

Pirith Ceremony

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with Dr. Gayathri N. Silva

The **Department of Chemistry** of the University of Colombo, the oldest Chemistry Department of the Sri Lankan University system has set its priority to be more focused on research in order to compete with the world class universities under the guidance of all the brilliant minds in the department. The department will mainly pivot its research on Materials Science, Biotechnology, Pharmaceuticals, and Computational Chemistry which will be playing a crucial role in shaping up the planet in the next upcoming decades.

The University administration has recognized the contribution by the department to academia and research in local and global scales and thus has appreciated the potential of the prestigious department. Major refurbishments are currently ongoing and will be undertaken to usher the department to a world class level. **Centre for Advanced Materials and Devices (CAMD)**, the **Center for Analytical Research and Development (CARD)**, and the **Sri Lanka Pharmaceutical laboratory (SLPL)** are the main sub units that have contributed largely to raise its standard to a global level. With its vision firm to "Diligence leads to excellence", we will strive to cultivate a safe, inclusive, and fair environment where our staff, faculty, researchers, and students can thrive as they advance new chemical frontiers through research, innovation, collaboration, and scholarship.

Pirith Ceremony and Almsgiving - 2021

The first ever Pirith Ceremony and Almsgiving organized by the Team Chemistry was held on 8th and 9th April 2021 with the intention of blessing the department, faculty, university, and the country. Since the world is currently suffering from the tragic CoVID-19 pandemic situation, the Team Chemistry believed that this would be the ideal time to organize such an event. The support and guidance from the Vice Chancellor, Dean of the Faculty of Science, Head of the Department, Senior Staff with the active participation of 80 staff members and the honours degree undergraduates of the department made this event a huge success.





Prof. Srianthie A. Deraniyagala, Congratulations on your career & best wishes for your retirement!!!

1992, Prof. Deraniyagala researched in the area of inhibitors for Beta-lactamases at Wesleyan University, Connecticut, USA having obtained a National Science Foundation (USA) Post-doctoral Fellowship for Science in Developing Countries. On returning to the University, she introduced Medicinal Chemistry into the curriculum of the Special Degree Program in Chemistry. Her research has encompassed predominantly the areas of Food Chemistry, Natural Product Chemistry, and Medicinal Chemistry. Her research has been recognized at the national level where she was awarded the Presidential Award for Research in 2002 and in 2003-2005. Her research work has been funded by grants from the University of Colombo, NARESA, and TWAS. She is the author of several books and monographs as well. She obtained her Associate Professorship in 1991, Professorship in 2001, and Senior Professorship in 2008. She has served in numerous committees in the university as well as in national level advisory committees. She was awarded the Yeomen Service Award 2019 by the Institute of Chemistry, Ceylon. After 42 valuable years of service at the University of Colombo, Prof. Deraniyagala retired on the 18th of April 2021 and her h-index was 12 at the time of her retirement. Even after her retirement from the Department, she expects to serve the field of Chemistry as the President of the Institute of Chemistry in 2021/2022. As a department, we would like to thank Prof. Srianthie Deraniyagala for her invaluable service to our Department. We wish you a life full of success and happiness.

Professor Srianthie Ayoma Deraniyagala is a Senior Professor of the Department of Chemistry, University of Colombo. She is a product of the Faculty of Science, University of Colombo. She graduated with 1st Class Honors in Chemistry in 1978. After serving as a Temporary Assistant Lecturer in the Department, she was absorbed into the Permanent Cadre in April 1979. She left for her Postgraduate studies to Dalhousie University, Nova Scotia, Canada in September 1979. She returned to the department in 1984 after obtaining a Ph.D. in Bio-Organic Chemistry. She was the 1st internal academic to teach Biochemistry in the department. In 1987, she was appointed as the convener of a subcommittee to formulate a Biochemistry course for the Faculty of Science; a brainchild of the then Dean, Professor L. M. V. Tillekeratne. During her first sabbatical leave in

