

# Gamage Shanika Madhushani Perera

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## OBJECTIVE

Obtain a Ph.D in Chemistry with the ultimate goal of joining the academia and contributing to the field of science through research by being the principal Investigator of my own laboratory and encouraging young scientists by mentoring them.

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## EDUCATION QUALIFICATION

B. Sc.(Special) Chemistry degree with Second class (Upper division) honors University of Colombo, Sri Lanka (<http://www.cmb.ac.lk>)

GRE : 305[ 163 (Q), 142 (V), 2.5 (AW)]

Cumulative G.P.A.: 3.38

TOEFL : 89 [24 (R), 20(L), 23 (S), 22(W)]

Year of Graduation: 2017

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## RESEARCH EXPERIENCE

### □ “Development of enhanced biodegradable thermo-bioplastic material based on natural polymers”

This research is focused to produce a biodegradable film based on natural polymers, with the objective of using it as a food packaging material. Potato starch is one of the commonly used biopolymers as a food packaging material, owing to its characteristics such as non-toxicity, biocompatibility, renewability, low cost, abundance in nature and also since biodegradable polymers are safer to use in food packaging.

To produce thermoplastic starch, starch has to be processed with a plasticizer (often glycerol) in the presence of thermal and mechanical treatments. Acetic acid and sodium bicarbonate were used in the process. Due to hydrophilic nature of starch, thermoplastic starch applications are limited. To retain mechanical properties and to reduce hydrophilic nature, starch was modified by blending with starch nanoparticles, which was prepared by ethanol precipitation. These materials were then combined and a bioplastic film was developed by casting technique. The casting thickness of the film was 2.5 mm. The bioplastic film obtained from this method was odorless, transparent and smooth. Treatment with weak acid ( $\text{CH}_3\text{COOH}$ ) before starch gelatinization improved the quality of fabrication. The potato starch film made with less amount of glycerol and high amount of starch was rigid, whereas the film produced with high amount of glycerol and less amount of starch was sticky and brittle. The film from potato starch and starch nanoparticles with glycerol is flexible and resistant to moisture. However, these variations may depend on relative humidity, environmental temperature, type of starch and sample preparation technique.

Furthermore, incorporation of suitable natural antioxidant additives could upgrade processing antimicrobial properties and antioxidant properties were investigated to enhance the bioplastic film as antioxidant active packaging material.

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**RESEARCH ABSTRACT PUBLICATION** □ Perera G.S.M.; Rathnayaka R.M.M.N.; Kaumal M.N.; Tillekaratne A.; **Development of enhanced biodegradable thermo-bioplastic material based on natural polymers.** In 9<sup>th</sup> International Research Conference on “Professional Integration for a secure Nation” Organized by General Sir John Kotelawala Defence University, Sri Lanka, 2016.

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### COLLEGIATE PRESENTATION

- **“Development of enhanced biodegradable thermo-bioplastic material based on natural polymers”**

*Poster presentation in 9<sup>th</sup> International Research Conference on “Professional Integration for a secure Nation” Organized by General Sir John Kotelawala Defence University, Sri Lanka, 2016.*

- **“Supramolecular Ferroelectrics”**

*Oral seminar presentation in partial fulfillment of the requirement for the undergraduate course “CH 4002: Seminar and Essay”*

- **“Determination of the total phosphate, citric acid soluble phosphate and water soluble phosphate in a sample of apatite.”**

*Oral presentation in partial fulfillment of the requirements for the undergraduate course “CH3030 Advanced Practical Chemistry”*

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### TECHNICAL SKILLS

- *Chemistry related*
  - Qualitative and quantitative analysis of organic and inorganic compounds
  - Solvent Extraction
  - Thin layer chromatography (TLC)
  - Column chromatography
  - Potentiometry
  - Atomic absorption Spectroscopy
  - Synthesis of Nanoparticles

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### WORKING EXPERIENCE

- University of Colombo – Department of Chemistry
  - Inorganic Chemistry laboratory (for second year undergraduates)
  - Organic Chemistry laboratory (for first year undergraduates)
  - Supervised and instructed students in inorganic and organic chemistry techniques. Emphasized keeping complete and accurate scientific notes and conduct tutorial classes from 1<sup>st</sup> of March 2017 –present
- Teachers training program for Science and Technology Teachers
  - Supervised and instructed teachers in laboratory practical techniques in A/L syllabus.
- M.Sc. Analytical Chemistry Laboratory – Demonstrator
  - Supervised and instructed students in Atomic Absorption Spectroscopy techniques.

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## CONFERENCES AND WORKSHOPS

- 9<sup>th</sup> International Research Conference on “Professional Integration for a secure Nation”  
Organized by General Sir John Kotelawala Defence University, Sri Lanka, 2016
- Workshop on New innovations and future directions of indigenous medicines and herbal products organized by Sri Lanka Association for the advancement of Science (SLAAS) Section E2, Chemical sciences (3<sup>rd</sup> April 2017)

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## SELECTED EXTRA CURRICULAR ACTIVITIES

- Associate member of Sri Lanka Association for the Advancement of Science (E<sub>2</sub> Chemical Sciences)
- Volunteer: Annual Research Symposium, University of Colombo
- Active member of Chemical Society , University of Colombo (2013- to date)
- Volunteer : All Island Inter School Chemistry Quiz Competition organized by Sri Lanka Association for the Advancement of Science (SLAAS)-2017 □ Member of the School Netball and Volleyball teams.

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## REFERENCES

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University of Colombo  
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