Temporary instructor, University of Moratuwa, Sri Lanka

Visiting/Consultant Appointments

- Consultant in Biosystems Engineering, Sri Lanka Technological Campus, Padukka (2020-todate).
- Visiting Lecturer in Basic Chemical Engineering, University of Ruhuna, Sri Lanka (2008 to 2014).
- Moderator of the Second year Examination paper “Elementary Chemical Engineering”, Institute of Technology, University of Moratuwa. (2005 – 2015)
- Visiting Lecturer in “Basic Principles in Chemical Engineering”, Dept. of Chemistry, University of Sri Jayawardenapura, Sri Lanka. (MSc)
- Visiting Lecturer in Industrial Biotechnology, Dept. of Plant Sciences, University of Colombo, Sri Lanka. (2009 to 2011)

- Visiting Lecturer in “Engineering in Food Technology”, Dept. of Food Science, University of Sri Jayawardenapura, Sri Lanka (2008)
- Visiting Lecturer in “Process Technology”, Dept. of Chemistry, University of Sri Jayawardenapura, Sri Lanka. (2009)
- Visiting Lecturer, Department of Town & Country Planning, University of Moratuwa, Sri Lanka. (2006)
- Visiting Lecturer in Industrial Microbiology, Dept. of Chemistry, University of Colombo, (2000 – 2005)
- Moderator and Second Examiner in Dept. of Food Science, University of Sri Jayawardenapura, Sri Lanka (2009- todate)
- Examiner (2000) and Moderator of the Second year Examination paper “Fuels and Lubricants”, Institute of Technology, University of Moratuwa, Sri Lanka. (2001, 2002)

Other Responsibilities

- Head – Department of Chemical and Process Engineering (2016-19)
- Chairperson - University Sports Advisory Board (2012 Dec. – 2017 Dec.)
- Member - Faculty Academic Committee 2002-2016
- Member - University Sports Advisory Board since 2002-2012
- Academic Coordinator - Semester 3 (previously Level 2 Semester 1)
- In charge – Food Engineering Laboratory, Department of Chemical & Process Engineering, University of Moratuwa (2014 – 2020, 2022- todate)
- Academic Counselor (Student Mentor) since 2008
- Chairman - Departmental sub-committee on Curriculum Development since 2011.
- In charge – Food & Biochemical Engineering Laboratory, Department of Chemical & Process Engineering, University of Moratuwa (2001-2009)
- In charge – Microbiology Laboratory, Department of Chemical & Process Engineering, University of Moratuwa (2009-2013)
- Senior Treasurer - University of Moratuwa Sports Council, 2002-2011
- Undergraduate in-plant training co-ordinator in 2003.
- Member - Faculty sub-committee Exhibition, University of Moratuwa (2000 – 2001).
- Chairman - Departmental sub-committee on Curriculum Development (2005)
- Member - Departmental sub-committee on Curriculum Development, 2000 & 2010.
- Member - Faculty sub-committee on Orientation, University of Moratuwa (2002 – 2004).
- Member - Departmental sub-committee on Curriculum Development, 2010.

Current Research Activities

- **Non thermal sterilization of local spices**
Spices contaminated with microorganisms can cause food spoilage and food borne diseases. Cold plasma is an emerging nonthermal sterilization method that can be used in place of wet or dry heat sterilization. The species generated in cold plasma can diffuse into a biological surface and undergo physical, chemical and biological modifications. During plasma-microbe interactions, those species can etch the membrane of microbial cells and damage the intracellular components. This causes microbial inactivation, and the level of treatment depends on the quantity from each component of reactive species and their respective collisions
- **Production of biodiesel using locally available non-edible oils and investigation of low-cost heterogeneous catalyst in biodiesel production**
Conversion of high free fatty acid containing nonedible oils obtained from various non-edible oils from oil bearing seeds available in Sri Lanka to biodiesel is investigated. Further, heterogeneous acid catalysts and base catalysts are produced from cheap local material for esterification of free fatty acids and transesterification of oils.

- **Development of rice straw biorefinery**

To take advantage of various components of the biomass and maximize the added value, fractionation of lignocellulosic into the three primary components, namely cellulose, hemicelluloses, and lignin must be performed. This process is called biorefinery and consists in an integrated conversion system to produce fuels, power, heat, and/or value-added chemicals from biomasses. Locally abundant rice straw could be used as the biomass to isolate components such as silica and also to convert into various products: hemicellulose to furfural; cellulose to bioethanol and 5-hydroxymethanol furfural (HMF)/levulinic acid etc.

- **Socioeconomic analysis on municipal solid waste disposal methods**

Environmental, social, and economic analysis of waste disposal and alternative options including controlled landfills are not available for developing countries. Studies done in developed countries like Germany and Japan are not automatically applicable in the context of low-income countries. There is a knowledge gap that needs to be filled in the context of low-income countries.

- **Development of a Novel Biological Decolourization System for Treatment of Textile Effluent**

Biological treatment of textile wastewaters has become significant and attractive due to its eco-friendly nature and cost effectiveness. This can be done using native microorganisms belonging to the different taxonomic groups of bacteria, fungi, actinomycetes, and algae. Work focuses on introducing a novel decolourization system for textile industry by using biological treatment method.