Senior Prof. K.M. Nalin de Silva named as the Chair of Chemistry

Senior Prof. K. M. Nalin de Silva was promoted to the post of Chair Senior Professor in the Department of Chemistry, University of Colombo. Chair professorship is the highest honour awarded to a faculty member and this academic title is awarded to the academic member in the department, for having achieved the highest levels of scholarly attainments and exhibited sustained excellence over the course of the career. Senior Chair Prof. K. M. Nalin de Silva graduated from the University of Colombo in 1992 with first class honors in Chemistry and joined the department as a Probationary Lecturer. He was a keen sportsman and received University Colors for Tennis and Table Tennis and also captained both Tennis and Table Tennis teams in 1991 and 1992 respectively. He obtained his Doctorate degree in Physical Chemistry from the University of Cambridge, UK in the year of 1998. Upon completion of his PhD, he was promoted to the post of Senior Lecturer and in February 2005, just six years after completing the PhD, he was directly accorded the full professorship and became the youngest Professor in the Faculty of Science, University of Colombo, at the age of 39. Prof. K. M. Nalin de Silva currently serves as the Head of the Department of Chemistry, University of Colombo. His h-index was 23 at the time of his appointment to the Chair of Chemistry. We, the junior academic staff and the entire Department of Chemistry add our heartiest congratulations for the well-deserved promotion and wish him a great success and many accomplishments in new post along with strength to lift the Department to greater heights!



Glory to the Department!!!

Vice Chancellor's Award 2019

Prof. Rohini M. de Silva



Presidential Awards - 2018

Prof. K. M. Nalin de Silva, Prof. K. R. R. Mahanama, Prof. Ranil Dassanayake and Prof. N. V. Chandrasekharan received Presidential Awards



The department would like to extend heartiest congratulations to our Scientists for their great achievements!



Senate Awards 2018

**Prof. Rohini M. de Silva
Prof. K. M. Nalin de Silva**

Senate Awards 2019

**Prof. Chamari Hettiarachchi
Prof. K. M. Nalin de Silva**

Senate Commendation Awards 2019

Prof. Ranil Dassanayake, Prof. Rohini M. de Silva and Dr. Ireshika de Silva

Transgenic mosquito resistant to multiple serotypes of dengue virus Development of the first transgenic Animal in Sri Lanka



The research team led by **Prof. Ranil Dassanayake** in collaboration with the Faculty of Medicine, University of Kelaniya undertook the development of the dengue virus resistant, transgenic *Ae. aegypti* line using an RNA interference-based technology as a PhD research project of **Mr. Kalindu Ramyasoma**. They were able to develop the first globally reported transgenic mosquito resistant to multiple dengue virus serotypes (serotype 2 and 4), and the first transgenic animal in Sri Lanka. This transgenic mosquito-based vector control strategy has also been successfully semi-field tested. This work has been published in prestigious peer-reviewed research journals, *RNA Biology* and *BioMed Research* and the project was funded by the National Research Council grant awarded to University of Kelaniya.



Chemistry Honours



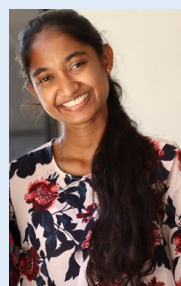
Dimuthu Hasanthi

Massachusetts Institute of Technology (MIT)



Danushki Suriyawansa

Pennsylvania State University



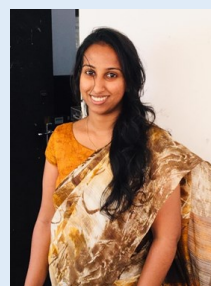
Sahani Iddawela

Pennsylvania State University



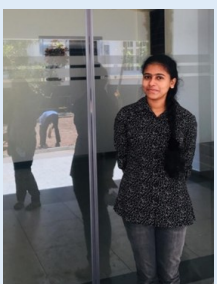
Nipuna Dhananjaya

Pennsylvania State University



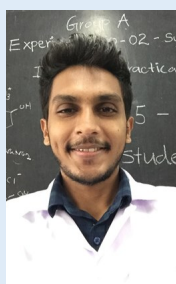
Dinushika Sandamini

University of Florida



Gayathri Ganesan

Arizona State University



Lakshan Yamudith

Iowa State University



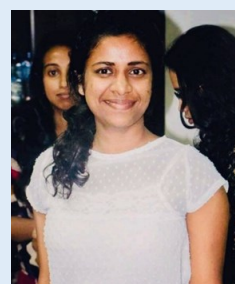
Rashini Gamage

University of Houston



Kaushalya Perera

University of Delaware



Uthpala Ekanayake

Clarkson University

PhD. Offers for fall 2021 !!! (USA)

Biochemistry and Molecular Biology Honours



Divyasorubini Seerpatham

Pennsylvania State University



Gihan Perera

University of Notre Dame



Jeyatharshika Antonyrajah

Arizona State University



Kohilan Jeyasothy

Arizona State University



Diluksha Senal

Arizona State University



Charitha Rajapakse

Arizona State University



Kasun Abeyrathne

University of Delaware



Abdullah Mishfak

University of Central Florida



Sharada Kothalawala

City University of New York



Deshan Madusanka

Brigham Young University

Congratulations & we believe that you'll make our UoC PROUD !!!

