SUNETH RAJAPAKSHA (Ph.D.)

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06/2022 to present **Senior Lecturer Gr. I**
Department of Chemistry
University of Sri Jayewardenepura
Gangodawila, Nugegoda
Sri Lanka.
http://science.sjp.ac.lk/che/dr-suneth-rajapaksha-2

06/2016 to 06/2022 **Senior Lecturer Gr. II**
Department of Chemistry
University of Sri Jayewardenepura
Gangodawila, Nugegoda
Sri Lanka.

01/2015 to 04/2016 **Postdoctoral Fellow**
Department of Pharmacology and Toxicology
Health Science Campus (Medical College of Georgia)
Augusta University
Augusta, GA 30912 USA
Advisor: Prof. Nevin Lambert, Ph.D.

05/2012 to 12/2014 **Postdoctoral Fellow**
Center for Petroleum and Geosystems Engineering
Cockrell School of Engineering
The University of Texas at Austin
Austin, TX 78712 USA
Advisor: Prof. Gary Pope, Ph.D.

08/2006 to 04/2012 **Ph.D.** in Photochemical Sciences
Center for Photochemical Sciences
Department of Chemistry
Bowling Green State University
Bowling Green, OH 43403 USA
Advisor: Prof. H. Peter Lu, Ph.D.

Thesis Title: Single Molecule Spectroscopy Studies of Membrane Protein Dynamics and Energetics by Combined Experimental and Computational Analyses.
https://scholarworks.bgsu.edu/photo_chem_diss/52/

08/1999 to 01/2004 **B.Sc.** (Chemistry Honors-2nd class upper)
Department of Chemistry
University of Sri Jayewardenepura
Gangodawila, Nugegoda, Sri Lanka
Research Advisor: Prof. P. M. Jayaweera, Ph.D.

RESEARCH EXPERINCE

- **Department of Chemistry, University of Sri Jayewardenepura, Sri Lanka**
  Independent research conducted as a senior lecturer. Molecular dynamics simulations study of formation of protein induced water pores in bio membranes. Molecular dynamics simulations study of curvature of bio membranes induced by different toxins and transmembrane potentials. Green synthesis of nanoparticles.

- **Department of Pharmacology and Toxicology, Health Science Campus Augusta University, Augusta, GA USA**
  Post-doctoral research conducted with Prof. Nevin Lambert. G protein coupled receptor signaling in neurons. The similarities and differences in localized G-protein mediated calcium release.

- **Center for Petroleum and Geosystems Engineering, Cockrell School of Engineering, The University of Texas at Austin, Austin, TX USA**
  Post-doctoral research conducted with Prof. Gary Pope. Investigation of applicability of different synthetic and bio polymers to satisfy the mobility requirement needed in tertiary oil production. Restoration of reservoir cores to their original reduced state for chemical flooding tests.

- **Center for Photochemical Sciences/Department of Chemistry, Bowling Green State University, Bowling Green, OH USA**
  Doctoral dissertation research conducted with Prof. Peter Lu. Pioneering studies in correlating electrophysiology and optical imaging on horizontal lipid bilayers. Computational modeling and simulations to investigate the membrane proteins dynamics (ion channel proteins and light harvesting complexes).

- **Department of Chemistry, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka**
  Undergraduate research conducted with Prof. P. M. Jayaweera. The influence of the second cationic dye to enhance the photovoltaic efficiency of dye-sensitized solar cells.