Postgraduate Supervision

Current Research Supervision

1. Process Analysis of Non-Thermal Plasma and UV Sterilization Processes for Sri Lankan spices. A.B.G.C.J de Silva (PhD). Supervisors: *Prof. A de Alwis, Dr. (Mrs.) Sanja Gunawardena, Dr. PNRJ Amunugoda*
2. "Development of a Sustainable Model for Composting in Sri Lanka" S. Vijayapala (PhD) Supervisors: *Dr. (Mrs.) Sanja Gunawardena, Prof. S. Dasanayake, Dr. VISCK Fernando*
3. Production of biodiesel from waste cooking oil using heterogeneous catalysts. R. Elabadagama (MSc). Supervisors: *Dr. (Mrs.) Sanja Gunawardena, Dr. S.A. Dilantha Thushara Subasinghe*
4. Optimization of Bio-chemical Conversion of Rice Straw to 5-(hydroxymethyl) furfural. P. N. Wanniarachchi (MPhil). Supervisors: *Dr. (Mrs.) Sanja Gunawardena, Dr. S.A. Dilantha Thushara Subasinghe*
5. Enhanced Separation of Heterogeneous Carbon Microspheres for Supercapacitor Electrodes. L.A. Isanka (MPhil). Supervisors: *Dr. Thushara Subasinghe, Dr. (Mrs.) Sanja Gunawardena*

Completed M.Sc. Research Projects:

1. "Decolourization of synthetic dye mixture and textile industry effluent in a fixed bed biofilm reactor" H.G. Madushika (PhD). Supervisors: *Dr. (Mrs.) Sanja Gunawardena, Dr. (Mrs.) Thilini Ariyadasa*
2. "Study on the effects of binding agents on the properties of compost pellets" L.G. Hettiarachchi Supervisors: *Dr. (Mrs.) Sanja Gunawardena, Dr. VISCK Fernando*
3. "Effectiveness of operational aspects of compost plants in Sri Lanka" W.G.A.N. Jayathilake Supervisor: *Dr. (Mrs.) Sanja Gunawardena,*
4. "Agricultural waste-based nanofibers for stabilisation of phytase enzyme" U. A. Rathnayake Supervisors: *Dr. (Mrs.) Sanja Gunawardena, Dr. (Mrs.) Nilwala Kottage*
5. "Study the temperature profile of Puta furnace used in manufacturing the Ayurveda metallic preparations" P.M.Y.S. Pathiraja Supervisor: *Dr. (Mrs.) Sanja Gunawardena, Prof. M.H.A. Tissera*
6. "Modeling and Simulation of a Biogas Reactor for Dairy Manure" K. Padmasiri Supervisor: *Dr. (Mrs.) Sanja Gunawardena, Prof. Finn Haugen*
7. "Optimization of amylase enzyme activity in mashing in brewing industry in the presence of an adjunct" N. S. Handaragama

- Supervisor: **Dr. (Mrs.) Sanja Gunawardena**
8. "Synthesis of Nano-Silica from natural resources and their applications" W.M.G.I. Priyadarshana
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Dr. W.A.P. Jeewantha Premaratne**
 9. "Investigation of Process Parameters in Retort Processed Food" KKUN Sugathadasa - (Did not complete the MSc.)
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Dr. (Mrs.) Marliya Ismail**
 10. "A Study on chitosan extraction and application of Chitosan in the Food Industry". N.D. Wanniarachchi
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Dr. (Mrs.) Marliya Ismail, Mr. B. Samarasekara**
 11. "Study the factors influencing the production of ethanol from waste coconut water" -JRUC Jayakody
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Dr. Shantha Amarasinghe**
 12. "Effect of ultrasound mixing on esterification of FFA in rubber seed oil" MND Malliyawadu
Supervisors: **Dr. (Mrs.) Sanja Gunawardena**
 13. "Design of a pilot plant for biodiesel production from high free fatty acid oils" DRS Hewa Walpita
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Dr. (Mrs.) Marliya Ismail**
 14. "Waste biomass substrates as feed stock option for Microbial Fuel cell and scaling up factors" MP Gunathilaka
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Prof. Ajith de Alwis.**
 15. "Study of Process Conditions for Starch Production from Local Rice Varieties". PTN Pathiraja
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Dr. (Mrs.) Marliya Ismail**
 16. "In vessel composing of urban solid waste". VISCK Fernando
Supervisors: **Prof. Ajith de Alwis, Dr. (Mrs.) Sanja Gunawardena**
 17. "Prevention of microbial growth in paints using herbal biocides available in Sri Lanka" GPS Premaratne
Supervisors: **Dr. Jagath Premachandra, Dr. (Mrs.) Sanja Gunawardena**
 18. "High rate biomethanation system for Municipal Solid Waste". U Wanigartne (Did not complete the MSc.)
Supervisors: **Dr. (Mrs.) Sanja Gunawardena, Prof. Kapila Perara, Prof. Ajith de Alwis.**