Computational Chemistry Honours



Namindu Rangana

University of Florida



Dulitha Prasanna

Iowa State University



Sulalith Samarasinghe

Kansas State University

USA Chemistry Rankings

Summary of Publications - 2021 (Jan-June)

- G.V.V. Liyanaarachchi, K.R.R. Mahanama, H.P.P.S. Somasiri, P.A.N. Punyasiri, K.A.K. Wijesena, J.D. Kottawa-Arachchi, Cereal Research Communications, **2021**.
- L.S.L.K. Fernando, K.R.R. Mahanama, Turkish Journal of Computer and Mathematics Education, **2021**, 12 (11).
- Mohamed A.C.M. Haniffa, K. Munawar, Ching Yern Chee, Sumit Pramanik, Ahmed Halilu, Hazlee Azil Illias, Muhammad Rizwan, Rajendram Senthilnithy, K.R.R. Mahanama, Ashis Tripathy, Mohd Fahmi Azman, Carbohydrate Polymers, **2021**, 118136.
- Priyani Paligaspe, Samantha Weerasinghe, D.P. Dissanayake, R. Senthilnithy, Journal of Molecular Structure, **2021**, 1235, 130257.
- M. Shanika Fernando, A.K.D.V.K. Wimalasiri, Karolina Dziemidowicz, Gareth R. Williams, K.I. Koswattage, D.P. Dissanayake, K.M. Nalin de Silva, Rohini M. de Silva, ACS omega, **2021**, 6, 12, 8517-8530.
- K.D.R.N. Kalubowila, M. Siyath Gunewardene, J. L. K. Jayasingha, D.P. Dissanayake, Charith Jayathilaka, J.M. Dilushan Jayasundara, Yun Gao, J.K.D. Sumedha Jayanetti, ACS Applied Nano Materials, **2021**, 4(3), 2673-2681.
- A.K.D. Veromee K. Wimalasiri, M. Shanika Fernando, Gareth R. Williams, D. P. Dissanayake, K.M. Nalin de Silva, Rohini M. de Silva, Materials Chemistry and Physics, **2021**, 257, 123712.
- A.K.D. Veromee K. Wimalasiri, M. Shanika Fernando, Karolina Dziemidowicz, Gareth R Williams, K Rasika Koswattage, D.P Dissanayake, K.M. Nalin de Silva, Rohini M de Silva, ACS omega, **2021**, 6, 21, 13527-13543.
- K.N.D. Bandara, K.M.D.C. Jayathilaka, D.P. Dissanayake, J.K.D.S. Jayanetti, Applied Surface Science, **2021**, 561, 150020.
- I. N. Harischandra, R. S. Dassanayake, B.G.D.N.K. de Silva, Journal of Vector Borne Diseases, **2021**.
- H. P. B. K. D Ramyasoma, Y. I. N. S Gunawardene, Menaka Hapugoda, R. S Dassanayake, BioMed Research International, **2021**.
- Tharaka Ranathunge, Lahiru Udayanga, Sumudu Sarasija, Samudra Karunathilaka, Shavindhya Nawarathne, Haruthra Rathnarajah, Fathima Fazla Dulficar, Fathima Nafla Shafi, R. S. Dassanayake, YI Gunawardene, BioMed Research International, **2021**.
- S.P. Ratnayake, C. Sandaruwan, M.M.M.G.P.G. Mantilaka, N. De Silva, D. Dahanayake, U.K. Wanninayake, W.R.L.N. Bandara, S. Santhoshkumar, E. Murugan, G.A.J. Amaratunga, K.M. Nalin De Silva, Journal of Industrial and Engineering Chemistry, **2021**, 95, 203-214.
- S.P. Ratnayake, K. Purasinhala, C. Sandaruwan, Y. Madhavi De Silva, M.M.M.G.P.G. Mantilaka, G. Priyadarshana, G.A.J. Amaratunga, K.M. Nalin de Silva, Materialia, **2021**, 15, 100984.
- I.W. Siriwardane, N.P.W. Rathuwadu, D. Dahanayake, Chanaka Sandaruwan, Rohini M. de Silva, K.M. Nalin de Silva, Nanoscale Advances, **2021**.
- S.P. Ratnayake, M.M.M.G.P.G. Mantilaka, C. Sandaruwan, D. Dahanayake, Y. Pivini Gunasekara, S. Jeyasakthy, N.M. Gurusinghe, U.K. Wanninayake, K.M. Nalin de Silva, Journal of Rare Earths, **2021**, 39 (1), 67-74.
- Lahiru A Wijayarathna, Ruchira N Wijesena, Nadeeka D Tissera, WRL Nisansala Bandara, Gehan J Amaratunga, K.M. Nalin De Silva, Royal Society open science, **2021**, 8 (5), 202 - 222.
- K.P. Wasantha Lankathilaka, Rohini M de Silva, M.M.M.G.P.G. Mantilaka, K.M. Nalin de Silva, Groundwater for Sustainable Development, **2021**, 100 - 606.
- Elizabeth A. Ploetz, Sadish Karunaweera, Nikolaos Benteinitis, Feng Chen, Shu Dai, Moon B. Gee, Yuanfang Jiao, Myungshim Kang, Nilusha L Kariyawasam, Nawavi Naleem, Samantha Weerasinghe, Paul E. Smith, Journal of chemical theory and computation, **2021**.
- W.A. Monika Madhavi, Samantha Weerasinghe, Konstantin I. Momot, Journal of Molecular Liquids, **2021**, 324, 114727.
- C.D. Wijayarathna, W.M. Nilmini H Kumari, Shalini Thiruchittampalam, Samantha Weerasinghe, N.V. Chandrasekharan, Applied Microbiology and Biotechnology, **2021**, 105(6), 2573-2586.
- D.P.W. Jayatunga, I.N. Harischandra, N.V. Chandrasekharan, B.G.D.N.K. de Silva, Life, **2021**, 11 (3), 211.
- Madhushani C. Haputhanthri, Hasini R. Perera, Journal of Analytical Chemistry, **2021**, 76 (1), 129-134.
- Ornella A. Joseph, Nipuni Dineesha, M.N. Kaumal, Sri Lanka Journal of Technology, **2021**, 1 (2), 35-40.
- M. Shyami Kandage, N. Gayathri Silva, K. Kanchana Gamage, Asian Journal of Research and Reports in Neurology, **2021**, 16-27.
- S. Jayasena, M. Perera, D. Wijayarathna, S. Wijesundera, M. Chinthaka, G. Seneviratne, Bioprocess & Biosystem Engineering, **2021**.
- Sanjeevan Rajendran, Blazej Slazak, Supun Mohotti, Adam A. Stromstedt, U.I.F. Goransson, Chamari M. Hettiarachchi, Sunithi Gunasekera, Phytochemistry, 187, **2021**, 112749.
- S.A. Sachini Jayawardana, J.K. Ramani Radhika Samarasekera, Chamari M Hettiarachchi, Jaanaki Gooneratne, Food Science and Technology International, **2021**.