RESEARCH SKILLS:

- Single-molecule microscopy
- Single particle tracking on artificial suspended lipid bilayers
- Formation of artificial suspended lipid bilayers
- Electrophysiological recording on artificial lipid bilayers
- Live cell imaging
- Cell perfusions
- Molecular dynamics simulations (atomistic and coarse grain level)
- Kinetic modeling of cellular pathways
- Nanoparticle synthesis and characterization

COMPUTER SKILLS

- Gromacs
- Orca
- Visualization software (VMD, Chimera, Avogadro, Chemcraft, etc.)
- Programming languages:
    - Matlab/Octave (expert)
    - Python (advanced beginner)
    - Labview (advanced beginner)
- Graphing software
    - Igor
    - Origin
- Other selected software
    - ImageJ
    - μmanager (Micro-manager)
    - VCell
- MS office package

RESEARCH GRANTS:

1. ASP/01/RE/SCI/2017/18 (*University of Sri Jayewardenepura*)
   Molecular dynamics simulation study of dengue virus capsid protein mediated cell infections
   Start date: 10/03/2017 End date: 09/03/2020
   Amount: Rs. 1500000.00 (~USD 10,000 based on 2017 exchange rate)

2. ASP/01/RE/SCI/2017/19 (*University of Sri Jayewardenepura*)
   Anti-cancer activity of garcinol capped silver nanoparticles
   Start date: 10/03/2017 End date: 09/03/2020
   Amount: Rs. 1800000.00 (~USD 12,000 based on 2017 exchange rate)

3. ASP/01/RE/SCI/2021/07 (*University of Sri Jayewardenepura*)
   Concentration dependent membrane deformations induced by charged molecules: A molecular dynamics simulations study
   Start date: 15/06/2021 End date: Active
   Amount: Rs. 1200000.00 (~USD 6,000 based on 2021 exchange rate)

PUBLICATIONS

1. Aqeel, M.M.A.; **Rajapaksha, S.P**., Enzyme Related Synthesis of Lipids and Fabrication of Planar Lipid Membranes, *Current Scientia (Special Issue)*, **2023**, 177-190.

2. Kumarasinghe, D.M., Lekamge, D.D., **Rajapaksha, S.P.**, Fernando, I.R., Complexation of Selected Polycyclic Aromatic Hydrocarbons with Hexaprotonated Hexaazacyclophane Macrocycles. *JJC*, **2023**, 18, 33-42.

3. **Rajapaksha, S.P.***; Upahari, S., Anti-Correlated Position Fluctuation of Lipids in Forming Membrane Water Pores: Molecular Dynamics Simulations Study with Dengue Virus Capsid Protein. *J Biomol Struct Dyn*, **2021,** *40*, 11395-11404. (**Corresponding Author*)

4. Lakmal, J. T. H.; **Rajapaksha, S.P.***, The Impact of Endoplasmic Reticulum Calcium Concentration on Transient Calcium Response in Phospholipase C pathway: A Simulation Study. *JSLASS* **2019**, *2*, 4-13. (**Corresponding Author*)

5. Fernando, H.N.; Kumarasinghe, K.G.U.R.; Gunasekara, T.D.C.P.; Wijekoon, H.P.S.K.; Ekanayaka, E.M.A.K.; **Rajapaksha, S.P.***; Fernando, S.S.N.; Jayaweera, P.M., Synthesis, Characterization and Antimicrobial Activity of Garcinol Capped Silver Nanoparticles. *J Microbiol Biotechnol*. **2019**, *29*, 1841-1851. (**Corresponding Author*).

6. **Rajapaksha, S.**; Pal, N.; Zheng, D.; Lu, H.P. Protein-fluctuation-induced water-pore formation in ion channel voltage-sensor translocation across a lipid bilayer membrane. *Phys. Rev. E* **2015**, *92*, 052719.

7. **Rajapaksha, S.**; Britton, C.; McNeil, R.; Kim, D. H.; Unomah, M.; Kulawardana, E.; Upamali, N.; Weerasooriya, U.; Pope, G. A., Restoration of Reservoir Cores to Reservoir Condition before Chemical Flooding Tests. SPE Improved Oil Recovery Symposium, 12-16 April **2014**, Tulsa, Oklahoma, USA **(**SPE 169887)

8. **Rajapaksha, S.**; Wang, X.; Lu, H. P., Suspended Lipid Bilayer for Optical and Electrical measurements of Single Ion Channel Proteins. *Anal. chem.* **2013**, *85*, 8951-8955.