Journal Publications

1. H. G. Madhushika, T.U. Ariyadasa, **S.H.P. Gunawardena**.
Decolorization of Textile Dyes in a Fixed-Bed Biofilm Reactor. *Chemical Engineering and Technology*. 2022. Volume 45, Issue 6. pp1183-1191.
<https://doi.org/10.1002/ceat.202200078>.
2. Samarasiri, M. H.; Chandrasiri, T. A.; Wijesinghe, D.B.; Gunawardena, S.P. Antioxidant Capacity with Physical Property Variations of *Morinda citrifolia* L. Juice in Traditional Fermentation. *Chem. Proc.* 2022, 10, 17, <https://doi:10.3390/IOCAG2022-12177>
3. H. G. Madhushika, T.U. Ariyadasa, **S.H.P. Gunawardena**.
Biodegradation of reactive yellow EXF dye: optimization of physiochemical parameters and analysis of degradation products. *Int. J. Environ. Sci. Technol.* **19**, 1683-1694 (2022).
<https://doi.org/10.1007/s13762-021-03220-6>
4. Poornima Wanninayake, Mahinsasa Ratnayake, Dilantha Thushara, **Sanja Gunawardena**.
Conversion of rice straw into 5-hydroxymethylfurfural: Review and comparative process evaluation. *Biomass conversion and biorefineries.* **12**, 1013-1047 (2022).
<https://doi.org/10.1007/s13399-021-01351-x>.
5. Bo Bao, Zhichao Wang, Dilantha Thushara, Achini Liyanage, **Sanja Gunawardena**, Zaiyong Yang, Shuangliang Zhao.
Recent Advances in Microfluidics Based Chromatography - A Mini Review. *Separations* 2021, 8, 3.
<https://doi.org/10.3390/separations8010003>
6. P.M.Y.S. Pathiraja, Y.M.M.K. Ranatunge, **S.K.M.K. Herapathdeniya, S.H.P. Gunawardena**.
Swarna Makshika Bhasma preparation using an alternative heating method to traditional Varaha Puta. *Journal of Ayurveda and Integrative Medicine.* (2020); 11(3): 206-212.
DOI: <https://doi.org/10.1016/j.jaim.2018.02.136>

7. Hewayalage Gimhani Madhushika, Thilini U. Ariyadasa, **Sanja H.P. Gunawardena**. Biological decolourization of textile industry wastewater by a developed bacterial consortium. *Water Sci Technol* (2019) 80 (10): 1910–1918. DOI: <https://doi.org/10.2166/wst.2020.010>
8. Malsha H. Samarasiri, Thushitha A. Chandrasiri, Diunuge B. Wijesinghe, **Sanja P. Gunawardena** Antioxidant Capacity and Total Phenolic Content Variations against *Morinda citrifolia* L. Fruit Juice Production Methods. *International Journal of Food Engineering*. Vol. 5, No. 4, (2019), pp. 293-299. DOI: [10.18178/ijfe.5.4.293-299](https://doi.org/10.18178/ijfe.5.4.293-299).
9. H.G. Madhushika, Thilini U. Ariyadasa, **S.H.P. Gunawardena**. Decolourization and degradation of reactive textile dyes by isolated strain *Proteus mirabili*. *Asian Journal of Water, Environment and Pollution*. Vol. 16, No. 4 (2019), pp. 1–6. DOI [10.3233/AJW190042](https://doi.org/10.3233/AJW190042)
10. Samavath Mallawarachchi, **Sanja Gunawardena** Modeling and optimization of mashing process in beer production with rice as an adjunct. *Journal of Microbiology, Biotechnology and Food Sciences*, 2019: 9 (1) 104-110. DOI: [10.15414/jmbfs.2019.9.1.104-110](https://doi.org/10.15414/jmbfs.2019.9.1.104-110)
11. Lakshika Hettiarachchi, Nilanthi Jayathillake, Sudarshana Fernando, **Sanja Gunawardena**. Effect of compost particle size, moisture content and binding agents on Co-compost pellet properties. *International Journal of Agricultural and Biological Engineering (IJABE)*, 2019; 12(4): 184–191. DOI: [10.25165/j.ijabe.20191204.4354](https://doi.org/10.25165/j.ijabe.20191204.4354)
12. Nayani Wann Arachchi, Marliya Ismail, **Sanja Gunawardena** Degree of deacetylation of chitin in Sri Lankan prawn shells (*Penaeus semisulcatus*) under different treatment methods. *The International Journal of Engineering and Science (IJES)* 7.10 (2018): 53-61
13. Danadhi Gunawardana, **Sanja Gunawardena**. Evaluating the effectiveness of chitosan for removal of hexavalent chromium from wastewater *International Journal of Management Information Technology and Engineering* Vol. 6, Issue 8, Aug 2018. pp. 1-10
14. Upendra A. Rathnayake, Tharindu Senapathi, Chanaka Sandaruwan, **Sanja Gunawardene**, Veranja Karunaratne and Nilwala Kottegoda. Rice bran nanofiber composites for stabilization of phytase. *Chemistry Central Journal*, 2018, 12:28. DOI: <https://doi.org/10.1186/s13065-018-0400-y>
15. **Sanja Gunawardena**, Dinuka Hewa Walpita, Marliya Ismail Method for Quantification of Methanol and Sulfuric Acid Required for Esterification of High Free Fatty Acid Oils in Biodiesel Production. *International Journal of Renewable Energy Research*. Vol. 7, No. 4, 2017. Pp 1639-1645
16. **Sanja Gunawardena**, Bo Jin Chemical pre-treatment for enhancing bio accessibility of oat husk. *American Journal of Biomass and Bioenergy* (2016) Vol. 5 No. 3 pp. 146-156
17. G. N. Maheshika, J. A. R. H. Wijerathna, **S. H. P. Gunawardena**. Investigation of temperature profiles and usage of traditional *Putta* in Ayurvedic *Bhasma* preparation. *SLJIM* (2014); 04(01): 224-229.
18. P.M.Y.S.Pathiraja, S.K.M.K.Herapathdeniya, **Sanja H.P.Gunawardane** Ferric Sulphate Catalyzed Esterification of High Free Fatty Acids Content Waste Coconut Oil for Biodiesel Synthesis. *International Journal of Science and Research (IJSR)*. Volume 3 Issue 10, [2014]
19. W.A.P.J. Premaratne, W.M.G.I. Priyadarshana, **S.H.P. Gunawardena**, A.A.P. DE Alwis. Synthesis of nanosilica from paddy husk ash and their surface functionalization. *J. Sci. Univ. Kelaniya* **8** (2013): 33-48