Poster and Oral Presentations in International Conferences

Kasun Abeyrathne (Madusha Satharasinghe, P. Banushan) presented on 'Design and development of a riboswitch biosensor to detect fluoride levels in drinking water' at the American Chemical Society Spring 2021 as a poster-themed 'Riboswitch-based whole-cell biosensor for detection of fluoride in drinking water', supervised by Dr. Gayathri N. Silva and Dr. Gayan Sanjeewa. https://acs.digitellinc.com/acs/live/8/page/245?poster_id=8018

Seerpatham Divyasorubini (Dimagi Nimeshika) presented on "Fluoride enhances the antibacterial activity of Na⁺/K⁺ carrier ionophore antibiotics" at the American Chemical Society Spring 2021 Conference. The research was supervised by Dr. Gayathri Silva. https://acs.digitellinc.com/acs/live/8/page/245?poster_id=8128

Nirojan Lalichchandran, Kasun Ananda, Sewwandi Kuruppu, and Navindra Keerthisinghe worked on "Colorful Applications of Fluorescent Silica Nanoparticles - Interactions Between Bio-Organic Molecules and Inorganic Surfaces" and it was presented (**oral**) at the 2021 Virtual MRS Spring Meeting & Exhibit conducted by Materials Research Society by **Dr. Aashani Tillekaratne**. The research was supervised by Dr. Aashani Tillekaratne and Prof. Chamari Hettiarachchi. <https://www.mrs.org/meetings-events/spring-meetings-exhibits/2021-mrs-spring-meeting/call-for-papers/symposium-sessions-detail?code=NM05>

Mr. E. M. Muthumal Ekanayake won the Best Presenter (**oral**) - Engineering and Technology Session, 2nd Asia International Conference on Multidisciplinary Research 2020, co-hosted and organized by the International Research & Development Institution and Liverpool John Moores University, UK. He presented on "Structure elucidation of P-insulin and the effect of processing on different nutritional values of *M.charantia* (Bitter gourd)". The research was supervised by Prof. Chamari Hettiarachchi, Prof. Samantha Weerasinghe and Dr. M.N. Kaumal.