9. **Rajapaksha, S**.; He, Y.; Lu, H. P., Combined Topographic, Spectroscopic, and Model Analyses of Inhomogeneous Energetic Coupling of Linear Light Harvesting Complex II Aggregates in Native Photosynthetic Membrane. *Phys. Chem. Chem. Phys.* **2013**, *15*, 5636-5647.

10. He, Y.; Zeng, X.; Mukherjee, S.; **Rajapaksha, S**.; Kaplan, S.; Lu, H. P., Revealing Linear Aggregates of Light Harvesting Antenna Proteins in Photosynthetic Membrane. *Langmuir* **2010,** *26*, 307-313.

11. Jayaweera, P; **Rajapaksha, S**.; Tennakone, K., TiO_2 nano-porous photoelectrochemical cells (PECs) sensitized with mixed cationic/anionic dye systems: Role of the second cationic fluorescent dye on the photocurrent enhancement. *Chem. Phys. Lett.* **2005,** *412*, 29-34.

12. Jayaweera, P.; Pathiraja, C.; **Rajapaksha, S**., Light Scattering Intensity and Viscosity Correlation for the Letters Printed on the Tobacco Cigarettes. *Sri Lankan Journal of Physics* **2005**, *6*, 1-6.

ABSTRACT AND POSTER PUBLICATIONS

1. Jabeen, S.F.S.; **Rajapaksha, S.P.** Membrane translocation dynamics of HIV-TAT derived cell penetrating peptide through diverse lipid bilayer models: A coarse grain molecular dynamics simulations study, SLAAS 2024, Colombo, Sri Lanka; p 56, Paper 612/E2.

2. Aqeel, M.M.A.; **Rajapaksha, S.P**. Mathematical modeling of recombinant DNA expression. SLAAS 2022, Colombo, Sri Lanka; p 70, Paper 622/E2.

3. Aqeel, M.M.A.; **Rajapaksha, S.P.** Mathematical modeling of cell-free protein synthesis systems. RESCON 2022, Peradeniya, Sri Lanka; p 92, Paper 235.

4. Mahamithawa, G.; **Rajapaksha, S.P.** Coarse-grained molecular dynamics simulations study on localized membrane curvature induced by the tetanus toxin and lipid composition. SLAAS 2021, Colombo, Sri Lanka; p 80, Paper 621/E2.

5. Walgampaya, H.M.S.N; **Rajapaksha, S.P.** The effect of temperature and salt concentration on the stability of dengue virus capsid protein: A molecular dynamics simulations study. SLAAS 2020, Colombo, Sri Lanka; p 102, Paper 619/E2.

6. Vishwabhanu, N.A.P.G.D.; **Rajapaksha, S.P.** Molecular dynamics simulations study of membrane deformations by combined effects of membrane potential and protein concentration. SLAAS 2020, Colombo, Sri Lanka; p 100, Paper 617/E2.

7. Gunapala A.H.M.H.P.W.; Peiris M.M.K.; Gunasekara T.D.C.P.; **Rajapaksha S.P.** Antimicrobial activity of acemannan-silver nanoparticle assembly. ICHS 2019, Colombo, Sri Lanka; p 162, Paper PP65 (Poster).

8. Fernando H.N.; Kumarasinghe U.R.; Gunasekara T.D.C.P.; Fernando S.S.N.; Jayaweera P.M.; Soysa P.; **Rajapaksha S.P.** Synthesis, Characterization and Antimicrobial Activity of Garcinol Coated Titanium Dioxide Nanoparticles. ICHS 2019, Colombo, Sri Lanka; p 71, Paper OP11.

9. Fernando H.N.; Kumarasinghe U.R.; Gunasekara T.D.C.P.; Fernando S.S.N.; Jayaweera P.M.; **Rajapaksha S.P.** Evaluation of antimicrobial activity of silver nanoparticles capped with garcinol, extracted from Garcinia quaesita pierre. SLAAS 2018, Colombo, Sri Lanka; p 117, Paper 604/E2/Poster.