Conference/Workshop Papers

1. Gayathri De Silva, Samith Amarasena, Neville Amunugoda, **Sanja Gunawardena**, Ajith de Alwis Effect of Low-Pressure Cold Plasma Treatment on Microbiological and Physicochemical Properties of Black Peppercorns. From Innovation to Impact (FITI) 2021, IEEE.

2. Achini Liyanage, Dilantha Thushara. **Sanja Gunawardena**, Simulation of Diffusive Transport of Nanoparticles under an Externally Applied Electric Field. . From Innovation to Impact (FITI) 2021, IEEE.
3. Poornima Wanninayake, Mahinsasa Ratnayake, Dilantha Thushara, **Sanja Gunawardena**. Optimization of Hemicellulose Recovery from Rice Straw for Biorefinery: Dilute Acid Pretreatment at Reduced Temperatures. MERCON 2021, IEEE Conference at University of Moratuwa, Sri Lanka.
4. RY Elabadagama, **S Gunawardena**, D Thushara. Tea waste derived heterogeneous acid catalyst for esterification of free fatty acids in biodiesel production. From Innovation to Impact (FITI) 2020, IEEE. DOI: [10.1109/FITIS2050.2020.9424897](https://doi.org/10.1109/FITIS2050.2020.9424897)
5. De Silva A. B. G. C. J., Weerasinghe W. A. B. S., Pitipanarachchi, R., De Alwis Ajith., **Gunawardana, S. H. P.**, Amunugoda, P. N. R. J. Cold plasma sterilization for selected Sri Lankan spices. Proceedings of 4th Biennial Research Symposium 2019. 17-18 December 2019, Malabe, Sri Lanka. PP 18.
6. D.T. Imalsha, W.M.S.S. Kumari, O.E. Walawege, Thilini U. Ariyadasa, **Sanja H.P. Gunawardena**, Simultaneously Decolourization of Textile Dye & Bioelectricity Generation in a Microbial Fuel Cell. Annual Transactions of IESL. The Institution of Engineers, Sri Lanka (2019) pp [483-487].
7. H.G.Madhushika, Thilini U.Ariyadasa, **S.H.P. Gunawardena** Decolourization of Reactive Red EXF Dye by Isolated Strain *Proteus mirabilis*. Proceedings of 2018 Moratuwa Engineering Research Conference (MERCon). pp. 231–234. <https://doi.org/10.1109/MERCon.2018.8421983>.
8. Ayesha Sandaruwani, Chathushki Kumarasinghe, Dasuni Samarakoon, Thilini U. Ariyadasa, **S.H. P Gunawardena**. Investigation of the efficiency of dairy wastewater treatment using lipid-degrading bacterial strains. MERCon 2018, IEEE Conference at University of Moratuwa, Sri Lanka.
9. H.M.N. Jayawardena, S.C. Fernando, **S.H.P. Gunawardena** and N. Jayathilake. Variations to Key Chemical Parameters during Dried Faecal Sludge and Municipal Solid Waste Co-Composting. Annual Sessions of IESL, pp. [537-543], 2017, The Institution of Engineers, Sri Lanka
10. N. P. Mendis, G. L. D. P. Gunawardana and **S.H.P. Gunawardena** Possibility of using chitosan as an adsorbent in a continuous fixed-bed column for removal of hexavalent chromium. The 28th International Symposium on Transport Phenomena 22-24 September 2017, Peradeniya, Sri Lanka
11. B.K.T. Samarasiri, S.W.S Samarakoon, P.G. Rathnasiri, **S.H.P. Gunawardena** Mechanistic model for electricity generation via biomethane production through anaerobic digestion of organic fraction of municipal solid waste generated in Sri Lanka MERCon 2017, IEEE Conference at University of Moratuwa, Sri Lanka DOI:[10.1109/MERCon.2017.7980519](https://doi.org/10.1109/MERCon.2017.7980519)
12. Gimhani Madhushika Hewayalage, Thilini Ariyadasa, **Sanja Gunawardena** Enhanced Decolourization and Biodegradation of Textile Azo and Xanthene Dyes by Using Bacterial Isolates. World Academy of Science, Engineering and Technology International Journal of Environmental and Ecological Engineering Vol:4, No:1, 2017 (Abstract Only)
13. B.K.T. Samarasiri, S.W.S. Samarakoon, P.G. Rathnasiri, **S.H.P. Gunawardena** Life cycle assessment of biomethane production from source Separated municipal solid waste (MSW) in Sri Lanka. 2nd International Conference on Engineering and Technology, Colombo, Sri Lanka. 2016 (Abstract Only)
14. Lakshika Hettiarachchi, Sudarshana Fernando, Sanja Gunawardena, Nilanthi Jayathilake, Johannes G., Paul, Felix Grau Strength and disintegration characteristics of compost pellets produced from urban waste in Sri Lanka. Conference on International Research on Food Security, Natural Resource Management, and Rural Development Tropentag 2016, Vienna, Austria, September 18-21, 2016
15. Sinnathamby, Vijayapala.; Paul, J. G.; Dasanayaka, S. W. S. B.; **Gunawardena, S. H. P.**; Fernando, Sudarshana. Factors affecting sustainability of municipal solid waste composting projects in Sri Lanka. In University of Moratuwa. Department of Management of Technology. Conference Proceedings of