Dr. Neranga Abeyasinghe and coworkers were pledged by the NRC for a special grant for his proposal to conduct clinical trials on a traditional food supplement to treat COVID-19. The team of investigators include Dr. Ananda Wijewickrama at IDH; Consultant Physician Dr. Eranga Narangoda; Prof. Priyanga Ranasinghe, Department of Pharmacology, University of Colombo; Consultant Physician Dr. Athula Liyanapathirana, Epidemiology unit, Sri Lanka and Dr. Gayathri N. Silva, Department of Chemistry.

CHIT-CHAT

A childhood passion to become a detective compounded by a curiosity for science

"I studied at Anula Vidyalaya, Nugegoda.

When I was young, I had a strong desire to become a forensic analyst or a detective. I think I always had an instinct for problem solving. I was very fortunate to get selected to FOS, UOC to study science. It opened many avenues for me to become a scientist"

A diverse and exciting journey in science laid the groundwork for her to become a researcher

"I did my undergraduate research with Prof. Chamari Hettiaarachchi. It was my first exposure to getting hands on experience in research. During my PhD at WSU

(USA), I have used a multidisciplinary approach to investigate different aspects of protein biosynthesis. My PI, Prof. Tamara Hendrickson was a great influence in shaping my career as a researcher. I did my postdoctoral studies at the medical school of University of Michigan, USA. By this time, I had realized that I want to explore my own ideas and to work as an independent scientist. So I returned to Sri Lanka and joined the Department of Chemistry as a Senior Lecturer."

Recognizing global challenges and researching to address them

"Currently my main research interest is riboswitches, their chemistry, and applications. I'm working on developing whole-cell and cell-free riboswitch-based biosensors to monitor fluoride, which is a major contaminant in ground water. I'm also interested in designing and assessing antibacterial combination regimens to combat antibacterial resistance, host toxicity and permeability limitations. My research team is investigating a group of antibacterial compounds that could potentially enhance the permeability of cell membranes to facilitate fluoride uptake. Another aspect that I'm looking at is designing small molecule fluoride channel blockers against fluoride resistant bacteria. The goal here is to find ways to limit fluoride efflux and to make bacteria more susceptible to fluoride.

Exciting findings and the shape of future research

My research team has optimized a fluoride riboswitch-based whole cell biosensor as a new approach for monitoring

"There are solutions to any challenge. Most often the solution is extremely simple and obvious; however, we tend to make the problem solving more complicated and convoluted by missing those simple solutions. It is possible that this is happening due to competition. When you have endless competition and the habit of competing there is a compromise. And almost always that compromise is wisdom, accuracy, creativity and empathy. Therefore, one has to look at competition from a very cautious angle."

environmental fluoride. This inexpensive and rapid fluoride detection method can be used to assess the quality of drinking water and thereby reduce the vulnerability of communities to fluoride dependent diseases. Furthermore, we have discovered that fluoride when used in combination with ionophore antibiotics can synergistically inhibit bacterial growth. We are currently using a fluoride riboswitch-based reporter assay to conclusively determine whether the ionophore antibiotics enhance the permeability of bacterial cell membranes to fluoride to induce strong fluoride toxicity. We strongly believe that our research work will provide new opportunities to design novel combination therapies to reduce host toxicity, antibacterial resistance and permeability limitations.

Incorporating what she learned from her past experiences into teaching and mentoring students

"I always encourage my students to see the excitement in science rather than getting into a competitive mindset when doing research. Also I try to give them space and time to work on their own pace. I believe that micromanaging everything as a research supervisor is debilitating to my students' deep learning and their growth as scientists."



"In our science education we advise students to think independently and think outside the box. However, with time there is a possibility that we can get stuck in modern concepts and principles in science so that we tend not to explore other approaches and viewpoints. As scientists, we should always have an open mind to see the pitfalls of the aspects we learn. "

- Dr. Gayathri N. Silva

(Ph.D., Wayne State University, Detroit, MI, USA, Postdoctoral Fellow University of Michigan Medical School, Ann Arbor, MI, USA)

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