10. Lakmal J.T.H.; **Rajapaksha S.P.** The effect of ER calcium concentration on transient cytosolic calcium response in phospholipase-C pathway: a simulation study. In ICHS 2018, Colombo, Sri Lanka; p 76, Paper PP2 (Poster).

11. Fernando H.N.; Kumarasinghe U.R.; Gunasekara T.D.C.P.; Fernando S.S.N.; Jayaweera P.M.; **Rajapaksha S.P.** Determination of the Antimicrobial and Antioxidant Activity of Garcinol Capped Silver Nanoparticles. ICHS 2018, Colombo, Sri Lanka; p 118, Paper 604/E2/Poster.

12. Rajapaksha, S.P.; Lu, H.P. Probing Single-Molecule Ion Channel Dynamics by Combined Patch-Clamp Single-Molecule Fret Imaging Microscopy *Biophysical Journal* **2011**, 100, 5a.

13. Rajapaksha, S.P.; He, Y.; Lu, H.P. Correlated AFM-Spectroscopy Imaging of Linear Light Harvesting Protein Aggregates in Bacterial Native Photosynthetic Membrane *Biophysical Journal* **2012**, 102, 166a-167a.

RESEARCH SUPERVISIONS:

Undergraduate: 10 students (*University of Sri Jayewardenepura*)
MSc: 02 students (*University of Sri Jayewardenepura*)
MPill: 01 (*University of Sri Jayewardenepura*)

FELLOWSHIPS AND AWARDS

- 2008-2012 Research Fellowship from Department of Chemistry, Bowling Green State University, Bowling Green, OH

- 2007-2008 McMaster Fellowship from Department of Chemistry, Bowling Green State University, Bowling Green, OH (Awarded for the highest GPA in the first year of graduate studies 4/4)

- 2002-2003 CIC Award from Department of Chemistry, University of Sri Jayewardenepura, Nugegoda, Sri Lanka (Awarded jointly with CIC Sri Lanka (Pvt.) Ltd. for the highest GPA in the third year of the undergraduate studies)

TEACHING EXPERIENCE

- 2016-present **Senior Lecturer Gr. II** in Department of Chemistry, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.

Teaching Responsibilities:

CHE 103 1.0	Chemical Thermodynamics
CHE 206 1.0	Chemical Kinetics
CHE 341 1.0	Colloids and Nanochemistry
CHE 369 1.0	Molecular Photochemistry
CHE 465 1.0	Biophysical Chemistry
CHE 495 1.0	Principles and Practices of Optical and Electron Microscopy
ICH 351 1.0	Introduction to Bioinformatics and Computational Biology

ICH 367 2.0 Microscopic and Scattering Techniques
IAC 509 2.0 Analytical Tools for Nanoscience
MPST 527 1.0 Modeling and Simulations
CHE 315 2.0 Physical Chemistry Laboratory (3rd Year)

- 2006-2007 **Teaching Assistant** in Department of Chemistry, Bowling Green State University, Bowling Green, OH, USA.
  Introductory Chemistry Laboratory

- 2004-2005 **Teaching Assistant** in Department of Chemistry, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.
  Physical Chemistry Laboratory

ADMINISTRATIVE ACTIVITIES (University of Sri Jayewardenepura)

- Department Coordinator-Extended Degree Program 2016-2017
- Department Coordinator-Extended Degree Program 2019-2022
- Department representative-Faculty Quality Assurance Cell 2017-2019
- Coordinator-Physical Chemistry Exam Paper Moderation Panel 2016-2019

OTHER EMPLOYMENT HISTORY

- 03/2005-10/2005 Junior Quality Assurance Executive- Lanka Walltile (Pvt.) Ltd., Sri Lanka
- 11/2005-07/2006 Assistant Government Analyst- Government Analyst's Department, Sri Lanka

PERSONAL INFORMATION

- Date of birth : 31st January 1978
- Gender : Male