- International Conference in Technology Management. Moratuwa, Sri Lanka: University of Moratuwa. Department of Management of Technology. (2016) pp.98-103.
16. K.S. Mallawarachchi, L.R.L.M. Bandara, S.K.D.H.S. Dilshan, T. Ariyadasa, **S.H.P. Gunawardena**
Optimization of mashing process in beer production using rice as an adjunct. MERCON 2016, IEEE Conference at University of Moratuwa, Sri Lanka.
DOI: [10.1109/MERCon.2016.7480155](https://doi.org/10.1109/MERCon.2016.7480155)
 17. Vithanage, A.K.D.N. Madushanka, T. Ariyadasa and **S.H.P. Gunawardena**
Textile Dye Removal in Wastewater Using Chitosan Transactions of IESL, The Institution of Engineers, Sri Lanka (2015) pp. 1-10
 18. T.K.K.S.Pathmasiri, Finn Haugen, **S.H.P. Gunawardena**
Simulation of a Biogas Reactor for Dairy Manure. Annual Transactions of IESL. The Institution of Engineers, Sri Lanka pp. 394-398, 2013
 19. Sachith Vidanapathirana, Chamara de Silva, Sanja Gunawardena.
Optimum processes and conditions for mass cultivation of algae for bio-fuel production in Sri Lanka. Proceedings of 2nd Sri Lankan Roundtable on sustainable consumption and production. pp. 29-47, 2013
 20. W.M.G.I. Priyadarshana, **Sanja Gunawardena**, and W.A.P.J. Premaratne.
Synthesis and Characterization of Nanosilica from Paddy Husk Ash. Proceedings of the International Conference on Advanced Materials, Science and Engineering, July 01-04, 2012,
 21. D.R.S. Hew Walpita, F.M.Ismail, **S.H.P. Gunawardena**
Production of biodiesel in pilot-scale using locally available feedstock materials. Annual Transactions of IESL. The Institution of Engineers, Sri Lanka. pp. 25-32, 2012
 22. J.R.U.C. Jayakody, A.D.U.S. Amarasinghe, **S.H.P. Gunawardena**
Effect of evaporation on sugar content of coconut water in desiccated coconut industry"; Annual Transactions of IESL, The Institution of Engineers, Sri Lanka. pp. 406-411, 2011
 23. Nilushi Rodrigo, Marliya Ismail, **Sanja Gunawardena**
Process Development for glycerine as a byproduct from biodiesel industry. pp.9-10. Proceedings of the 16th ERU Symposium, 2010: Faculty of Engineering, University of Moratuwa, Sri Lanka.
 24. K.K.U.N. Sugathadasa, **S. H. P. Gunawardena**, F. M. M. Ismail
Investigation of process parameters in retort processed food. Annual Transactions of IESL, The Institution of Engineers, Sri Lanka. pp. 07-12, 2010
 25. **Sanja Gunawardena** and Marliya Ismail
Production of biodiesel in Sri Lankan context. Proceedings of the National Energy Symposium 2010. pp 83-92. Ministry of Power and Energy, Sri Lanka.
 26. H. S. Bhagya Manjaree, **Sanja Gunawardena**, Marliya Ismail
Development of adhesives from rice and cassava starch. pp 30-31. Proceedings of the 15th ERU Symposium, 2009: Faculty of Engineering, University of Moratuwa, Sri Lanka
 27. **S.H.P. Gunawardena**, P. Jayasinghe, D. Hewa Walpita.
Comparison of Mechanical Oil Extraction vs. Solvent Extraction for *Jatropha curcas*. pp 25-27. Proceedings of the 15th ERU Symposium, 2009: Faculty of Engineering, University of Moratuwa, Sri Lanka.
 28. D R S Hewa Walpita, P R A U Sampath, S P A G L Samarakoon, F M Ismail and **S.H. P. Gunawardena**.
Possibility of Using Waste Vegetable Oil as a Biodiesel Raw-Material. pp 28-29. Proceedings of the 15th ERU Symposium, 2009: Faculty of Engineering, University of Moratuwa, Sri Lanka.
 29. **Sanja Gunawardena** and Marliya Ismail
Rubber Seed Oil: A Feasible Feedstock for Biodiesel Production in Sri Lanka. Economic Review. (Publication of the Research Department - People's Bank, Sri Lanka). Vol. 34, No.9, December 2008.
 30. Gunathilake M.P, **Gunawardane S.H.P**, de Alwis A.A.P.
Microbial Fuel cell (MFC) Technology for Wastewater Treatment and Bioenergy: Cow dung as a Waste Biomass substrate for MFC. International Forestry and Environment Symposium 2008. University of Sri Jayawardenepura, Sri Lanka

31. **S.H.P. Gunawardena**
Bioethanol Fuel Quality and Downstream Marketing Constraints. Proceedings of the SAARC Training workshop on Biofuels held in Kandalama, Sri Lanka from 22-26 September 2008.
32. Gunathilake M.P., de Alwis A.A.P., **Gunawardena S.H.P.**
Microbial Fuel Cell (MFC) Technology and Scale up Factors in a Sri Lankan Context. pp. 34-35. Proceedings of the 14th ERU Symposium, 2008: Faculty of Engineering, University of Moratuwa, Sri Lanka.
33. Sampath P.R.A.U., Samarakoon S.P.A.G.L., Ismail F. M., Gunawardena S.H.P.
Biodiesel production from high FFA nonedible oil. pp 38-40. Proceedings of the 14th ERU Symposium, 2008: Faculty of Engineering, University of Moratuwa, Sri Lanka.
34. PTN Pathiraja, **SHP Gunawardena**, FM Ismail
Study of process conditions for starch production from local rice varieties. International Conference on Chemistry, Technology and Innovation for Greater Safety and Economic Growth – Chemtech (2007), Sri Lanka
35. PTN Pathiraja, **SHP Gunawardena**, FM Ismail.
Application of alkaline steeping method and enzymatic method in rice starch isolation
Proceedings of the 13th ERU Symposium, 2007: Faculty of Engineering, University of Moratuwa, Sri Lanka.
36. Sudarshana Fernando, Ajith de Alwis, **Sanja Gunawardana**
Rapid biodegradation of organic waste as a solution for urban solid waste
Proceedings of the 12th ERU Symposium, 2006: Faculty of Engineering, University of Moratuwa, Sri Lanka.
37. Sudarshana Fernando, Ajith de Alwis, **Sanja Gunawardana**
In vessel composting of solid waste using a rotating reactor
R'05 7th World Congress on Recovery, Recycling and Re-integration (2005)
38. Upali Wanigartne, **Sanja Gunawardana**, Kapila Perara, Ajith de Alwis
High rate biomethanation of municipal solid waste
Eighth Annual Forestry and Environmental Symposium 2002, University of Sri Jayawardenepura, Sri Lanka

Thesis Publication

S.A.S.H. Wijesinghe

Image analysis for characterising *Penicillium chrysogenum* vacuolation
PhD Thesis, University of Birmingham, UK

Course Textbooks/Chapters

1. Book: Madhushika, H.G., Ariyadasa, T.U., Gunawardena, S.H.P. (2022). Textile Dye Removal from Industrial Wastewater by Biological Methods and Impact on Environment. In: Singh, V.P., Yadav, S., Yadav, K.K., Yadava, R.N. (eds) Environmental Degradation: Challenges and Strategies for Mitigation. Water Science and Technology Library, vol 104. Springer, Cham. https://doi.org/10.1007/978-3-030-95542-7_9
2. Book: Unit II “CYD3614: Food Preservation and Processing” - Diploma in Food Science: LEVEL 3 students of the Department of Chemistry, Faculty of Natural Sciences, Open University of Sri Lanka (OUSL).
3. Chapters in following course books
Unit I – Different fermentation systems
Unit II – Isolation and strain improvement of microorganisms for industrial applications
Structure and different types of fermenters
Bioseparation process
Unit IV –Product development, Regulations and Safety

Patents

1. Quantification of reactants required in the conversion of Free Fatty Acids (FFA) present in vegetable oils and animal fats into Fatty Acid Methyl Ester (gazetted)
2. Method of converting free fatty acids to fatty acid methyl esters (FAME) (pending)

As a resource person/Member in National/Institutional Committees

- Subject expert in Biochemical Engineering in the subject review panel for introduction of new degree program on Bio System Engineering at South Asian Institute of Technology and Medicine.
- Subject expert for the development of curriculum for Bioengineering Degree at University of Colombo
- Member Board of Management SIL-UOM Rubber Products & Process Development Incubator (2018-2019).
- Resource person for the development of course modules for the Chemical and Process Technology Diploma program at the University of Vocational Technology on the invitation of Ministry of Youth Affairs and Skills Development in 2013
- Member – National Mirror Committee on “Sustainable criteria for Bioenergy” for Sri Lanka Standards Institute.
- Board Member – Uni-Consultancy Services (2013)
- Technical Advisory Board on the preparation of “Sri Lanka Standard Specification for Two Pot Clay Cook Stoves”, Practical Action/SLSI (2012-2013).
- Consultant Research Advisor– UOM-Cargills Food Process Development Incubator (2009 to 2012)
- Member - National Committee on Biotechnology at National Science Foundation, Sri Lanka. (2006 to 2011) - Committee, comprising of experts from various branches of Biotechnology, who advise and assist the Foundation on matters pertaining to research & development, prioritization of research, S&T manpower and enhancement of research capacity and policies.
- Resource person/Member in the committee – for the preparation of the “National Biotechnology Policy” by the National Science Foundation, Sri Lanka. (2006-2008).
- Resource person/ Member in the committee- for preparation of “Regulations on Liquid Biofuels for Sri Lanka” (2009). (The task was entrusted by Sri Lanka Sustainable Energy Authority).
- Resource person/Member in the subcommittee – for the preparation of a cabinet paper on “Development of Local Renewable Fuels for Vehicles” by the National Science Foundation, Sri Lanka. (2006).
- Resource person/Member - Technical Advisory Board on Liquid Biofuels, Practical Action, Sri Lanka. (2006 to 2010)
- Institutional coordinator of the National Biosafety Framework Development Project – Sri Lanka. (2002-2005)
Participated and contributed in consultative workshops and seminars to develop the National Policy on Bio safety.
- Member - Environmental Impact Assessment team for “The disposal of hospital waste from selected hospitals in Colombo, Sri Lanka” (2004). The task was entrusted by The Central Environmental Authority, Sri Lanka.
- Represented Sri Lankan delegation of Sri Lanka Chapter of Federation of Asian Biotech Association at the Biotechnology Asia 2006, Kuala Lumpur Malaysia, August 2006.
- Served as the Expert in the preparation of the evaluation report of the Fermenter at the Veterinary Research Institute, Gannoruwa. (2006).

Short Term Training/Conferences/Workshops/Public Lectures

As a resource person

- Resource person at the National Consultative Workshop on Strengthening and Road mapping of Emerging Technology Innovation Systems of Sri Lanka. Jointly organized by The Coordinating Secretariat for Science Technology and Innovation (COSTI) and United Nations- Asia Pacific Centre for Technology Transfer (APCTT): 25th-27th August 2015, Colombo Sri Lanka. Presentation title - “Biochemical Process Options for Biofuel Production” (26th August)
- Resource person at the National Conference on Biotechnology; “BIOTECHNOLGY FOR WEALTH CREATION”, 18th September 2014. Presentation title – “Biochemical Conversion of Biomass into Fuel”.
- Resource person at the SIS-Sida Pre-Seminar and subsequent ISO 13065, Sustainability Criteria for Bioenergy Meeting in Stockholm, Sweden 23rd September to 4th October 2013

- Resource person at the SIS-Sida Pre-Seminar and subsequent ISO 13065, Sustainability Criteria for Bioenergy Meetings in Brisbane, Australia 17-25 January 2013
- Trainer at the “Training of Trainers Programme on Healthcare Waste Management”. Faculty of Medicine, University of Colombo, Sri Lanka. 4th October 2012.
- Resource person at the SIS-Sida-SAWTEE Pre-Seminar and subsequent ISO/PC 248 WG 3 Meetings in Nairobi, Kenya 2-3, 4-6 October 2011
- Public Lecture on “Biosafety and Biosecurity: Issues and Concerns”. Jointly organised by Institute of Biology/ SLAAS Section D and ZooNet of OUSL (30th June 2009)
- Public Lecture on “Technical Feasibility and Environmental Desirability of Biofuels”. Institution of Engineers, Sri Lanka (IESL), The Chemical Engineering Section. (24th March 2009)
- Country presentation on “Household energy in Sri Lanka” at the five day women-specific workshop on “Efficient Energy Management and Renewable Energy for South Asian Women” (Phase 1) organized by USAID/SARI/Energy, Kerala, India (21-25th April 2008).
- Resource person at the “SAARC Training workshop on Biofuels” Kandalam, Sri Lanka. (22-26 September 2008). Presentation title - “Bioethanol Fuel Quality and Downstream Marketing Constraints”

As a participant

- Auditor Training Programme on Certification of Educational Programmes (Accreditation of Biosystems Technology Degree Program of Universities) 16th & 17th December 2019 and 6th, 7th & 8th January 2020. (Organized by The National Biotechnology Association (NBIA) in collaboration with the United Nations Industrial Development Organization (UNIDO) and Coordinating Secretariat for Science Technology and Innovation - COSTI).
- JICA training program on “Promotion and Dissemination of Biomass Utilization Technology”, Hiroshima, Japan. 6th January – 15th February 2014.
- Training program on “Outcome Based Education and Accreditation as per Washington Accord Guidelines” organized by the Institute of Engineers (IESL), Sri Lanka from 25th-27th June 2012.
- Training on “Process Simulation” at Telemark University College Norway – 18th November to 4th December 2011
- Four-day workshop on “Women, Energy and Enterprise Building” organized by USAID/SARI/Energy, Kerala, India from 4th-7th April 2011.
- “Science and Safety Train-the-Trainer Course” at Emory University, Atlanta, Georgia, USA from 27/04/2009 to 01/05/2009.
- “Pilot scale baker’s yeast fermentation and downstream processing” at the Pilot Plant Development and Training Institute, King Mongkut University of Technology, Thailand from January 04-19, 2009.
- “SOUTH ASIA WOMEN IN ENERGY (SAWIE)” Second Application Workshop on Efficient Energy Management and Renewable Energy. November 17-19, 2008. Dhaka, Bangladesh
- “Biosafety and Biosecurity International 2007” Abu Dhabi, UAE 12-14 November 2007.
- “Asia Conference on Laboratory Biosafety and Biosecurity” Bangkok, Thailand 17-19 April 2007.
- Training program on “Managing the Safety of Foods and Beverages in International Trade” conducted by Institute of Chemistry, Sri Lanka July 2006
- Biotechnology Asia 2006 Conference, 09-11 August 2006, Kuala Lumpur, Malaysia.
- Sugar & Ethanol Asia Conference, 6-7 December 2006, New Delhi, India
- IRQUE training Faculty of Biotechnology & Bimolecular Science, Universiti Putra Malaysia. 22-02-2007 to 14-03-2007.
- Participated in a training program on “Application of Biotechnology in Industry” conducted by Institute of Chemistry, Sri Lanka December 2004
- National Biosafety Framework Project, Institutional Coordinators’ Workshop, organized by National Biosafety Framework Development Project, Ministry of Environment and Natural Resources 31st July 2003.
- Training workshop on “Fermentation Process Operation” at the University College London, UK 11-13 November 2002.
- Training Seminar on “Safety in Microbiological Laboratories”, Institute of Chemistry, Ceylon

Review Panel Examiner

- Review panel examiner of PhD Dissertations on
 - ✓ Progressing freeze concentration with partial ice melting and non-thermal pasteurization for liquid food". University of Sri Jayawardenepura. (2019)
 - ✓ "Commercially sustainable production of butanol from rice straw using naturally occurring bacterial consortia under anaerobic continuous bioreactor and solvent separation system combat energy poverty". Faculty of Agriculture, University of Peradeniya. (2015).
 - ✓ "Solid State Fermentation of Bacillus subtilis to Produce Menaquinone7 (Vitamin K2)"- School of Chemical & Biomolecular Engineering, University of Sydney (2013).
- Review panel examiner of MPhil Dissertation on
 - ✓ "Possibility of Biodiesel production from selected algae species ". University of Ruhuna (2018).
- Review panel examiner of MSc Dissertation on
 - ✓ "Fate and transport of glyphosate and degradation by-products: implications for remediation at CKDu endemic areas in Sri Lanka". Department of Civil Engineering, University of Moratuwa (2018).
 - ✓ "Factors affecting technological issues in dairy processing industry". Department of Management of Technology, University of Moratuwa (2012).
 - ✓ "Development of a pilot scale biogas plant to utilize biomethane as a transport fuel" Department of Chemical and Process Engineering, University of Moratuwa. (2010)
 - ✓ "Extraction of rice bran oil using aqueous media" Department of Chemical and Process Engineering, University of Moratuwa (2007).
 - ✓ Feasibility of biofuels for Sri Lankan transportation sector" Department of Management of Technology, University of Moratuwa (2007).
 - ✓ "Optimal operating conditions and equilibrium characteristics of rice bran oil extraction." Department of Chemical and Process Engineering, University of Moratuwa (2002)

Journal Reviewing

I have extended my services as a reviewer for the following Journals

- Chemosphere
- International Journal of Renewable Energy Research (IJRER)
- Asian Journal of Biology
- Food and Bioproducts Processing (Official journal of the European Federation of Chemical Engineering: Part C)
- International Journal of Renewable Energy Research (IJRER)
- Journal of the National Science Foundation of Sri Lanka

Further, I have reviewed papers in the following conferences/symposia

- Member - Scientific Committee (International) of the "ICEF13 - International Congress on Engineering and Food 2019". Assisted in reviewing 17 Abstracts for the Congress
- Peradeniya University Research Sessions (PURSE)
- Technical paper for Institute of Engineers Sri Lanka Transactions
- University Research Symposium, University of Colombo 2016
- Manufacturing & Industrial Engineering Symposium, University of Peradeniya
- University of Ruhuna, Ruhuna International Science and Technology Conference - RISTCON (2015-2019)

Research Grants

- Title: "Development of Rice Straw Biorefinery" [Grant No: RG/ 2019/ EA & ICT/01]
Source: National Science Foundation, Sri Lanka
- Title: "Production of biodiesel from waste cooking oil using heterogeneous catalysis" [Grant No: SRC/LT/2018/30]
Source: University of Moratuwa, Senate Research Grant
- Title: "Removal of textile dye in a fixed bed column using chitosan as the absorbent and estimation of scale up parameters" [Grant No: SRC/ST/2017/07]
Source: University of Moratuwa, Senate Research Grant
- Title: "Development of a novel biological decolourization system for treatment of textile effluent" [Grant No: SRC/CAP/15/03]
Source: University of Moratuwa, Senate Research Grant
- Title: Biodiesel production using waste oils and fats [Grant No:RG/2009/BioFuel/001]
Source: National Science Foundation, Sri Lanka
- Title: "Extraction and purification of glycerine to develop as a by-product from the diesel production process [Grant No: SRC/ST/2009/22]
Source: University of Moratuwa, Senate Research Grant
- Title: "Optimization of Jatropha oil extraction by liquid extraction and pressing methods" [Grant No: 227]
Source: University of Moratuwa, Senate Research Grant
- Title: "Optimization of Jatropha oil extraction by liquid extraction and pressing methods" [Grant No: 227]
Source: University of Moratuwa, Senate Research Grant
- Title: "Development of an efficient process for manufacture of anhydrous fuel ethanol" [Grant No: 294]
Source: University of Moratuwa, Senate Research Grant

Referees:

Prof. Bo Jin
School of Chemical
Engineering
Engineering North Building
The University of Adelaide
SA 5005
Australia
bo.jin@adelaide.edu.au
00 61 8 8303 7056 (Office)
0061 8 8303 6222 (fax)

Prof. Ajith de Alwis
Professor of Chemical Engineering
Department of Chemical and Process
Engineering
University of Moratuwa
Moratuwa
Sri Lanka
ajith@cheng.mrt.ac.lk
0094 114 650506 (Office)
0094 777 342476 (Mobile)

Prof. (Mrs.) Padma Amarasinghe
Professor of Chemical Engineering
Department of Chemical and Process
Engineering
University of Moratuwa
Moratuwa
Sri Lanka
padma@cheng.mrt.ac.lk
0094 112 640474 (Office)
0094 716 558759 (Mobile)